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

FORM 10-Q

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended June 30, 2019

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: 001-37923

CRISPR THERAPEUTICS AG

(Exact name of Registrant as specified in its charter)

Switzerland **(State or other jurisdiction of incorporation or organization)**	**Not Applicable** **(I.R.S. Employer Identification No.)**
Baarerstrasse 14 **6300 Zug, Switzerland** **(Address of principal executive offices)**	**Not Applicable** **(zip code)**

+41 (0)41 561 32 77
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Shares, CHF 0.03 par value	CRSP	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 emerging growth company. See definition 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 registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). YES ☐ NO ☒

As of July 25, 2019, there were 54,662,539 shares of registrant's common shares outstanding.

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PART I—FINANCIAL INFORMATION

Item 1. Financial Statements

CRISPR Therapeutics AG
Condensed Consolidated Balance Sheets
(unaudited, in thousands, except share and per share data)

	As of	
	June 30, 2019	**December 31, 2018**
Assets		
Current assets:		
Cash and cash equivalents	$ 427,885	$ 456,649
Accounts receivable, including related party amounts of $321 and $88 as of June 30, 2019 and December 31, 2018, respectively	321	88
Prepaid expenses and other current assets, including related party amounts of $3,318 and $3,417 as of June 30, 2019 and December 31, 2018, respectively	10,267	9,658
Total current assets	438,473	466,395
Property and equipment, net	20,156	18,500
Intangible assets, net	262	289
Restricted cash	3,915	3,163
Operating lease assets	30,770	—
Other non-current assets	669	669
Total assets	$ 494,245	$ 489,016
Liabilities and shareholders' equity		
Current liabilities:		
Accounts payable	$ 7,143	$ 5,069
Accrued expenses, including related party amounts of $3,312 and $1,700 as of June 30, 2019 and December 31, 2018, respectively	18,628	20,852
Accrued tax liabilities	542	402
Deferred rent	—	1,202
Operating lease liabilities	4,880	—
Other current liabilities	219	221
Total current liabilities	31,412	27,746
Deferred revenue non-current, including related party amounts of $57,730 and $57,780 as of June 30, 2019 and December 31, 2018, respectively	57,730	57,780
Deferred rent non-current	—	11,052
Operating lease liabilities, net of current portion	37,200	—
Other non-current liabilities	220	243
Total liabilities	126,562	96,821
Commitments and contingencies, see Note 4		
Shareholders' equity:		
Common shares, CHF 0.03 par value, 55,445,241 and 52,183,139 shares authorized at June 30, 2019 and December 31, 2018, respectively, 53,756,046 and 52,160,798 shares issued at June 30, 2019 and December 31, 2018, respectively, 53,499,057 and 51,852,862 shares outstanding at June 30, 2019 and December 31, 2018, respectively, 23,948,128 and 20,498,996 shares in conditional capital at June 30, 2019 and December 31, 2018, respectively.	1,630	1,584
Treasury shares, at cost, 256,989 and 307,936 shares at June 30, 2019 and December 31, 2018, respectively	(57)	(57)
Additional paid-in capital	759,796	682,245
Accumulated deficit	(393,676)	(291,569)
Accumulated other comprehensive loss	(10)	(8)
Total shareholders' equity	367,683	392,195
Total liabilities and shareholders' equity	$ 494,245	$ 489,016

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

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Collaboration revenue (1)	$ 318	$ 1,088	$ 646	$ 2,446
Operating expenses:				
Research and development (2)	39,533	25,633	73,355	45,152
General and administrative	15,768	12,741	30,697	21,577
Total operating expenses	55,301	38,374	104,052	66,729
Loss from operations	(54,983)	(37,286)	(103,406)	(64,283)
Other income (expense):				
Loss from equity method investment	(1,012)	(1,153)	(2,037)	(2,244)
Other income (expense), net	2,381	155	3,506	29
Total other income (expense), net	1,369	(998)	1,469	(2,215)
Net loss before income taxes	(53,614)	(38,284)	(101,937)	(66,498)
Provision for income taxes	(85)	(96)	(170)	(182)
Net loss	(53,699)	(38,380)	(102,107)	(66,680)
Foreign currency translation adjustment	(10)	(21)	(2)	(9)
Comprehensive loss	$ (53,709)	$ (38,401)	$ (102,109)	$ (66,689)
Reconciliation of net loss to net loss attributable to common shareholders:				
Net loss	$ (53,699)	$ (38,380)	$ (102,107)	$ (66,680)
Net loss per share attributable to common shareholders—basic and diluted	$ (1.01)	$ (0.82)	$ (1.94)	$ (1.44)
Weighted-average common shares outstanding used in net loss per share attributable to common shareholders—basic and diluted	53,188,041	46,842,316	52,643,649	46,362,538
(1) Including the following revenue from a related party, see Notes 6 & 11:	$ 318	$ 881	$ 646	$ 1,963
(2) Including the following research and development expense with a related party, see Notes 6 & 11:	$ 6,870	$ 1,246	$ 14,459	$ 2,352

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

CRISPR Therapeutics AG
Consolidated Statements of Shareholders' Equity
(In thousands, except share and per share data)

	Common Shares		Treasury Shares					
	Shares	CHF 0.03 Par Value	Shares	Amount, at cost	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total Shareholders' Equity
Balance at December 31, 2017	40,592,248	1,240	444,873	—	312,018	(125,440)	14	187,832
Cumulative effect of ASC 606 adoption	—	—	—	—	—	(1,148)	—	(1,148)
Issuance of common shares, net of issuance costs of $8.2 million	5,750,000	174	—	—	122,423	—	—	122,597
Vesting of restricted shares	10,042	—	—	—	13	—	—	13
Exercise of vested options	328,525	9	(6,253)	—	2,647	—	—	2,656
Stock-based compensation expense	—	—	—	—	6,673	—	—	6,673
Other comprehensive loss	—	—	—	—	—	—	12	12
Net loss	—	—	—	—	—	(28,300)	—	(28,300)
Balance at March 31, 2018	46,680,815	$ 1,423	438,620	$ —	$ 443,774	$ (154,888)	$ 26	$ 290,335
Issuance of common shares, net of issuance costs of $0.0M	—	—	—	—	—	—	—	-
Vesting of restricted shares	10,043	1	—	—	13	—	—	14
Exercise of vested options	380,977	11	(29,259)	(50)	3,768	—	—	3,729
Stock-based compensation expense	—	—	—	—	9,477	—	—	9,477
Other Comprehensive loss	—	—	—	—	—	—	(21)	(21)
Net loss	—	—	—	—	—	(38,380)	—	(38,380)
Balance at June 30, 2018	47,071,835	$ 1,435	409,361	$ (50)	$ 457,032	$ (193,268)	$ 5	$ 265,154
Balance at December 31, 2018	51,852,862	1,584	307,936	(57)	682,245	(291,569)	(8)	392,195
Issuance of common shares, net of issuance costs of $1.2 million	631,580	—	—	—	23,472	—	—	23,472
Vesting of restricted shares	9,288	—	—	—	15	—	—	15
Exercise of vested options	141,915	5	—	—	1,827	—	—	1,832
Stock-based compensation expense	—	—	—	—	10,696	—	—	10,696
Other comprehensive loss	—	—	—	—	—	—	8	8
Net loss	—	—	—	—	—	(48,408)	—	(48,408)
Balance at March 31, 2019	52,635,645	1,589	307,936	(57)	718,255	(339,977)	—	379,810
Issuance of common shares, net of issuance costs of $1.3 million	732,108	40	(47,297)	—	28,074	—	—	28,114
Vesting of restricted shares	12,317	1	—	—	15	—	—	16
Exercise of vested options	118,987	—	(3,650)	—	1,254	—	—	1,254
Stock-based compensation expense	—	—	—	—	12,198	—	—	12,198
Other comprehensive loss	—	—	—	—		—	(10)	(10)
Net loss	—	—	—	—		(53,699)	—	(53,699)
Balance at June 30, 2019	53,499,057	1,630	256,989	(57)	759,796	(393,676)	(10)	367,683

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

CRISPR Therapeutics AG
Condensed Consolidated Statements of Cash Flows
(unaudited, in thousands)

	Six Months Ended June 30,	
	2019	**2018**
Operating activities:		
Net loss	$ (102,107)	$ (66,680)
Reconciliation of net loss to net cash used in operating activities:		
Depreciation and amortization	2,010	1,691
Equity-based compensation	20,857	13,906
Loss from equity method investment	2,037	2,244
Other income, non-cash	—	(169)
Changes in:		
Accounts receivable	(233)	1,682
Prepaid expenses and other assets	(1,399)	(3,804)
Accounts payable and accrued expenses	(849)	3,764
Deferred revenue	(50)	(244)
Deferred rent	—	(381)
Operating lease assets and liabilities	(391)	—
Other liabilities, net	6	88
Net cash used in operating activities	(80,119)	(47,903)
Investing activities:		
Purchase of property and equipment	(3,271)	(1,078)
Net cash used in investing activities	(3,271)	(1,078)
Financing activities:		
Proceeds from issuance of common shares, net of issuance costs	52,294	122,597
Proceeds from exercise of options	3,086	6,433
Repurchase of treasury shares	—	(50)
Net cash provided by financing activities	55,380	128,980
Effect of exchange rate changes on cash	(2)	(9)
(Decrease) increase in cash	(28,012)	79,990
Cash, cash equivalents and restricted cash, beginning of period	459,812	242,912
Cash, cash equivalents and restricted cash, end of period	$ 431,800	$ 322,902
Supplemental disclosure of non-cash investing and financing activities		
Property and equipment purchases in accounts payable and accrued expenses	$ 702	$ 125
Equity issuance costs in accounts payable and accrued expenses	$ 477	$ —

	As of June 30,	
Reconciliation to amounts within the condensed consolidated balance sheets	**2019**	**2018**
Cash and cash equivalents	$ 427,885	$ 319,737
Restricted cash	3,915	3,165
Cash, cash equivalents and restricted cash at end of period	431,800	322,902

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

1. Basis of Presentation 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 of America ("GAAP").

The accompanying condensed consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation. The Company views its operations and manages its business in one operating segment, which is the business of discovering, developing and commercializing therapies derived from or incorporating genome-editing technology. Certain information and footnote disclosures normally included in the Company's annual financial statements have been condensed or omitted. These interim financial statements, in the opinion of management, reflect all normal recurring adjustments necessary for a fair presentation of the financial position and results of operations for the three and six month interim periods ended June 30, 2019 and 2018.

The results of operations for the interim periods are not necessarily indicative of the results of operations to be expected for the full year. These interim financial statements should be read in conjunction with the audited financial statements for the year ended December 31, 2018, which are contained in the 2018 Annual Report on Form 10-K filed with the Securities and Exchange Commission ("SEC") on February 25, 2019.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Significant estimates in these consolidated financial statements have been made in connection with the calculation of revenues, research and development expenses and equity-based compensation expense. The Company bases its estimates on historical experience and various other assumptions, including, in certain circumstances, future projections that management believes to be reasonable. Actual results could differ from those estimates. Changes in estimates are reflected in reported results in the period in which they become known.

Significant Accounting Policies

The significant accounting policies used in preparation of these condensed consolidated financial statements for the three and six months ended June 30, 2019 are consistent with those discussed in Note 2 to the consolidated financial statements in the Company's 2018 Annual Report on Form 10-K filed with the SEC on February 25, 2019, except with respect to the Company's lease accounting policy noted within the "Recently adopted accounting standards" section below.

Recently Adopted Accounting Standards

The Company adopted ASC 842, *Leases* ("ASC 842"), using the required modified retrospective approach, effective January 1, 2019. The Company chose to apply the transition provisions as of the period of adoption. The Company elected the package of practical expedients permitted under the transition guidance within the new standard, which, among other things, allowed the Company to carry forward the historical lease classification. In addition, the Company elected the practical expedient not to apply the recognition requirements in the lease standard to short-term leases (a lease that at commencement date has a lease term of 12 months or less and does not contain a purchase option that it is reasonably certain to exercise) and the practical expedient that permits lessees to make an accounting policy election (by class of underlying asset) to account for each separate lease component of a contract and its associated non-lease components as a single lease component. The adoption of the new standard resulted in the recording net lease assets and lease liabilities of $26.1 million and $37.6 million, respectively, as of January 1, 2019. The difference between the additional lease assets and lease liabilities is primarily due to the change in classification of lease incentives from liabilities to a reduction in our net lease assets. The standard had no impact on our net loss or cash flows.

Impact of Adopting ASC 842 on the Financial Statements

	January 1, 2019 *Prior to ASC 842 Adoption*	ASC 842 Adjustment	January 1, 2019 *As Adjusted*
Consolidated Balance Sheet Data (in thousands):			
Prepaid expenses and other current assets(1)	$ 9,658	$ (553)	$ 9,105
Operating lease assets(2)	$ —	$ 26,087	$ 26,087
Deferred rent(3)(4)	$ 1,026	$ (1,026)	$ —
Deferred rent non-current(3)	$ 11,052	$ (11,052)	$ —
Operating lease liabilities(5)	$ —	$ 4,930	$ 4,930
Non-current operating lease liabilities(5)	$ —	$ 32,682	$ 32,682

(1) Represents reclassification of prepaid rent to operating lease assets.

(2) Represents capitalization of operating lease assets and reclassification of equipment licenses from prepaid expenses to operating lease assets, offset by reclassification of deferred rent to operating lease assets.

(3) Represents reclassification of deferred rent and tenant incentives to operating lease assets.

(4) As of December 31, 2018, the deferred rent balance was $1,202, which included $176 of sublease income received prior to year-end but not due until January 1, 2019.

(5) Represents recognition of operating lease liabilities.

2. Property and Equipment, net

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

	As of	
	June 30, 2019	December 31, 2018
Computer equipment	$ 585	$ 443
Furniture, fixtures and other	2,555	2,453
Laboratory equipment	10,157	8,964
Leasehold improvements	14,937	13,776
Construction work in process	1,280	239
Total property and equipment, gross	29,514	25,875
Accumulated depreciation	(9,358)	(7,375)
Total property and equipment, net	$ 20,156	$ 18,500

Depreciation expense for the three and six months ended June 30, 2019 was $1.0 million and $2.0 million, respectively. Depreciation expense for the three and six months ended June 30, 2018 was $0.9 million and $1.7 million, respectively.

3. Accrued Expenses

Accrued expenses consist of the following (in thousands):

	As of	
	June 30, 2019	December 31, 2018
Payroll and employee-related costs	$ 5,604	$ 7,321
Research costs	9,266	7,973
Licensing fees	—	625
Professional fees	2,096	1,848
Intellectual property costs	1,164	2,193
Accrued property and equipment	387	294
Other	111	598
Total	$ 18,628	$ 20,852

4. Commitments and Contingencies

Litigation

In the ordinary course of business, the Company is 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 those proceedings and claims cannot be predicted with certainty, the Company is not party to any legal or arbitration proceedings that may have significant effects on its financial position. It is not a party to any material proceedings in which any director, member of executive management or affiliate of the Company is either a party adverse to it or its subsidiaries or has a material interest adverse to it or its subsidiaries.

As disclosed in its Current Report on Form 8-K filed with the SEC on June 26, 2019, on June 25, 2019, the Company received notification that the United States Patent and Trademark Office initiated an interference proceeding at the Patent Trial and Appeal Board (the "PTAB") between certain pending U.S. patent applications co-owned by the University of California, the University of Vienna and Dr. Emmanuelle Charpentier (collectively, the "CVC Group") and certain patents and a patent application currently owned by the Broad Institute and Massachusetts Institute of Technology and, in some instances, the President and Fellows of Harvard College (individually and collectively, the "Broad"), all of which are related to the single guide format of CRISPR/Cas9 genome editing technology in eukaryotic cells. The Company has an exclusive worldwide license in the field of human therapeutics to Dr. Charpentier's rights as a co-owner of the CVC Group portfolio. Specifically, the PTAB has declared Patent Interference No. 106,115 between the CVC Group's pending U.S. Patent Application Nos. 15/947,680; 15/947,700; 15/947,718; 15/981,807; 15/981,808; 15/981,809; 16/136,159; 16/136,165; 16/136,168; and 16/136,175, and the Broad's U.S. Patent Nos. 8,697,359; 8,771,945; 8,795,965; 8,865,406; 8,871,445; 8,889,356; 8,895,308; 8,906,616; 8,932,814; 8,945,839; 8,993,233; 8,999,641; 9,840,713, and U.S. Patent Application No. 14/704,551.

Letters of Credit

As of June 30, 2019, the Company had restricted cash of $3.9 million representing letters of credit securing the Company's obligations under certain leased facilities in Cambridge, Massachusetts, as well as certain credit card arrangements. The letters of credit are secured by cash held in a restricted depository account. The cash deposit is recorded in restricted cash in the accompanying consolidated balance sheet as of June 30, 2019.

Research Agreements

The Company has engaged several research institutions and companies to identify new delivery strategies and applications of its gene-editing technology. The Company is also a party to a number of research license agreements which require significant upfront payments, future royalty payments and potential milestone payments from time to time, as well as intellectual property agreements, which require maintenance and milestone payments from time to time. In association with these agreements, the Company has committed to making payments of $1.7 million and $2.1 million in 2019 and 2020, respectively. For the three and six months ended June 30, 2019, the Company paid $0.5 million and $2.2 million, respectively, related to these research agreements.

The Company is also a party to a number of manufacturing agreements that require upfront payments for the future performance of services. In connection with these agreements, the Company paid $2.8 million in upfront payments, which were recorded as prepaid expenses as of June 30, 2019. The Company will amortize the prepaid balance as services are performed.

5. Leases

In June 2015, the Company entered into a lease agreement for the lease of approximately 19,817 square feet of research facility space with a commencement date of November 15, 2015 (the "2015 Lease"). The lease expires in February 2022. The 2015 Lease contains escalating rent clauses which require higher rent payments in future years. With the adoption of ASC 842, the Company has recorded a right-of-use asset and corresponding lease liability.

In May 2016, the Company entered into a sublease agreement for its primary office and research facility in Cambridge, Massachusetts, with a commencement date of December 23, 2016 (the "2016 Sublease"). The sublease expires in December 2026, and the Company has an option to extend the term of sublease for an additional five-year period if, at the time of expiration of the initial term, the sublessor does not intend to utilize the space for itself or its affiliates. The 2016 Sublease contains escalating rent clauses which require higher rent payments in future years. With the adoption of ASC 842, the Company has recorded a right-of-use asset and corresponding lease liability. The right-of-use asset and corresponding lease liability does not include the additional five-year period under the option.

In May 2019, the Company entered into a lease agreement for the lease of approximately 15,877 square feet of office facility space with a commencement date of June 1, 2019 (the "2019 Lease"). The lease expires in November 2026, and the Company has an option to extend the term of the lease for an additional five-year period based on certain conditions within the Company's control. The 2019 Lease contains escalating rent clauses which require higher rent payments in future years. At lease commencement, the Company recorded a right-of-use asset and corresponding lease liability. The right-of-use asset and corresponding lease liability does not include the additional five-year period under the option.

In addition, the Company rents certain office space in Zug, Switzerland, on a short-term basis for which a right-of-use asset and liability are not recorded, in accordance with the practical expedient elected.

The Company has embedded leases in certain research and license agreements for which the Company has recorded a right of use asset and liability. These arrangements are not significant in comparison to the Company's total operating lease assets and liabilities. In addition, the Company has identified certain short-term leases embedded within its manufacturing contracts which are not recorded on the Company's balance sheet in accordance with the practical expedient elected.

The Company identified and assessed the following estimates in recognizing the right-of-use asset and corresponding liability:

- *Expected lease term*: The expected lease term for those leases commencing prior to January 1, 2019 did not change with the adoption of ASC 842. The expected lease term for leases commencing after the adoption of ASC 842 includes noncancelable lease periods and, when applicable, periods covered by an option to extend the lease if the Company is reasonably certain to exercise that option, as well as periods covered by an option to terminate the lease if the Company is reasonably certain not to exercise that option.
- *Incremental borrowing rate*: As the discount rates in the Company's lease are not implicit, the Company estimated the incremental borrowing rate based on the rate of interest the Company would have to pay to borrow a similar amount on a collateralized basis over a similar term.

The following table summarizes the lease assets and liabilities as of June 30, 2019 (in thousands):

	As of June 30, 2019
Assets	
Operating lease assets	$ 30,770
Total lease assets	30,770
Liabilities	
Current	
Operating lease liabilities	4,880
Non-current	
Operating lease liabilities, net of current portion	37,200
Total lease liabilities	$ 42,080

The following table summarizes operating lease costs included in research and development and general and administrative expense, as well as sublease income for the three and six months ended June 30, 2019 (in thousands):

	Three months ended June 30, 2019	Six months ended June 30, 2019
Operating lease costs	$ 1,904	$ 3,726
Short-term lease costs	1,123	2,261
Variable lease costs	683	1,413
Sublease income	—	(525)
Net lease cost	$ 3,710	$ 6,875

The following table summarizes the maturity of undiscounted payments due under lease liabilities and the present value of those liabilities as of June 30, 2019 (in thousands):

	Total
2019	$ 4,419
2020	8,566
2021	8,507
2022	7,345
2023	7,362
Thereafter	23,254
Total	$ 59,453
Present value adjustment	(17,373)
Present value of lease liabilities	$ 42,080

The following table summarizes the lease term and discount rate as of June 30, 2019:

	As of June 30, 2019
Weighted-average remaining lease term (years)	
Operating leases	7.0
Weighted-average discount rate	
Operating leases	9.8%

The following table summarizes the cash paid for amounts included in the measurement of lease liabilities for the six months ended June 30, 2019 (in thousands):

	Six months ended June 30, 2019
Cash paid for amounts included in the measurement of lease liabilities	$ 3,940
Operating cash flows from operating leases	$ 3,940

6. Significant Contracts

Collaboration Agreement with and Joint Development Agreement with Vertex Pharmaceuticals Incorporated and certain of its subsidiaries

Summary of Agreement

On October 26, 2015, the Company entered into a strategic collaboration, option and license agreement (the "2015 Collaboration Agreement") with Vertex Pharmaceuticals Incorporated and certain of its subsidiaries ("Vertex"). The 2015 Collaboration Agreement is focused on the use of the Company's CRISPR/Cas9 gene editing technology to discover and develop potential new treatments aimed at the underlying genetic causes of human disease. On December 12, 2017, the Company and Vertex entered into Amendment No. 1 to the 2015 Collaboration Agreement ("Amendment No. 1") and the Joint Development Agreement (the "JDA"). Amendment No. 1, among other things, modified certain definitions and provisions of the 2015 Collaboration Agreement to make them consistent with the JDA and clarified how many options are exercised (or deemed exercised) in connection with certain targets specified under the 2015 Collaboration Agreement. Amendment No. 1 also amended other provisions of the 2015 Collaboration Agreement, including the expiration terms.

In connection with the 2015 Collaboration Agreement, Vertex made a nonrefundable upfront payment of $75.0 million. Under the 2015 Collaboration Agreement, Vertex will fund the discovery activities conducted pursuant to the agreement while retaining options to co-exclusive and exclusive licenses. In December 2017, upon execution of the JDA and Amendment No. 1, Vertex exercised its option to obtain a co-exclusive license to develop and commercialize hemoglobinopathy and beta-globin targets. As such, for potential hemoglobinopathy treatments, including treatments for sickle cell disease, the Company and Vertex will share equally all research and development costs and worldwide revenues. For other targets that Vertex elects to license, Vertex will lead development and global commercialization activities. For each of up to four remaining targets that Vertex elects to license, the Company has the potential to receive up to $420.0 million in development, regulatory and commercial milestones and royalties on net product sales.

In connection with the JDA, the Company received a $7.0 million up-front payment from Vertex and is eligible for a one-time low seven-digit milestone payment upon the dosing of the second patient in a clinical trial with the initial product candidate. The net profits and net losses, as applicable, incurred under the JDA will be shared equally between the Company and Vertex.

Accounting for the 2015 Collaboration Agreement, Amendment No. 1 and JDA

The arrangements include components of a customer-vendor relationship and collaborative arrangements as defined under ASC 808, *Collaborative Arrangements*. The Company applies the guidance of ASC 606, *Revenue from Contracts with Customers* ("ASC 606") by analogy to the vendor-customer performance obligations of the 2015 Collaboration Agreement and the performance obligations of the JDA subject to ASC 606 as outlined below. The Company applies the guidance of ASC 808 to those elements in which there is a collaboration relationship in which both parties share equally in the risks and rewards of the research and development as outlined below.

Accounting Analysis Under ASC 606

As the overall arrangement was modified in December 2017, the Company elected a practical expedient within ASC 606 that allowed entities to reflect the aggregate effect of all contract modifications when identifying the satisfied and unsatisfied performance obligations for contracts that were modified prior to the adoption of ASC 606. As of the December 2017 contract modification date, the Company concluded the arrangement contained the following performance obligations: (i) the non-exclusive research license; (ii) four material rights representing the option for up to four exclusive licenses to develop and commercialize the collaboration targets; (iii) a combined performance obligation representing the co-exclusive research license, and a development and commercialization license to develop and commercialize hemoglobinopathies and beta-globin targets; and (iv) the performance of research and development ("R&D Services").

The selling price of each performance obligation was determined based on the Company's estimated standalone selling price (the "ESSP"). The Company developed the ESSP for all the performance obligations included in the 2015 Collaboration Agreement and JDA with the objective of determining the price at which it would sell such an item if it were to be sold regularly on a standalone basis. The ESSP for material rights was determined based on the incremental discount given to Vertex based on the ESSP of the four remaining exclusive licenses and the exercise price paid at the time of exercise.

As the Company has a right to consideration from Vertex in an amount that corresponds directly with the value of the Company's performance completed to date for the R&D Services, the Company recognizes revenue related to the R&D Services as invoiced, in line with the practical expedient in ASC 606-10-55-18.

The transaction price was comprised of: (i) original upfront payment of $75.0 million, (ii) an upfront payment of $7.0 million under the JDA and (iii) $19.3 million of variable consideration associated with the R&D Services. The R&D Services revenue is recognized as invoiced and specifically allocated to the R&D Services performance obligation. The remaining transaction price of $82.0 million was allocated among the performance obligations using the relative selling price method as follows: (i) a non-exclusive research license: $0.5 million; (ii) a material right to discounts for exclusive licenses for up to four Collaboration Targets: $22.2 million, $18.7 million, $8.4 million and $8.4 million for a total of $57.7 million; and (iii) co-exclusive development and commercialization licenses for hemoglobinopathy and beta-globin targets identified in the JDA and co-exclusive research license for the follow-on products: $23.8 million.

The Company recognized $0.1 million and $0.2 million of revenue related to the collaboration with Vertex for the three and six months ended June 30, 2019, respectively. The Company recognized $0.2 million and $0.4 million of revenue related to the collaboration with Vertex for the three and six months ended June 30, 2018. As of June 30, 2019, there was $57.7 million of non-current deferred revenue related to the collaboration with Vertex compared to $57.8 as of December 31, 2018. The transaction price allocated to the remaining performance obligations is $57.8 million. The remaining performance obligations will be recognized as follows: four material rights to obtain an exclusive commercialization and development license at a point in time, upon exercise; and the non-exclusive research license ratably over/within the remaining research term. As of June 30, 2019, the remaining amount to be recognized for the non-exclusive research license is not significant. R&D Services are recognized as invoiced under the practical expedient and, as such, are not disclosed within the remaining performance obligation balance.

Milestones under the 2015 Collaboration Agreement

The Company evaluated the milestones that may be received in connection with the 2015 Collaboration Agreement and JDA. The first potential milestone the Company will be entitled to receive is the milestone in the JDA to receive a one-time low seven-digit milestone payment upon the dosing of a second patient in a clinical trial with the initial shared product and was fully constrained as of

June 30, 2019. The remaining milestones are predominately related to the development and commercialization of a product resulting from the arrangement and are payable with respect to each selected exclusive license which have yet to be exercised and are not currently included in the determination of the transaction price. Each milestone is payable only once per collaboration target, regardless of the number of products directed to such collaboration target that achieve the relevant milestone event. There are nine remaining clinical development and regulatory approval milestones which may trigger proceeds of up to $90.0 million and $235.0 million, respectively, for each selected exclusive license, and two commercial milestones which may trigger proceeds of up to $75.0 million for each selected exclusive license (which, when combined with the $10.0 million due upon exercise of the exclusive option and the $10.0 million development milestone associated with an Investigational New Drug- enabling application, total $420.0 million for each selected Exclusive License), as follows:

Developmental Milestone Events

1. Initiation of the first Clinical Trial of a Product;
2. Establishment of Proof of Concept for a Product;
3. Initiation of the first Phase 3 Clinical Trial of a Product;
4. Acceptance of Approval Application by the U.S. Food and Drug Administration for a Product;
5. Acceptance of Approval Application by the European Medicines Agency for a Product;
6. Acceptance of Approval Application by a Regulatory Authority in Japan for a Product;
7. Marketing Approval in the U.S. for a Product;
8. Marketing Approval in the EU for a Product; and
9. Marketing Approval in Japan for a Product.

Commercial Milestone Events

1. Annual Net Sales for Products with respect to a Collaboration Target exceed $500 million; and
2. Annual Net Sales for Products with respect to a Collaboration Target exceed $1.0 billion.

There is uncertainty that the events to obtain the developmental milestones will be achieved given the nature of clinical development and the stage of the CRISPR/Cas9 technology. Upon exercise of the exclusive license options, developmental milestones will be constrained until the Company is sure that a significant revenue reversal will not occur. Commercial milestones and royalties relate predominantly to a license of intellectual property and are determined by sales or usage-based thresholds. The commercial milestones and royalties are accounted for under the royalty recognition constraint and will be accounted for as constrained variable consideration. The Company applies the royalty recognition constraint for each commercial milestone and will not recognize revenue for each until the subsequent sale of a licensed product (achievement of each) occurs.

Accounting Analysis under ASC 808

The Company identified the following collaborative elements which are accounted for under ASC 808: (i) development and commercialization services for shared products; (ii) R&D Services for follow-on products; and (iii) committee participation. The related impact of the cost sharing associated with research and development is included in research and development expense. Expenses related to services performed by the Company are classified as research and development expense. Payments received from Vertex for partial reimbursement of expenses are recorded as a reduction of research and development expense.

The Company recognized $6.6 million and $13.7 million of research and development expense related to the collaboration with Vertex for the three and six months ended June 30, 2019, respectively. The Company recognized $0.2 million and $0.4 million of research and development expense related to the collaboration with Vertex for the three and six months ended June 30, 2018, respectively. Research and development expense for the three and six months ended June 30, 2019 was net of $3.3 million and $7.8 million of reimbursements from Vertex, respectively. Research and development expense for the three and six months ended June 30, 2018 was net of $3.7 million and $6.9 million of reimbursements from Vertex, respectively.

Joint Venture with Bayer Healthcare LLC

On December 19, 2015, the Company entered into an agreement with Bayer Healthcare LLC and its subsidiaries ("Bayer"), to establish a joint venture to focus on the research the development of new therapeutics to cure blood disorders, blindness and congenital heart disease. On February 12, 2016, the Company and Bayer completed the formation of the joint venture entity, Casebia Therapeutics LLP ("Casebia"). Bayer and the Company each received a 50% equity interest in the entity in exchange for their respective contributions to the entity. The Company contributed $0.1 million in cash and licensed its proprietary CRISPR/Cas9 gene editing technology and intellectual property for selected disease indications. Bayer contributed its protein engineering expertise and relevant disease know-how. Under the agreement, Casebia paid the Company $35.0 million in exchange for a worldwide, exclusive license to commercialize the Company's gene-editing technology specifically for the indications covered by the license. There are no milestone, royalties or other payments due to the Company under this aspect of the agreement. The Company also entered into a separate services agreement with Casebia, under which the Company agreed to provide compensated research and development services.

During 2016, the Company recorded an equity method investment of $36.5 million equal to the fair value of the Company's interest in Casebia and subsequently recorded unrealized equity method losses for the same amount. The Company has no further contractual obligations to provide cash financing to Casebia and accordingly, no additional losses have been recorded beyond the initial equity amount. Casebia's net losses were $18.1 million and $32.3 million for the three and six months ended June 30, 2019, respectively. Casebia's net losses were $13.5 million and $25.8 million for the three and six months ended June 30, 2018, respectively. Unrecognized equity method losses in excess of the Company's equity investment in Casebia were $60.5 million and $45.3 million as of June 30, 2019 and December 31, 2018, respectively.

The remaining performance obligations include research and development services, which are recorded as revenue under ASC 606 and cost sharing activities with Casebia related to shared research and technology licenses are accounted for as a cost/profit sharing arrangement under ASC 808, with the related impact of the cost sharing included as research and development expense. During the three and six months ended June 30, 2019, the Company recognized $0.2 million and $0.4 million of revenue, respectively, related to the collaboration with Casebia. During the three and six months ended June 30, 2018, the Company recognized $0.9 million and $2.0 million of revenue, respectively, related to the collaboration with Casebia. During the three and six months ended June 30, 2019, the Company recognized $0.2 million and $0.7 million, respectively, of research and development expense related to the collaboration with Casebia. During the three and six months ended June 30, 2018, the Company recognized $1.2 million and $2.4 million, respectively, of research and development expense related to the collaboration with Casebia. During the three and six months ended June 30, 2019, the Company recognized a loss from equity method investment of $1.0 million and $2.0 million, respectively, related to stock-based compensation expense for Casebia employees. During the three and six months ended June 30, 2018, the Company recognized a loss from equity method investment of $1.2 million and $2.2 million, respectively, related to stock-based compensation expense for Casebia employees.

7. Share Capital

The Company had 55,445,241 authorized common shares as of June 30, 2019, with a par value of CHF 0.03 per share. Included in the authorized common shares as of June 30, 2019 are 5,586 shares of unvested restricted stock awards, 256,989 treasury shares which are legally outstanding but not considered outstanding for accounting purposes and 1,683,609 shares registered and reserved for future issuance. The Company had conditional capital reserved for future issuance of 19,028,428 common shares for employee benefit plans and 4,919,700 common shares for debt instruments as of June 30, 2019. Under Swiss law, authorized share capital consisted of 25,134,003 common shares as of June 30, 2019.

At-the-Market Offering

In August 2018, the Company entered into an Open Market Sale Agreement℠ with Jefferies LLC ("Jefferies"), under which Jefferies may offer and sell, from time to time, common shares having aggregate gross proceeds of up to $125.0 million. In the first quarter of 2019, the Company began to issue and sell securities under this sales agreement. During the three and six months ended June 30, 2019, the Company sold 732,108 and 1,363,688 common shares, respectively, for net cash proceeds of $28.5 million and $52.5 million, respectively, after deducting commission fees of $0.8 million and $1.6 million, respectively. In addition, the Company paid approximately $0.2 million in stamp taxes related to the securities issued and sold during the three- and six-month period ended June 30, 2019 and accrued an additional $0.5 million for stamp taxes as of June 30, 2019. The Company sold an additional 1,124,952 common shares under this agreement subsequent to June 30, 2019 through July 29, 2019, resulting in net cash proceeds of approximately $52.8 million, after deducting commission fees of approximately $1.2 million.

8. Stock-based Compensation

During the three and six months ended June 30, 2019 and 2018, the Company recognized the following stock-based compensation expense (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Research and development	$ 5,913	$ 5,167	$ 10,875	$ 8,083
General and administrative	5,273	3,157	9,982	5,823
Loss from equity method investment	1,012	1,153	2,037	2,244
Total	$ 12,198	$ 9,477	$ 22,894	$ 16,150

Stock option activity

The following table summarizes stock option activity for the six months ended June 30, 2019 (intrinsic value in thousands):

	Stock Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (years)	Aggregate Intrinsic Value
Outstanding at December 31, 2018	6,689,311	$ 25.42	8.3	$ 68,572
Granted	1,948,773	$ 36.05		
Exercised	(263,700)	$ 12.23		
Cancelled or forfeited	(178,518)	$ 33.48		
Outstanding at June 30, 2019	8,195,866	$ 28.19	8.3	$ 167,076
Exercisable at June 30, 2019	3,198,255	$ 19.51	7.5	$ 91,777
Vested and expected to vest at June 30, 2019	8,195,866	$ 28.19	8.3	$ 167,076

The Company estimated the fair value of each stock option award using the Black-Scholes option-pricing model based on the following assumptions:

	Six Months Ended June 30,	
	2019	2018
Assumptions		
Weighted-average expected volatility	69.3%	72.2%
Expected term (in years)	6.0	6.0
Risk-free interest rate	2.5%	2.7%
Expected dividend yield	0.0%	0.0%

As of June 30, 2019, total unrecognized compensation expense related to stock options was $104.3 million which the Company expects to recognize over a remaining weighted-average period of 2.9 years.

In May 2018, the Company modified the terms of certain options held by a departing employee. The modification resulted in $2.2 million in stock-based compensation expense recorded during the period.

Restricted stock activity

The following table summarizes restricted stock activity for the six months ended June 30, 2019:

	Restricted Stock	Weighted-Average Grant Date Fair Value
Unvested balance as of December 31, 2018	327,342	$ 36.72
Granted	49,000	33.30
Vested	(24,339)	14.96
Cancelled or forfeited	(14,000)	38.33
Unvested balance as of June 30, 2019	338,003	$ 37.72

As of June 30, 2019, total unrecognized compensation expense related to unvested restricted common shares was $8.0 million which the Company expects to recognize over a remaining weighted-average vesting period of 1.35 years.

9. Net Loss Per Share Attributable to Common Shareholders

Basic net loss per share is calculated by dividing net loss attributable to common shareholders by the weighted-average number of common shares outstanding during the period. Diluted net income per share is calculated by dividing the net income attributable to common shareholders by the weighted-average number of common share equivalents outstanding for the period, including any dilutive effect from outstanding stock options and warrants using the treasury stock method.

The following common share equivalents, presented on an as-converted basis, were excluded from the calculation of net loss per share for the periods presented due to their anti-dilutive effect (in common share equivalent shares):

	As of	
	June 30, 2019	June 30, 2018
Outstanding options	8,195,866	6,617,181
Unvested restricted common shares	338,003	169,930
Total	8,533,869	6,787,111

10. Income Taxes

During the three and six months ended June 30, 2019, the Company recorded an income tax provision of $0.1 million and $0.2 million, respectively, representing an effective tax rate of -0.2% and -0.2%, respectively. During the three and six months ended June 30, 2018, the Company recorded an income tax provision of $0.1 million and $0.2 million, respectively, representing an effective tax rate of -0.3% and -0.3%, respectively. The income tax provision is primarily attributable to the year-to-date pre-tax income earned by the Company's U.S. subsidiary. The difference in the statutory tax rate and effective tax rate is primarily a result of the jurisdictional mix of earnings and losses that are not benefited. The Company maintains a valuation allowance against certain deferred tax assets that are not more-likely-than-not realizable. As a result, the Company has not recognized a tax benefit related to losses generated in Switzerland in the current periods.

11. Related Party Transactions

In the fourth quarter of 2018, upon becoming an owner of record of more than 10% of the voting interest of the Company, Vertex became a related party under ASC 850, *Related party disclosures*. Refer to Note 6, "*Collaboration Agreement with and Joint Development Agreement with Vertex Pharmaceuticals Incorporated and certain of its subsidiaries*" and "*Joint Venture with Bayer Healthcare LLC*" for discussion of transactions with Casebia and Vertex, related parties.

12. Subsequent Events

In June 2019, the Company and Vertex entered into a series of agreements, which closed on July 23, 2019. The Company entered into a strategic collaboration and license agreement (the "2019 Collaboration Agreement") with Vertex for the development and commercialization of products for the treatment of Duchenne Muscular Dystrophy ("DMD") and Myotonic Dystrophy Type 1 ("DM1"). Under the terms of the 2019 Collaboration Agreement, the Company received an upfront, nonrefundable payment of $175 million. In addition, the Company is eligible to receive potential future payments of up to $825 million based upon the successful

achievement of specified research, development, regulatory and commercial milestones for the DMD and DM1 programs. The Company is also eligible to receive tiered royalties on future net sales on any products that may result from this collaboration. For the DMD program, Vertex is responsible for all research, development, manufacturing and commercialization activities and all related costs. For the DM1 program, the Company and Vertex will share research costs for specified guide RNA research to be conducted by the Company, and Vertex is responsible for all other research, development, manufacturing and commercialization costs. Upon Investigational New Drug application filing, the Company has the option to forego the DM1 milestones and royalties to co-develop and co-commercialize all DM1 products globally.

In connection with the execution of the 2019 Collaboration Agreement, the Company and Vertex entered into a second amendment to the 2015 Collaboration Agreement ("Amendment No. 2"). Among other things, Amendment No. 2 modified certain definitions and provisions of the 2015 Collaboration Agreement to make them consistent with the 2019 Collaboration Agreement and set forth the final number and identity of the collaboration targets under the 2015 Collaboration Agreement. The Company and Vertex agreed that one of the four remaining options under the 2015 Collaboration Agreement, as amended, would not be exercised; instead, the Company will conduct research and development activities for a specified target. Vertex will have the option to co-develop and co-commercialize the specified target and if Vertex does not exercise its option to do so within a specified time period, Vertex is eligible to receive potential specified research, development, regulatory and commercial milestones and tiered single-digit royalties on future net sales.

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

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with (i) our condensed consolidated financial statements and related notes appearing elsewhere in this Quarterly Report on Form 10-Q and (ii) our audited consolidated financial statements and related notes and management's discussion and analysis of financial condition and results of operations included in our annual report on Form 10-K for the year ended December 31, 2018 filed with the Securities and Exchange Commission ("SEC") on February 25, 2019. This Quarterly Report on Form 10-Q contains "forward-looking statements" within the meaning of Section 27A of the Securities Act and Section 21E of the Securities Exchange Act of 1934, as amended, (the "Exchange Act"). These statements are often identified by the use of words such as "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "may," "plan," "project," "will," "would" or the negative or plural of these words or similar expressions or variations. These forward-looking statements, include, but are not limited to, statements about:

- *the safety, efficacy and clinical progress of our various clinical programs including CTX001® and CTX110™;*
- *the status of clinical trials, development timelines and discussions with regulatory authorities related to product candidates under development by us and our collaborators;*
- *our intellectual property coverage and positions, including those of our licensors and third parties as well as the status and potential outcome of proceedings involving any such intellectual property;*
- *the sufficiency of our cash resources; and*
- *the therapeutic value, development, and commercial potential of CRISPR/Cas9 gene editing technologies and therapies.*

Such forward-looking statements are subject to a number of risks, uncertainties, assumptions and other factors that could cause actual results and the timing of certain events to differ materially from future results expressed or implied by the forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those identified herein, and those discussed in the section titled "Risk Factors," set forth in Part II, Item 1A of this Quarterly Report on Form 10-Q, if any, and in other SEC filings. You should not rely upon forward-looking statements as predictions of future events. Furthermore, such forward-looking statements speak only as of the date of this report. Except as required by law, we undertake no obligation to update any forward-looking statements to reflect events or circumstances after the date of such statements.

Investors and others should note that we announce material information to our investors using our investor relations website (https://crisprtx.gcs-web.com/), SEC filings, press releases, public conference calls and webcasts. We use these channels as well as social media to communicate with the public about our company, our business, our product candidates and other matters. It is possible that the information we post on social media could be deemed to be material information. Therefore, we encourage investors, the media, and others interested in our company to review the information we post on the social media channels listed on our investor relations website.

Overview

We are a leading gene editing company focused on the development of CRISPR/Cas9-based therapeutics. CRISPR/Cas9 is a revolutionary gene editing technology that allows for precise, directed changes to genomic DNA. The application of CRISPR/Cas9 for gene editing was co-invented by one of our scientific founders, Dr. Emmanuelle Charpentier, who, along with her collaborators, published work elucidating how CRISPR/Cas9, a naturally occurring viral defense mechanism found in bacteria, can be adapted for use in gene editing. We are applying this technology to potentially treat a broad set of rare and common diseases by disrupting, correcting or regulating the genes related to such diseases. We believe that our scientific expertise, together with our approach, may enable an entirely new class of highly active and potentially curative therapies for patients for whom current biopharmaceutical approaches have had limited success.

Since our inception in October 2013, we have devoted substantially all of our resources to our research and development efforts, identifying potential product candidates, undertaking drug discovery and preclinical development activities, building and protecting our intellectual property estate, organizing and staffing our company, business planning, raising capital and providing general and administrative support for these operations. To date, we have primarily financed our operations through private placements of our preferred shares, common share issuances, convertible loans and collaboration agreements with strategic partners.

We have established a portfolio of therapeutic programs across a broad range of disease areas including hemoglobinopathies, oncology, regenerative medicine and rare diseases. We have begun clinical trials in the United States and Europe for CTX001, which is an investigational, autologous, gene-edited hematopoietic stem cell therapy for the treatment of transfusion-dependent beta thalassemia ("TDT") and severe sickle cell disease. Additionally, we are developing our own portfolio of CAR-T cell product candidates based on our gene-editing technology. Earlier this year, the U.S. Food and Drug Administration (the "FDA") approved our Investigational New Drug ("IND") application for CTX110, our wholly-owned allogeneic CAR-T cell therapy targeting CD19+

malignancies. Additionally, we have clinical trial applications approved in various countries to conduct a Phase 1/2 trial of CTX110 and are currently enrolling patients.

All of our revenue to date has been collaboration revenue. We have incurred significant net operating losses in every year since our inception and expect to continue to incur net operating losses for the foreseeable future. As of June 30, 2019, we had $427.9 million in cash and cash equivalents and an accumulated deficit of $393.7 million. We expect to continue to incur significant expenses and increasing operating losses for the next several years. Our net losses may fluctuate significantly from quarter to quarter and year to year. We anticipate that our expenses will increase significantly as we continue our current research programs and development activities; seek to identify additional research programs and additional product candidates; conduct initial drug application supporting preclinical studies and initiate clinical trials for our product candidates; initiate preclinical testing and clinical trials for any other product candidates we identify and develop; maintain, expand and protect our intellectual property estate; further develop our gene editing platform; hire additional research, clinical and scientific personnel; and incur additional costs associated with operating as a public company.

Collaboration Agreement, Joint Development and Commercialization Agreement- Vertex (CTX001)

In October 2015, we entered into a strategic research collaboration agreement (the "2015 Collaboration Agreement") with Vertex Pharmaceuticals Incorporated and certain of its subsidiaries ("Vertex") focused on the development of CRISPR/Cas9-based therapies. Under the terms of the 2015 Collaboration Agreement, we received an upfront, nonrefundable payment of $75.0 million and $30.0 million in convertible loan proceeds.

In December 2017, we entered into the Joint Development Agreement ("JDA") with Vertex for the development and commercialization of CTX001. The initial focus of the JDA centers on developing CTX001 for transfusion-dependent beta thalassemia ("TDT") and severe sickle cell disease ("SCD"). CTX001 is an investigational autologous gene-edited hematopoietic stem cell therapy for patients suffering from severe hemoglobinopathies. The net profits and net losses, as applicable, incurred under the JDA will be shared equally between us and Vertex.

In December 2017, we and Vertex entered into an amendment to the 2015 Collaboration Agreement ("Amendment No. 1"). Amendment No. 1, among other things, modified certain definitions and provisions of the 2015 Collaboration Agreement to make them consistent with the JDA and clarified how many options are exercised (or deemed exercised) in connection with certain targets specified under the 2015 Collaboration Agreement. Amendment No. 1 also amended other provisions of the 2015 Collaboration Agreement, including the expiration terms of the 2015 Collaboration Agreement.

In June 2019, we and Vertex entered into a second amendment to the 2015 Collaboration Agreement ("Amendment No. 2"). Among other things, Amendment No. 2 modified certain definitions and provisions of the 2015 Collaboration Agreement to make them consistent with the strategic collaboration and license agreement (the "2019 Collaboration Agreement") and set forth the final number and identity of the collaboration targets under the 2015 Collaboration Agreement. We and Vertex agreed that one of the four remaining options under the 2015 Collaboration Agreement, as amended, would not be exercised; instead, we will conduct research and development activities for a specified target. Vertex will have the option to co-develop and co-commercialize the specified target and if Vertex does not exercise its option to do so within a specified time period, Vertex is eligible to receive potential specified research, development, regulatory and commercial milestones and tiered single-digit royalties on future net sales. Amendment No. 2 was not effective until after regulatory review, which occurred in July 2019.

We and Vertex are planning to conduct clinical trials for CTX001 in multiple countries for both beta thalassemia and severe sickle cell disease and we and Vertex continue to work closely with various global regulatory authorities in these and other countries.

We and Vertex are investigating CTX001 in a Phase 1/2 open-label clinical trial designed to assess the safety and efficacy of a single dose of CTX001 in patients ages 18 to 35 with TDT, non-beta zero/beta zero subtypes. The first two patients in the trial will be treated sequentially and, pending data from these initial two patients, the trial will open for broader concurrent enrollment. The first patient has been treated with CTX001 in this trial. The trial is currently being conducted at multiple clinical trial sites in Canada and Europe. In addition, we and Vertex expanded the IND for CTX001 to include TDT. CTX001 was granted Fast Track Designation by the FDA for the treatment of TDT in April 2019. On July 29, 2019, we announced that the first patient treated with CTX001 in a Phase 1/2 clinical study of patients with TDT remains transfusion independent, greater than four months following engraftment.

We and Vertex are also investigating CTX001 in a Phase 1/2 open-label clinical trial designed to assess the safety and efficacy of a single dose of CTX001 in patients ages 18 to 35 with severe SCD. Similar to the trial in TDT, the first two patients in the trial will be treated sequentially and, pending data from these initial two patients, the trial will open for broader concurrent enrollment. The first patient has been treated with CTX001 in this trial. The trial is currently being conducted at clinical trial sites in the United States.

CTX001 was granted Fast Track Designation by the FDA for the treatment of SCD. In addition, we and Vertex have obtained approvals of Clinical Trial Applications for CTX001 for severe SCD in Canada and additional countries in Europe.

Strategic Collaboration and License Agreement – Vertex (DMD and DM1)

In June 2019, we entered into the 2019 Collaboration Agreement with Vertex for the development and commercialization of products for the treatment of Duchenne Muscular Dystrophy ("DMD") and Myotonic Dystrophy Type 1 ("DM1"). Under the terms of the 2019 Collaboration Agreement, we received an upfront, nonrefundable payment of $175.0 million. Additionally, under the terms of the 2019 Collaboration Agreement, we have an option, exercisable during a specified exercise period, to co-develop and co-commercialize products for the treatment of DM1. The 2019 Collaboration Agreement was not effective until after regulatory review, which occurred in July 2019.

Joint Venture Agreement- Casebia

In December 2015, we entered into an agreement (the "JV Agreement") with Bayer HealthCare LLC ("Bayer") and its subsidiaries to create a joint venture, Casebia Therapeutics LLP ("Casebia" or the "JV") to discover, develop and commercialize CRISPR/Cas9 gene-editing therapeutics to treat the genetic causes of bleeding disorders, autoimmune disease, blindness, hearing loss and heart disease. We and Bayer each have a 50% interest in the JV. Under the JV Agreement, Bayer is making available its protein engineering expertise and relevant disease know-how and we are contributing our proprietary CRISPR/Cas9 gene editing technology and intellectual property. Bayer will also provide up to $300.0 million in research and development investments to the JV over the first five years, subject to specified conditions.

In connection with the JV Agreement, the JV was required to pay us an aggregate amount of $35.0 million technology access fee, consisting of an upfront payment of $20.0 million, which was paid at the closing of the JV Agreement in March 2016, and another payment of $15.0 million for specified intellectual property rights relating to our CRISPR/Cas9 technology outside of the United States, which was paid in December 2016. In January 2016, we also issued the Bayer Convertible Loan to Bayer BV for gross proceeds of $35.0 million which was immediately converted to Series B Preferred Shares at a conversion price of $13.43 per share. Concurrent with our initial public offering in October 2016, we issued and sold 2,500,000 common shares to Bayer BV, at the public offering price of $14.00 per share resulting in aggregate net proceeds of $35.0 million.

Financial Overview

Revenue

We have not generated any revenue to date from product sales and do not expect to do so in the near future. During the three and six months ended June 30, 2019, we recognized $0.3 million and $0.6 million of revenue related to our collaboration arrangements with Vertex and Casebia, respectively. During the three and six months ended June 30, 2018, we recognized $1.1 million and $2.4 million, respectively, of revenue related to our collaboration agreements with Vertex and Casebia. As of June 30, 2019, we had not received any milestone or royalty payments under any of the Vertex collaboration agreements. For additional information about our revenue recognition policy, see Note 2 "Summary of Significant Accounting Policies" in our Annual Report on Form 10-K for the year ended December 31, 2018 filed with the SEC on February 25, 2019.

Research and Development Expenses

Research and development expenses consist primarily of costs incurred for our research activities, including our product discovery efforts and the development of our product candidates, which include:

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

Research and development costs are expensed as incurred. Nonrefundable advance payments for research and development goods or services to be received in the future are deferred and capitalized. The capitalized amounts are expensed as the related goods are delivered or the services are performed. At this time, we cannot reasonably estimate or know the nature, timing or estimated costs of the efforts that will be necessary to complete the development of any product candidates we may identify and develop. This is due to the numerous risks and uncertainties associated with developing such product candidates, including the uncertainty of:

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

A change in the outcome of any of these variables with respect to the development of any product candidates or the subsequent commercialization of any product candidates we may successfully develop could significantly change the costs, timing and viability associated with the development of that product candidate.

Except for activities we perform in connection with our collaborations with Vertex and Casebia, we do not track research and development costs on a program-by-program basis.

Research and development activities are central to our business model. We expect research and development costs to increase significantly for the foreseeable future as our current development programs progress and new programs are added.

General and Administrative Expenses

General and administrative expenses consist primarily of employee related expenses, including salaries, benefits, and equity-based compensation, for personnel in executive, finance, accounting, business development and human resources functions. Other significant costs include facility costs not otherwise included in research and development expenses, legal fees relating to patent and corporate matters and fees for accounting and consulting services.

We anticipate that our general and administrative expenses will increase in the future to support continued research and development activities, potential commercialization of our product candidates and increased costs of operating as a public company. We anticipate increased costs associated with being a public company, including expenses related to services associated with maintaining compliance with exchange listing and SEC requirements, insurance costs and investor relations costs, the hiring of additional personnel and fees to outside consultants, lawyers and accountants, among other expenses. We also anticipate increased expenses related to the reimbursements of third-party patent related expenses in connection with certain of our in-licensed intellectual property.

Results of Operations

Comparison of three months ended June 30, 2019 and 2018 (in thousands):

	Three Months Ended June 30,		Period to Period Change
	2019	2018	
Collaboration revenue	$ 318	$ 1,088	$ (770)
Operating expenses:			
Research and development	39,533	25,633	13,900
General and administrative	15,768	12,741	3,027
Total operating expenses	55,301	38,374	16,927
Loss from operations	(54,983)	(37,286)	(17,697)
Other income (expense), net	1,369	(998)	2,367
Net loss before income taxes	(53,614)	(38,284)	(15,330)
Provision for income taxes	(85)	(96)	11
Net loss	$ (53,699)	$ (38,380)	$ (15,319)

Collaboration Revenue

Collaboration revenue for the three months ended June 30, 2019 was $0.3 million, compared to $1.1 million for the three months ended June 30, 2018. The decrease of approximately $0.8 million was primarily attributable to a decrease in research conducted under the JV Agreement with Casebia. Please refer to Note 6 in the accompanying financial statements for further information.

Research and Development Expenses

Research and development expenses were $39.5 million for the three months ended June 30, 2019, compared to $25.6 million for the three months ended June 30, 2018. The increase of approximately $13.9 million was primarily attributable to the following:

- $4.4 million of increased employee compensation, benefit and other headcount related expenses, of which $0.7 million is increased stock-based compensation expense, primarily due to an increase in headcount to support overall growth;
- $5.3 million of increased variable research and development costs and license fees; and
- $3.0 million of increased facility-related expenses.

General and Administrative Expenses

General and administrative expenses were $15.8 million for the three months ended June 30, 2019, compared to $12.7 million for the three months ended June 30, 2018. The increase of approximately $3.0 million was primarily attributable to $2.7 million of increased employee compensation, benefit and other headcount related expenses, of which $2.2 million is stock-based compensation expense, primarily due to an increase in headcount to support overall growth.

Other Income (Expense), Net

Other income was $1.4 million for the three months ended June 30, 2019, compared to $1.0 million of expense for the three months ended June 30, 2018. The change was primarily due to interest income earned on cash and cash equivalents for the three months ended June 30, 2019.

Comparison of six months ended June 30, 2019 and 2018 (in thousands):

	Six Months Ended June 30,		Period to Period
	2019	2018	Change
		(in thousands)	
Collaboration revenue	$ 646	$ 2,446	$ (1,800)
Operating expenses:			
Research and development	73,355	45,152	28,203
General and administrative	30,697	21,577	9,120
Total operating expenses	104,052	66,729	37,323
Loss from operations	(103,406)	(64,283)	(39,123)
Other (expense) income, net	1,469	(2,215)	3,684
Net loss before income taxes	(101,937)	(66,498)	(35,439)
Provision for income taxes	(170)	(182)	12
Net loss	$ (102,107)	$ (66,680)	$ (35,427)

Collaboration Revenue

Collaboration revenue for the six months ended June 30, 2019 was $0.6 million, compared to $2.4 million for the six months ended June 30, 2018. The decrease of approximately $1.8 million was primarily attributable to a decrease in research conducted under the JV Agreement with Casebia. Please refer to Note 6 in the accompanying financial statements for further information.

Research and Development Expenses

Research and development expenses were $73.4 million for the six months ended June 30, 2019, compared to $45.2 million for the six months ended June 30, 2018. The increase of approximately $28.2 million was primarily attributable to the following:

- $10.2 million of increased employee compensation, benefit, and other headcount related expenses, of which $2.8 million is increased stock-based compensation expense, primarily due to an increase in headcount to support overall growth;
- $10.2 million of increased variable research and development costs and license fees;
- $1.9 million of increased professional and consulting fees; and
- $4.9 million of increased facility-related expenses.

General and Administrative Expenses

General and administrative expenses were $30.7 million for the six months ended June 30, 2019, compared to $21.6 million for the six months ended June 30, 2018. The increase of approximately $9.1 million was primarily attributable to the following:

- $5.6 million of increased employee compensation, benefit, and other headcount related expenses, of which $4.2 million is stock-based compensation expense, primarily due to an increase in headcount to support overall growth; and,
- $3.0 million of increased legal, professional and consulting fees.

Other Income (Expense), Net

Other income was $1.5 million for the six months ended June 30, 2019, compared to $2.2 million of expense for the six months ended June 30, 2018. The change was primarily due to interest income earned on cash and cash equivalents for the six months ended June 30, 2019.

Liquidity and Capital Resources

As of June 30, 2019, we had cash and cash equivalents of approximately $427.9 million of which approximately $421.6 million was held outside of the United States. In August 2018, we entered into an Open Market Sale Agreement℠ with Jefferies LLC (“Jefferies”), under which Jefferies may offer and sell, from time to time, common shares having aggregate gross proceeds of up to $125.0 million. In the first quarter of 2019, we began to issue and sell securities under this sales agreement. During the three and six months ended June 30, 2019, we sold 732,108 and 1,363,688 common shares, respectively, for net cash proceeds of $28.5 million and

$52.5 million, respectively, after deducting commission fees of $0.8 million and $1.6 million, respectively. In addition, we paid approximately $0.2 million in stamp taxes related to the securities issued and sold during the six months ended June 30, 2019 and accrued an additional $0.5 million for stamp taxes as of June 30, 2019. We sold an additional 1,124,952 common shares under this agreement subsequent to June 30, 2019 through July 29, 2019, resulting in net cash proceeds of approximately $52.8 million, after deducting commission fees of $1.2 million.

Funding Requirements

Our primary uses of capital are, and we expect will continue to be, research and development activities, compensation and related expenses, laboratory and related supplies, legal and other regulatory expenses, patent prosecution filing and maintenance costs for our licensed intellectual property and general overhead costs. We expect our expenses to increase compared to prior periods in connection with our ongoing activities, particularly as we continue research and development and preclinical activities and initiate preclinical studies to support initial drug applications. In addition, we expect to incur additional costs associated with operating as a public company.

Because our research programs are still in early stages of development and the outcome of these efforts is uncertain, we cannot estimate the actual amounts necessary to successfully complete the development and commercialization of any current or future product candidates, if approved, or whether, or when, we may achieve profitability. Until such time as we can generate substantial product revenues, if ever, we expect to finance our cash needs through a combination of equity, debt financings and payments received in connection with our collaboration agreements. We are entitled to research payments under our collaboration with Vertex. Additionally, we are eligible to earn payments, in each case, on a per-product basis under the JV Agreement with Bayer for Casebia and our collaboration with Vertex. Except for these sources of funding, we do not have any committed external source of liquidity. We intend to consider opportunities to raise additional funds through the sale of equity or debt securities when market conditions are favorable to us to do so. To the extent that we raise additional capital through the future sale of equity or debt securities, the ownership interests of our shareholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our existing shareholders. If we raise additional funds through collaboration arrangements in the future, we may have to relinquish valuable rights to our technologies, future revenue streams or product candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Outlook

Based on our research and development plans and our timing expectations related to the progress of our programs, we expect our existing cash will enable us to fund our operating expenses and capital expenditures for at least the next 24 months without giving effect to any additional proceeds we may receive under our 2015 Collaboration Agreement and JDA with Vertex and the agreements related to Casebia and any other capital raising transactions we may complete. We have based this estimate on assumptions that may prove to be wrong, and we could use our capital resources sooner than we expect. Given our need for additional financing to support the long-term clinical development of our programs, we intend to consider additional financing opportunities when market terms are favorable to us.

Our ability to generate revenue and achieve profitability depends significantly on our success in many areas, including: developing our delivery technologies and our gene-editing technology platform; selecting appropriate product candidates to develop; completing research and preclinical and clinical development of selected product candidates; obtaining regulatory approvals and marketing authorizations for product candidates for which we complete clinical trials; developing a sustainable and scalable manufacturing process for product candidates; launching and commercializing product candidates for which we obtain regulatory approvals and marketing authorizations, either directly or with a collaborator or distributor; obtaining market acceptance of our product candidates, if approved; addressing any competing technological and market developments; negotiating favorable terms in any collaboration, licensing or other arrangements into which we may enter; maintaining good relationships with our collaborators and licensors; maintaining, protecting and expanding our estate of intellectual property rights, including patents, trade secrets and know-how; and attracting, hiring and retaining qualified personnel.

Cash Flows

The following table provides information regarding our cash flows for each of the periods below (in thousands):

	Six Months Ended June 30,		Period to Period Change
	2019	2018	
Net cash used in operating activities	$ (80,119)	$ (47,903)	$ (32,216)
Net cash used in investing activities	(3,271)	(1,078)	(2,193)
Net cash provided by financing activities	55,380	128,980	(73,600)
Effect of exchange rate changes on cash	(2)	(9)	7
Net (decrease) increase in cash	$ (28,012)	$ 79,990	$ (108,002)

Net Cash Used in Operating Activities

Net cash used in operating activities was $80.1 million for the six months ended June 30, 2019, compared to $47.9 million for the six months ended June 30, 2018. The $32.2 million increase in cash used in operating activities was due to the increase in net loss during this period of $35.4 million, which was driven by increased spending on our clinical and pre-clinical stage programs and increased payroll and payroll-related expenses to support overall growth.

Net Cash Used in Investing Activities

Net cash used in investing activities for the six months ended June 30, 2019 was $3.3 million, compared to $1.1 million for the six months ended June 30, 2018. The net cash used in investing activities for the six months ended June 30, 2019 consisted primarily of purchases of property and equipment.

Net Cash Provided by Financing Activities

Net cash provided by financing activities for the six months ended June 30, 2019 was $55.4 million, compared with $129.0 million for the six months ended June 30, 2018. The net cash provided by financing activities for the six months ended June 30, 2019 consisted of proceeds from the issuance of common shares in connection with the Open Market Sale Agreement℠, which resulted in $52.3 million of net cash proceeds, after deducting $1.6 million in commissions and $0.2 million in stamp taxes, as well as the exercise of stock options.

Contractual Obligations

The disclosure of our contractual obligations and commitments was reported in our Annual Report on Form 10-K for the year ended December 31, 2018 filed with the SEC on February 25, 2019. There have been no material changes from the contractual commitments and obligations previously disclosed in our Annual Report on Form 10-K other than the changes described in Note 5 and Note 12 to the accompanying financial statements.

Off-Balance Sheet Arrangements

As of June 30, 2019, we do not have any off-balance sheet arrangements as defined under applicable SEC rules.

Critical Accounting Policies and Significant Judgments and Estimates

This discussion and analysis of our financial condition and results of operations is based on our financial statements, which we have prepared in accordance with U.S. GAAP. We believe that several accounting policies are important to understanding our historical and future performance. We refer to these policies as critical because these specific areas generally require us to make judgments and estimates about matters that are uncertain at the time we make the estimate, and different estimates—which also would have been reasonable—could have been used. On an ongoing basis, we evaluate our estimates and judgments, including those described in greater detail below. We base our estimates on historical experience and other market-specific or other relevant assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

We believe that our most critical accounting policies are those relating to revenue recognition, variable interest entities and equity-based compensation, and there have been no changes to our accounting policies discussed in our Annual Report on Form 10-K for the year ended December 31, 2018 filed with the SEC on February 25, 2019.

Recent Accounting Pronouncements

Refer to Note 1, "Basis of Presentation and Significant Accounting Policies," in the accompanying notes to the consolidated financial statements for a discussion of recent accounting pronouncements.

Item 3. Qualitative and Quantitative Disclosures about Market Risk

Foreign Exchange Market Risk

As a result of our foreign operations, we face exposure to movements in foreign currency exchange rates, primarily the Swiss Franc and British Pound, against the U.S. dollar. The current exposures arise primarily from cash, accounts payable, and intercompany receivables and payables. Changes in foreign exchange rates affect our consolidated statement of operations and distort comparisons between periods. To date, foreign currency transaction gains and losses have not been material to our financial statements, and we have not engaged in any foreign currency hedging transactions.

Item 4. Controls and Procedures.

Management's Evaluation of our Disclosure Controls and Procedures

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

As of June 30, 2019, our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities and Exchange Act of 1934). Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives, and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Our principal executive officer and principal financial officer have concluded based upon the evaluation described above that, as of June 30, 2019, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control over Financial Reporting

During the quarter ended June 30, 2019, 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, we are not party to any legal or arbitration proceedings that may have significant effects on our financial position. 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.

As disclosed in our Current Report on Form 8-K filed with the Securities and Exchange Commission on June 26, 2019, on June 25, 2019, we received notification that the United States Patent and Trademark Office initiated an interference proceeding at the Patent Trial and Appeal Board (the "PTAB") between certain pending U.S. patent applications co-owned by the University of California, the University of Vienna and Dr. Emmanuelle Charpentier (collectively, the "CVC Group") and certain patents and a patent application currently owned by the Broad Institute and Massachusetts Institute of Technology and, in some instances, the President and Fellows of Harvard College (individually and collectively, the "Broad"), all of which are related to the single guide format of CRISPR/Cas9 genome editing technology in eukaryotic cells. CRISPR Therapeutics has an exclusive worldwide license in the field of human

therapeutics to Dr. Charpentier's rights as a co-owner of the CVC Group portfolio. Specifically, the PTAB has declared Patent Interference No. 106,115 between the CVC Group's pending U.S. Patent Application Nos. 15/947,680; 15/947,700; 15/947,718; 15/981,807; 15/981,808; 15/981,809; 16/136,159; 16/136,165; 16/136,168; and 16/136,175, and the Broad's U.S. Patent Nos. 8,697,359; 8,771,945; 8,795,965; 8,865,406; 8,871,445; 8,889,356; 8,895,308; 8,906,616; 8,932,814; 8,945,839; 8,993,233; 8,999,641; 9,840,713, and U.S. Patent Application No. 14/704,551.

Item 6. Exhibits

The exhibits filed as part of this Quarterly Report on Form 10-Q are set forth in the Exhibit Index below.

Exhibit Number	Description of Document
10.1†	Amendment No. 2 to the Strategic Collaboration, Option and License Agreement by and between, on the one hand, Vertex Pharmaceuticals Incorporated and Vertex Pharmaceuticals (Europe) Limited, and on the other hand, CRISPR Therapeutics AG, CRISPR Therapeutics, Inc., CRISPR Therapeutics Limited and TRACR Hematology Ltd., dated as of June 6, 2019.
10.2†	Strategic Collaboration and License Agreement dated June 6, 2019, between CRISPR Therapeutics AG and Vertex Pharmaceuticals Incorporated.
31.1	Certification of Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	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	XBRL Taxonomy Extension Schema Document.
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB	XBRL Taxonomy Extension Label Linkbase Document.
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document.

* The certification attached as Exhibit 32.1 that accompany this Quarterly Report on Form 10-Q are not deemed filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of CRISPR Therapeutics AG under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Form 10-Q, irrespective of any general incorporation language contained in such filing.

† Confidential portions of this exhibit have been omitted.

SIGNATURES

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

CRISPR Therapeutics AG

Dated: July 29, 2019

By: /s/ Samarth Kulkarni
Samarth Kulkarni
Chief Executive Officer
(Principal Executive Officer)

Dated: July 29, 2019

By: /s/ Michael Tomsicek
Michael Tomsicek
Chief Financial Officer
(Principal Financial Officer)

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

EXHIBIT 10.1

AMENDMENT NO. 2
TO THE
STRATEGIC COLLABORATION, OPTION AND LICENSE AGREEMENT

This AMENDMENT NO. 2 TO THE STRATEGIC COLLABORATION, OPTION AND LICENSE AGREEMENT (this "**Amendment**") is entered into as of June 6, 2019 (the "**Amendment Execution Date**") by and between, on the one hand, **Vertex Pharmaceuticals Incorporated**, a corporation organized and existing under the laws of The Commonwealth of Massachusetts ("**Vertex Parent**"), and **Vertex Pharmaceuticals (Europe) Limited**, a private limited liability company organized under the laws of England and Wales ("**Vertex UK**" and, together with Vertex Parent, "**Vertex**") and, on the other hand, **Crispr Therapeutics AG**, a corporation organized under the laws of Switzerland ("**CRISPR AG**"), **Crispr Therapeutics, Inc.**, a corporation organized under the laws of the state of Delaware ("**CRISPR Inc.**"), **Crispr Therapeutics Limited**, a corporation organized under the laws of England and Wales ("**CRISPR UK**") and **Tracr Hematology Ltd**, a UK limited company ("**Tracr**" and together with CRISPR AG, CRISPR Inc. and CRISPR UK "**CRISPR**"). Vertex and CRISPR each may be referred to herein individually as a "**Party**" or collectively as the "**Parties**." This Amendment amends the Strategic Collaboration, Option and License Agreement, entered into as of October 26, 2015, between Vertex and CRISPR, as amended (the "**Agreement**"). Capitalized terms used but not defined in this Amendment shall have the meanings ascribed to such terms in the Agreement.

RECITALS

WHEREAS, Vertex and CRISPR desire to amend Article 1, Section 2.3.3, Section 2.9, Section 11.4.1(a), Section 12.1, Section 12.2 and Section 13.2 of the Agreement;

NOW, THEREFORE, in consideration of the respective covenants and agreements set forth herein, the Parties hereto agree as follows:

ARTICLE 1.
AMENDMENTS

1.1. **Amendment Date**. This Amendment will be effective as of the Effective Date (as defined in the Collaboration Agreement) of the Collaboration Agreement (the "**Amendment Date**"); *provided*, *however*, that this Section 1.1 and Section 1.2 will be effective as of the Amendment Execution Date. For clarity, if the Collaboration Agreement is terminated pursuant to Section 10.2.1 thereof, then the Amendment Date will not occur and this Amendment, including this Section 1.1 and Section 1.2, will be of no further force or effect.

1.2. **[***]**.

1.3. **Other Agreements**. Article 1 of the Agreement is hereby amended to include the following defined terms:

"**Collaboration Agreement**" means that certain Strategic Collaboration and License Agreement entered into as of the Amendment Execution Date by and between Vertex Parent and CRISPR AG.

"**[***] Agreement**" means that certain [***] Agreement entered into as of the Amendment Execution Date by and between Vertex Parent and CRISPR AG.

"**Other CRISPR-Vertex Agreement**" means the Collaboration Agreement, the [***] Agreement, the Joint Development & Commercialization Agreement, and any other agreement entered into pursuant thereto or hereto between Vertex Parent or any of its Affiliates, on the one hand, and CRISPR AG or any of its Affiliates, on the other hand.

1.4. **Collaboration Target Selection**. Section 2.3.3 of the Agreement is hereby amended by deleting it in its entirety and replacing it with the following text:

2.3.3 **Collaboration Target Selection**. Vertex may elect to designate a Vertex Target as a Collaboration Target at any time prior to the Amendment Execution Date (as defined in Amendment No. 2 to this Agreement entered into as of June 6, 2019) upon written notice to CRISPR. Within [***] days after the designation of a Collaboration Target, the Collaboration Program Working Group will be formed and will provide the JRC an initial draft Research Plan for such Collaboration Target. Subject to Section 3.1.3, the JRC will review such plan and agree upon a final Research Plan for such Collaboration Target. Collaboration Targets continue to be included as Vertex Targets for purposes of the Target Cap. In addition, effective as of the Amendment Date, any Vertex Target that has not been designated as a Collaboration Target prior to the Amendment Date shall no longer constitute a Vertex Target under this Agreement.

1.5. **Subcontractors**. Section 2.9 of the Agreement is hereby amended by deleting it in its entirety and replacing it with the following text:

2.9 **Subcontractors**. CRISPR may engage consultants, subcontractors, or other vendors (each, a "**Subcontractor**") to perform any work under a Research Plan with Vertex's prior written consent; *provided*, that [***] or (b) identified on Schedule E. Vertex may engage Subcontractors to perform Vertex Activities. Each contract between a Party and a Subcontractor will be consistent with the provisions of this Agreement (including ARTICLE 8 and ARTICLE 12). Each Party will be responsible for the effective and timely management of and payment of its Subcontractors. The engagement of any Subcontractor in compliance with this Section 2.9 will not relieve the applicable Party of its obligations under this Agreement or the Research Plan. Each Party will be solely responsible for any taxes, including income, withholding, payroll, VAT, sales tax or the like, that arise from the use of a Subcontractor.

1.6. **Other Matters Pertaining to Prosecution and Maintenance of Patents**. Section 8.2.5 of the Agreement is hereby amended by deleting it in its entirety and replacing it with the following text:

8.2.5 **Other Matters Pertaining to Prosecution and Maintenance of Patents**.

(a) Each Party will keep the other Party informed through their respective Patent Coordinators as to material developments with respect to the Prosecution and Maintenance of the CRISPR Platform Technology Patents, CRISPR Background Patents, CRISPR Program Patents, [***] Patents and Joint Program Patents for which such Party has responsibility for Prosecution and Maintenance pursuant to this Section 8.2. Without limiting the foregoing, solely with respect to CRISPR Program Patents, [***] Patents and Joint Program Patents for which a Party has responsibility for Prosecution and Maintenance pursuant to this Section 8.2, such Party will (i) provide the other Party with copies of any office actions or office action responses or other correspondence that such Party provides to or receives from any patent office, including notice of all interferences, reissues, re-examinations, or oppositions, and all patent-related filings, and (ii) provide the other Party the timely opportunity to have reasonable input into the strategic aspects of such Prosecution and Maintenance activities.

(b) If, during the Agreement Term, Vertex intends to abandon patent applications for any Patent that Vertex is responsible for Prosecuting and Maintaining under Section 8.2.3 (excluding Vertex Background Patents and Vertex Program Patents that Cover technology other than Licensed Agents and Products, but including, for the avoidance of doubt, [***] Patents) in a particular country, then Vertex will so notify CRISPR of such intention at least [***] days before such Patent will become abandoned, and CRISPR will have the right, but not the obligation, to assume responsibility for the Prosecution and Maintenance thereof at its own expense with counsel of its own choice.

(c) If, during the Agreement Term, CRISPR intends to abandon any CRISPR Program Patent, [***] Patent, [***] Joint Program Patent or Other Joint Program Patent Covering a Licensed Agent or Product that CRISPR is responsible for Prosecuting and Maintaining in a particular country, then, if Vertex's right to obtain an Exclusive License to such Patent or have such Patent assigned pursuant to Section 8.1.3, as applicable, has not expired or terminated, CRISPR will notify Vertex of such intention at least [***] days before such Patent will become abandoned, and Vertex will have the right, but not the obligation, to assume responsibility for the Prosecution and Maintenance thereof at its own expense with counsel of its own choice.

1.7. **Patent Coordinators**. Section 8.3 of the Agreement is hereby amended by deleting it in its entirety and replacing it with the following text:

8.3. **Patent Coordinators**. Each Party will appoint a patent coordinator reasonably acceptable to the other Party (each, a "**Patent Coordinator**") to serve as such Party's primary liaison with the other Party on matters relating to the Prosecution and Maintenance and enforcement of Licensed Patents and

Joint Program Patents. The Patent Coordinators (or their designees) will meet in person or by means of telephone or video conference at least once each Calendar Quarter during the Agreement Term. Each Party may replace its Patent Coordinator at any time by providing notice in writing to the other Party. The Patent Coordinators as of the Amendment Date (as defined in Amendment No. 2 to this Agreement entered into as of June 6, 2019) will be:

For Vertex: [***]

For CRISPR: [***]

1.8. **CRISPR Covenants**. Section 9.3.1, Section 9.3.3, Section 9.3.4 and Section 9.3.5 of the Agreement are hereby amended by deleting them in their entirety and replacing them with the following text:

9.3.1 CRISPR will maintain, and will not materially breach, any CRISPR In-License Agreements that provide a grant of rights from such Third Party to CRISPR that are Controlled by CRISPR and are licensed or may become subject to a license from CRISPR to Vertex for a Licensed Agent or Product under this Agreement;

9.3.3 it will not amend, modify or terminate any CRISPR In-License Agreement or [***] in a manner that would have a material adverse effect on Vertex's rights hereunder without first obtaining Vertex's written consent, which consent may be withheld in Vertex's sole discretion;

9.3.4 it will not enter into any new agreement or other obligation with any Third Party, or amend an existing agreement with a Third Party, in each case that materially and adversely restricts, limits or encumbers the rights granted to Vertex under this Agreement or the additional rights or licenses Vertex would acquire upon Option Exercise;

9.3.5 it will not, and will cause its Affiliates not to (a) license, sell, assign or otherwise transfer to any Person any Licensed Technology (or agree to do any of the foregoing), except as provided in Section 8.1.3 or (b) incur or permit to exist, with respect to any Licensed Technology, any lien, encumbrance, charge, security interest, mortgage, liability or other restriction (including in connection with any indebtedness), except, in each case ((a) and (b)), as will not materially and adversely restrict, limit or encumber the rights granted to Vertex under this Agreement or the additional rights or licenses Vertex would acquire upon Option Exercise;

1.9. **Consequences of Expiration or Termination of the Agreement**. Section 11.4.1(a) of the Agreement is hereby amended by deleting it in its entirety and replacing it with the following text:

(a) Solely in the event of termination of this Agreement, the Parties will return (or destroy, as directed by the other Party) all data, files, records and other materials containing or comprising the other Party's Confidential Information, except to the extent such

Confidential Information (i) is subject to a license or similar grant of rights that survives such termination, (ii) is necessary or useful to conduct activities for a surviving Collaboration Program or Product or country, or (iii) is Confidential Information under an Other CRISPR-Vertex Agreement and such Other CRISPR-Vertex Agreement has not been terminated at the time of termination of this Agreement. Notwithstanding the foregoing, the Parties will be permitted to retain one copy of such data, files, records, and other materials for archival and legal compliance purposes.

1.10. **Confidentiality**. Section 12.1, Section 12.2 and Section 12.3 of the Agreement are hereby amended by deleting them in their entirety and replacing them with the following text:

12.1 **Confidentiality**. Except to the extent expressly authorized by this Agreement or otherwise agreed in writing, the Parties agree that, during the Agreement Term and for [***] thereafter, each Party (the "**Receiving Party**") receiving any Confidential Information of the other Party (the "**Disclosing Party**") hereunder will: (a) keep the Disclosing Party's Confidential Information confidential; (b) not publish, or allow to be published, and will not otherwise disclose, or permit the disclosure of, the Disclosing Party's Confidential Information in any manner not expressly authorized pursuant to the terms of this Agreement or, to the extent Confidential Information under this Agreement is also Confidential Information under an Other CRISPR-Vertex Agreement, such Other CRISPR-Vertex Agreement; and (c) not use, or permit to be used, the Disclosing Party's Confidential Information for any purpose other than as expressly authorized pursuant to the terms of this Agreement or, to the extent Confidential Information under this Agreement is also Confidential Information under an Other CRISPR-Vertex Agreement, the terms of such Other CRISPR-Vertex Agreement. Without limiting the generality of the foregoing, to the extent that a Party or any of its Affiliates provides to the other Party or any of its Affiliates any Confidential Information owned by any Third Party, the receiving Party will, and will cause its Affiliates to, handle such Confidential Information in accordance with the terms and conditions of this ARTICLE 12 applicable to a Receiving Party.

12.2 **Authorized Disclosure**. Notwithstanding the foregoing provisions of Section 12.1, each Party may disclose Confidential Information belonging to the other Party to the extent such disclosure is reasonably necessary to:

12.2.1 file or prosecute patent applications as contemplated by this Agreement or, to the extent Confidential Information under this Agreement is also Confidential Information under an Other CRISPR-Vertex Agreement, such Other CRISPR-Vertex Agreement;

12.2.2 prosecute or defend litigation;

12.2.3 exercise its rights and perform its obligations hereunder or, to the extent Confidential Information under this Agreement is also Confidential Information under an Other CRISPR-Vertex Agreement, under such Other CRISPR-Vertex Agreement; or

12.2.4 comply with Applicable Law.

If a Party deems it reasonably necessary to disclose Confidential Information belonging to the other Party pursuant to this Section 12.2, the Disclosing Party will to the extent possible give reasonable advance written notice of such disclosure to the other Party and take reasonable measures to ensure confidential treatment of such information. In addition to the foregoing and except as otherwise prohibited or limited by clause (b) of the following sentence, [***] may disclose [***] Confidential Information to Third Parties as reasonably required to facilitate the actual or potential Research, Development, Manufacture or Commercialization of Products; *provided* that such disclosure is covered by terms of confidentiality and non-use similar to those set forth herein.

Notwithstanding anything to the contrary contained herein, (a) in no event may [***] disclose [***] Confidential Information to any Third Party (including any of [***] investors, collaborators or licensees) [***] as its primary business, and (b) in no event may [***] disclose [***] Confidential Information, other than the terms and conditions of this Agreement, to any Third Party (including any of [***] investors, collaborators or licensees) that [***] as its primary business.

12.3 **SEC Filings and Other Disclosures**. Either Party may disclose the terms of this Agreement (i) to the extent required to comply with Applicable Law, including the rules and regulations promulgated by the United States Securities and Exchange Commission or any equivalent governmental agency in any country in the Territory; *provided*, that such Party will reasonably consider the comments of the other Party regarding confidential treatment sought for such disclosure and (ii) to its advisors (including financial advisors, attorneys and accountants), actual or potential acquisition partners, strategic partners, collaborators or services providers, actual or potential financing sources or investors and actual or potential underwriters on a need to know basis; *provided* that such disclosure is covered by terms of confidentiality similar to those set forth herein (which may include professional ethical obligations).

1.11. **Public Announcements; Publications**. Section 12.5.2 and Section 12.5.3 of the Agreement are hereby amended by deleting them in their entirety and replacing them with the following text:

12.5.2 **Announcements**. The Parties will jointly issue a press release, in the form attached hereto as Schedule M, regarding the signing of this Agreement on a date to be determined by [***] within [***] Business Days following the Effective Date. Except as set forth in the preceding sentence and as may be expressly permitted under Section 12.3 or this Section 12.5.2, or as required to comply with Applicable Law (including the rules and regulations promulgated by the United States Securities and Exchange

Commission or any equivalent governmental agency in any country in the Territory), neither Party will make any public announcement regarding this Agreement without the prior written approval of the other Party. For the sake of clarity, nothing in this Agreement will prevent (i) [***] from making any scientific publication or public announcement concerning [***] Research, Development, Manufacture or Commercialization activities with respect to any [***] or Product under this Agreement; *provided*, *however*, that, except as permitted under Section 12.2, [***] will not disclose any of [***] Confidential Information in any such publication or announcement without obtaining [***] prior written consent to do so; and (ii) [***] from making any (A) scientific publication concerning [***] activities arising from, relating to or otherwise in connection [***]; and (B) public announcement or statement (including an Internet posting) regarding the identity of the Products, the nature of the collaboration of the Parties contemplated by this Agreement and the nature of each Party's activities under this Agreement and the transactions contemplated hereby, in each case of this clause (B), to the extent previously publicly disclosed by [***] or as otherwise permitted under Section 12.3 or Section 12.5.4; *provided*, *however*, that (x) except as permitted under Section 12.2, [***] will not disclose any of [***] Confidential Information in any such publication, announcement, statement or Internet posting and (y) except as permitted under Section 12.2 or Section 12.5.4, [***] will not disclose any information related to the Research, Development, Manufacture or Commercialization of [***] or Products in any such publication, announcement, statement or Internet posting, in each case ((x) and (y)), without obtaining [***] prior written consent to do so.

12.5.3 **Publications**. During the Agreement Term, each Party will submit to the other Party (the "**Non-Disclosing Party**") for review and approval any proposed academic, scientific and medical publication or public presentation related to any Licensed Agent or Product or any activities conducted hereunder; *provided* that, except as otherwise permitted in this Article 12, CRISPR shall not have the right to make any publications with respect to Licensed Agents or Products. In each such instance, such review and approval will be conducted for the purposes of preserving the value of the Licensed Technology and the Vertex Technology, the rights granted to Vertex hereunder and determining whether any portion of the proposed publication or presentation containing the Non-Disclosing Party's Confidential Information should be modified or deleted. Written copies of such proposed publication or presentation required to be submitted hereunder will be submitted to the Non-Disclosing Party no later than [***] days before submission for publication or presentation (or [***] Business Days in advance in the case of an abstract). The Non-Disclosing Party will provide its comments with respect to such publications and presentations within [***] Business Days of its

receipt of such written copy (or five Business Days in the case of an abstract). The review period may be extended for an additional [***] days if the Non-Disclosing Party reasonably requests such extension including for the preparation and filing of patent applications. Notwithstanding anything to the contrary, the Non-Disclosing Party may require that the other Party redact the Non-Disclosing Party's Confidential Information from any such proposed publication or presentation; *provided*, that neither Party shall be required to redact any information permitted to be disclosed pursuant to Section 12.3. CRISPR and Vertex will each comply with standard academic practice regarding authorship of scientific publications and recognition of contribution of other parties in any publication. Notwithstanding the foregoing, (i) Vertex's obligation to submit any publication to CRISPR for review and approval under this Section 12.5.3 will not apply to any publication made with respect to a Collaboration Program following Vertex's exercise of the applicable Option that does not contain CRISPR's Confidential Information or disclose any non-public information included in the Licensed Technology; *provided*, that where reasonably possible, Vertex will provide CRISPR with an advance copy of such publication if such publication is [***].

1.12. **Product Disclosures**. The following text is hereby inserted immediately following Section 12.5.3 of the Agreement:

12.5.4 **Product Disclosures**. The Parties will, from time to time, discuss in good faith and endeavor to agree upon high-level talking points with respect to the status and progress of the Licensed Agents and Products for public disclosure. Notwithstanding anything to the contrary in this Section 12.5, following any such agreement, nothing herein shall prohibit CRISPR from including such high-level talking points in any public announcement, presentation, publication or other public disclosure.

1.13. **Entire Agreement**. Section 13.2 of the Agreement is hereby amended by deleting it in its entirety and replacing it with the following text:

13.2 **Entire Agreement**. This Agreement, together with the Other CRISPR-Vertex Agreements, constitutes and contains the complete, final and exclusive understanding and agreement of the Parties and cancels and supersedes any and all prior negotiations, correspondence, understandings and agreements, whether oral or written, between the Parties respecting the subject matter hereof and thereof, including that certain Confidentiality Agreement between Vertex Parent and CRISPR dated May 6, 2015, which is hereby superseded and replaced in its entirety as of the Effective Date, and any Confidential Information disclosed by the Parties under such agreement will be treated in accordance with the provisions of ARTICLE 12.

ARTICLE 2.
MISCELLANEOUS

2.1. **Effect of Amendment**. This Amendment shall not be deemed to be an amendment to any other terms and conditions of the Agreement. Except as expressly amended by this Amendment, the Agreement remains unchanged and in full force and effect.

2.2. **Counterparts**. This Amendment may be executed in one or more counterparts, each of which will be an original and all of which will constitute together the same document. Counterparts may be signed and delivered by facsimile or digital transmission (.pdf), each of which will be binding when received by the applicable Party.

[SIGNATURE PAGE FOLLOWS]

* - * - * - *

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

IN WITNESS WHEREOF, the Parties have caused this Amendment to be executed by their representatives thereunto duly authorized as of the Amendment Execution Date.

VERTEX PHARMACEUTICALS INCORPORATED

By: /s/ Jeffrey Leiden

Name:Jeffrey Leiden

Title: Chairman, President and Chief Executive Officer

VERTEX PHARMACEUTICALS (EUROPE) LIMITED

By: /s/ Klas Holmlund

Name: Klas Holmlund

Title: Director

CRISPR THERAPEUTICS AG

By: /s/ Rodger Novak

Name:Rodger Novak

Title: President

CRISPR THERAPEUTICS LIMITED

By: /s/ Rodger Novak

Name: Rodger Novak

Title: President

CRISPR THERAPEUTICS, INC.

By: /s/ Rodger Novak

Name: Rodger Novak

Title: President

TRACR HEMATOLOGY LTD

By: /s/ Rodger Novak

Name: Rodger Novak

Title: President

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

Schedule 1.2

Collaboration Targets as of Amendment Execution Date

[***]

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

EXHIBIT 10.2

STRATEGIC COLLABORATION AND LICENSE AGREEMENT

BETWEEN

VERTEX PHARMACEUTICALS INCORPORATED

AND

CRISPR THERAPEUTICS AG

June 6, 2019

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

STRATEGIC COLLABORATION AND LICENSE AGREEMENT

This STRATEGIC COLLABORATION AND LICENSE AGREEMENT (this "**Agreement**") is entered into as of June 6, 2019 (the "**Execution Date**"*)* by and between Vertex Pharmaceuticals Incorporated **(**"**Vertex**") and CRISPR Therapeutics AG ("**CRISPR**"). Vertex and CRISPR each may be referred to herein individually as a "**Party**" or collectively as the "**Parties**."

RECITALS

WHEREAS, CRISPR possesses certain Patents, Know-How, technology and expertise with respect to the CRISPR/Cas System (as defined below);

WHEREAS, Vertex possesses expertise in developing and commercializing human therapeutics;

WHEREAS, Vertex and CRISPR desire to enter into a strategic collaboration and license agreement to enable Vertex to research, develop, manufacture and commercialize products for the treatment of DMD and DM1 (each as defined below) using gene editing [***], including the CRISPR/Cas System (as defined below);

WHEREAS, pursuant to this Agreement, CRISPR will perform certain DM1 guide research activities related to initial guide work for DM1 in cells; and

WHEREAS, CRISPR will have the option to enter into a Co-Commercialization Agreement (as defined below) with Vertex for all DM1 Products.

NOW, THEREFORE, in consideration of the respective covenants, representations, warranties and agreements set forth herein, the Parties hereto agree as follows:

ARTICLE 1.
DEFINITIONS

For purposes of this Agreement, the following capitalized terms will have the following meanings:

1.1. "**Acquisition Transaction**" has the meaning set forth in Section 4.4.2.

1.2. "**Adverse Event**" has the meaning set forth in the Applicable Law for such term (or comparable term), and will generally mean any untoward medical occurrence in a subject in any Clinical Trial who has received a product, medical device or placebo, and which does not necessarily have a causal relationship with such product, medical device or placebo, including any unfavorable and unintended sign (including an abnormal laboratory finding), symptom or disease temporally associated with the use of the applicable product, medical device or placebo, whether or not related to such product, medical device or placebo.

1.3. "**Affiliate**" means, as of any point in time and for so long as such relationship continues to exist with respect to any Person, any other Person that controls, is controlled by or is under common control with such Person. A Person will be regarded as in control of another Person if it (a) owns or controls more than 50% of the equity securities of the subject Person entitled to vote in the election of directors (or, in the case of a Person that is not a corporation, for the election of the corresponding managing authority); *provided*, *however*, that the term "Affiliate" will not include subsidiaries or other entities in which a Person owns a majority of the ordinary voting power necessary to elect a majority of the board of directors or other

governing board, but is restricted from electing such majority by contract or otherwise, until such time as such restrictions are no longer in effect, or (b) possesses, directly or indirectly, the power to direct or cause the direction of the management or policies of an such Person (whether through ownership of securities or other ownership interests, by contract or otherwise).

1.4. "**Agreement**" has the meaning set forth in the Preamble.

1.5. "**Agreement Term**" means the period commencing on the Effective Date and ending on the expiration of this Agreement pursuant to Section 10.1, unless terminated earlier as provided herein.

1.6. "**Alliance Manager**" has the meaning set forth in Section 3.3.1.

1.7. "**Alternative Product**" means any Product, other than a CRISPR Product, that is Researched, Developed, Manufactured or Commercialized by Vertex or its Affiliates or Sublicensees.

1.8. "**Applicable Law**" means all applicable laws, statutes, rules, regulations and other pronouncements having the effect of law of any federal, national, multinational, state, provincial, county, city or other political subdivision, agency or other body, domestic or foreign, including any applicable rules, regulations, guidelines, or other requirements of the Regulatory Authorities that may be in effect from time to time.

1.9. "**Approval Application**" means a BLA, NDA or similar application or submission for a Product filed with a Regulatory Authority in a country or group of countries to obtain marketing approval for a biological or pharmaceutical product in that country or group of countries.

1.10. "**Audited Party**" has the meaning set forth in Section 6.9.

1.11. "**Auditing Party**" has the meaning set forth in Section 6.9.

1.12. "**Available**" has the meaning set forth in Section 1.33.

1.13. "**[***] Arbitration**" means the arbitration process set forth in Schedule A.

1.14. "**[***] Expert**" has the meaning set forth in Schedule A.

1.15. "**BLA**" means a Biological License Application that is submitted to the FDA for marketing approval for a Product pursuant to 21 C.F.R. § 601.2.

1.16. "**[***]**" means, [***].

1.17. "**[***]**" means [***].

1.18. "**Breaching Party**" means the Party that is believed by the other Party to be in material breach of this Agreement.

1.19. "**Business Day**" means a Monday, Tuesday, Wednesday, Thursday or Friday that is not a day on which banking institutions in Boston, Massachusetts are authorized or obligated to close.

1.20. "**Calendar Quarter**" means the respective periods of three consecutive calendar months ending on March 31, June 30, September 30 or December 31, during the Agreement Term, or the applicable part thereof during the first or last calendar quarter of the Agreement Term.

1.21. "**Calendar Year**" means any calendar year ending on December 31, or the applicable part thereof during the first or last year of the Agreement Term.

1.22. "**cGMP**" means current Good Manufacturing Practices as specified in the United States Code of Federal Regulations, ICH Guideline Q7A, or equivalent laws, rules, or regulations of an applicable Regulatory Authority at the time of manufacture.

1.23. "**Change of Control**" means, with respect to a Party, (a) a merger or consolidation of such Party with a Third Party that results in the voting securities of such Party outstanding immediately prior thereto, or any securities into which such voting securities have been converted or exchanged, ceasing to represent more than 50% of the combined voting power of the surviving entity or the parent of the surviving entity immediately after such merger or consolidation, or (b) a transaction or series of related transactions in which a Third Party, together with its Affiliates, becomes the beneficial owner of more than 50% of the combined voting power of the outstanding securities of such Party, or (c) the sale or other transfer to a Third Party of all or substantially all of such Party's business to which the subject matter of this Agreement relates. Notwithstanding the foregoing, with respect to CRISPR, the term "Change of Control" will not include any sale of shares of capital stock of CRISPR, in a single transaction or series of related transactions in which CRISPR issues new securities solely to institutional investors for cash or the cancellation or conversion of indebtedness or a combination thereof where such transaction(s) are conducted primarily for bona fide equity financing purposes.

1.24. "**Clinical Trial**" means a study in humans that is conducted in accordance with GCP and is designed to generate data in support of an Approval Application.

1.25. "**Co-Commercialization Agreement**" has the meaning set forth in Section 5.1.6(a).

1.26. "**Collaboration Agreement**" means that certain Strategic Collaboration, Option and License Agreement entered into as of October 26, 2015 by and between Vertex, Vertex Pharmaceuticals (Europe) Limited, CRISPR Therapeutics, Inc., CRISPR, CRISPR Therapeutics Limited, and TRACR Hematology LTD.

1.27. "**Combination Product**" has the meaning set forth in Section 1.122.

1.28. "**Commercialize**" or "**Commercializing**" means to market, promote, distribute, offer for sale, sell, have sold, import, export or otherwise commercialize a product, to conduct activities, other than Research, Development and Manufacturing, in preparation for the foregoing activities, including obtaining Price Approval, and to conduct post-Marketing Approval studies (including Clinical Trials). When used as a noun, "Commercialization" means any and all activities involved in Commercializing.

1.29. "**Commercially Reasonable Efforts**" means with respect to the efforts to be expended by any Person, with respect to any objective, reasonable, diligent and good faith efforts to accomplish such objective. With respect to any objective relating to the Research, Development or Commercialization of a Product, "Commercially Reasonable Efforts" means [***] taking into account, without limitation, with respect to each Product, [***] "Commercially Reasonable Efforts" shall be [***].

1.30. "**Competitive Infringement**" has the meaning set forth in Section 7.7.1.

1.31. "**Competitive Program**" has the meaning set forth in Section 1.32.

1.32. "**Competitor**" means [***] (each, a "**Competitive Program**").

1.33. "**Confidential Information**" means, with respect to each Party, all Know-How or other information, including proprietary information (whether or not patentable) regarding or embodying such Party's technology, products, business information or objectives, that is communicated in any way or form by or on behalf of the Disclosing Party to the Receiving Party or its permitted recipients, prior to, on or after the Execution Date, whether or not such Know-How or other information is identified as confidential at the time of disclosure. The terms and conditions of this Agreement will be considered Confidential Information of both Parties, with both Parties deemed to be the Receiving Party of such Confidential Information. Notwithstanding any provision of this Section 1.33 to the contrary, Confidential Information does not include any Know-How or information that: (a) was already known by the Receiving Party (other than under an obligation of confidentiality to the Disclosing Party) at the time of disclosure by or on behalf of the Disclosing Party; (b) was generally available to the public or otherwise part of the public domain at the time of its disclosure to the Receiving Party; (c) became generally available to the public or otherwise part of the public domain after its disclosure to the Receiving Party, other than through any act or omission of the Receiving Party in breach of its obligations under this Agreement; (d) was disclosed to the Receiving Party, other than under an obligation of confidentiality, by a Third Party who had no obligation to the Disclosing Party not to disclose such information to the Receiving Party; or (e) was independently discovered or developed by or on behalf of the Receiving Party without the use of any Confidential Information belonging to the Disclosing Party; *provided*, in connection with the foregoing exclusions from protection, that specific Confidential Information shall not be deemed to be known, generally available, in the public domain, disclosed, independently discovered or developed (individually and collectively "**Available**"), merely because broader or related information is Available, nor shall combinations of elements or principles be considered to be Available merely because individual elements thereof are Available.

1.34. "**[***]**" has the meaning set forth in Section 4.6.1(b).

1.35. "**Control**" or "**Controlled**" means with respect to any Know-How or Patent or other data, information or Materials, possession of the ability by a Party or its Affiliate(s) (whether by sole or joint ownership, license or otherwise, other than pursuant to this Agreement) to grant, without violating the terms of any agreement with a Third Party, a license, access or other right in, to or under such Know-How or Patent or other data, information or Materials. Notwithstanding anything in this Agreement to the contrary, a Party will be deemed to not Control any Patents or Know-How that are owned or controlled by a Third Party described in the definition of "Change of Control," or such Third Party's Affiliates (other than an Affiliate of such Party prior to the Change of Control), (a) prior to the closing of such Change of Control, except to the extent that any such Patents or Know-How were developed prior to such Change of Control through the use of such Party's technology, or (b) after such Change of Control to the extent that such Patents or Know-How are developed or conceived by such Third Party or its Affiliates (other than such Party) after such Change of Control without using or incorporating such Party's technology.

1.36. "**Cost Report**" has the meaning set forth in Section 6.3.2.

1.37. "**Cover**," "**Covered**," "**Covering**" or "**Covers**" means (a) as to a product and Patent, that, in the absence of a license granted under, or ownership of, such Patent, the making, using, keeping, selling, offering for sale or importation or exportation of such product would infringe such Patent or, as to a pending claim included in such Patent, the making, using, selling, offering for sale or importation of such product would infringe such Patent if such pending claim were to issue in an issued patent without modification and (b) as to any Know-How and a Patent, that, in the absence of a license granted under, or ownership of, such Patent, the use or practice of such Know-How would infringe such Patent or, as to a pending claim included in such Patent, the use or practice of such Know-How would infringe such Patent if such pending claim were to issue in an issued patent without modification.

1.38. "**CREATE Act**" means the Cooperative Research and Technology Enhancement Act of 2004, 35 U.S.C. § 103(c)(2)-(c)(3).

1.39. "**CRISPR**" has the meaning set forth in the Preamble.

1.40. "**CRISPR Agreement Breach**" has the meaning set forth in Section 10.2.3(a).

1.41. "**CRISPR Background Know-How**" means any Know-How, other than Joint Program Know-How and CRISPR Program Know-How, that (a) [***] and (b) [***].

1.42. "**CRISPR Background Patents**" means any Patent, other than a Joint Program Patent, CRISPR Program Patent or CRISPR Platform Technology Patent that (a) [***] and (b) [***].

1.43. "**CRISPR Breach Event**" has the meaning set forth in Section 10.2.3(a).

1.44. "**CRISPR Indemnified Party**" has the meaning set forth in Section 9.1.

1.45. "**CRISPR In-License Agreements**" means (a) the agreements set forth on Schedule B pursuant to which certain of the Licensed Technology Controlled by CRISPR or CRISPR Affiliates as of the Execution Date was in-licensed or acquired by CRISPR under the agreements with Third Party licensors or sellers (the "**Existing CRISPR Agreements**"), and (b) [***].

1.46. "**CRISPR Platform Technology Patents**" means all Patents that are owned, used, developed by, or licensed to CRISPR or its Affiliates, in each case, to the extent Controlled by CRISPR or its Affiliates on the Effective Date or at any time during the Agreement Term, claiming [***]. For the avoidance of doubt, the CRISPR Platform Technology Patents (i) do not include [***] and (ii) include [***].

1.47. "**CRISPR Product**" means any Product Researched, Developed, Manufactured or Commercialized by Vertex or its Affiliates or Sublicensees that (i) is Covered by a Valid Claim of the Specified Intellectual Property Rights or (ii) contains an endonuclease that (x) is Covered by a Valid Claim of the Licensed Patents or (y) embodies all or any part of the Licensed Technology.

1.48. "**[***] Patent**" has the meaning set forth in Section 7.2.

1.49. "**CRISPR Program Breach**" has the meaning set forth in Section 10.2.3(a).

1.50. "**CRISPR Program Know-How**" has the meaning set forth in Section 7.1.2(a).

1.51. "**CRISPR Program Patents**" has the meaning set forth in Section 7.1.2(a).

1.52. "**CRISPR Program Technology**" has the meaning set forth in Section 7.1.2(a).

1.53. "**CRISPR/Cas System**" means a clustered regularly interspaced short palindromic repeats (CRISPR)/CRISPR-associated (Cas) protein system that comprises (a) [***] and (b) [***].

1.54. "**Development**" means all clinical and non-clinical research and development activities conducted after filing of an IND for a product, including toxicology, pharmacology test method development and stability testing, process development, formulation development, delivery system development, quality assurance and quality control development, statistical analysis, Clinical Trials (other than post-Marketing Approval Clinical Trials), regulatory affairs, pharmacovigilance, Clinical Trial regulatory activities and obtaining and maintaining Regulatory Approval. When used as a verb, "Develop" or "Developing" means to engage in Development.

1.55. "**Disclosing Party**" has the meaning set forth in Section 11.1.

1.56. "**Distracting Product**" has the meaning set forth in Section 4.4.1.

1.57. "**Distributor**" means a Third Party to whom Vertex grants a right to sell or distribute a Product, that does not make payments to Vertex that are calculated on the basis of a percentage of, or profit share on, such Third Party's sales of Products.

1.58. "**Divestiture**" means, with respect to a Distracting Product, the sale, exclusive license or other transfer by the applicable Party and its Affiliates of all of their development and commercialization rights with respect to such Distracting Product to a Third Party without the retention or reservation of any development or commercialization obligation, interest or participation rights (other than solely an economic interest or the right to enforce customary terms and conditions contained in the relevant agreements effectuating such transaction). When used as a verb, "Divest" means to engage in a Divestiture.

1.59. "**DM1**" means Myotonic Dystrophy Type 1.

1.60. "**DM1 Guide Research**" means [***].

1.61. "**DM1 Guide Research Plan**" means the research plan setting forth the design, optimization and research activities for the DM1 Guide Research.

1.62. "**DM1 Guide Research Plan Budget**" has the meaning set forth in Section 2.1.1.

1.63. "**DM1 Guide Research Term**" means the period of time beginning on the Effective Date and ending upon the [***] anniversary thereof; *provided* that [***] may, in its sole discretion, elect to terminate such DM1 Guide Research Term after the [***] anniversary of the Effective Date on [***] days' prior written notice to [***]; and *provided further*, that, if [***] does not elect to terminate the DM1 Guide Research Term before such [***] anniversary and any DM1 Guide Research activities under the DM1 Guide Research Plan are incomplete on such [***] anniversary, [***] will, at [***] election, complete such activities, and the DM1 Guide Research Term will be extended for up to [***] additional months to complete such activities or such longer period as may be agreed upon by both Parties.

1.64. "**DM1 Product**" means a Product that is intended to treat, ameliorate or prevent DM1 that is being Researched, Developed, Manufactured or Commercialized by Vertex (or its Affiliates or Sublicensees) (subject to Section 5.1.6).

1.65. "**DM1 Program**" means the program of Research, Development, Manufacturing and Commercialization activities for DM1 Products conducted by Vertex (or its Affiliates or Sublicensees) (subject to Section 5.1.6) pursuant to this Agreement.

1.66. "**DM1 Program Data Package**" means, with respect to the DM1 Program, a data package containing [***].

1.67. "**DM1 Program Option**" has the meaning set forth in Section 5.1.6(a).

1.68. "**DMD**" means Duchenne Muscular Dystrophy.

1.69. "**DMD Product**" means a Product that is intended to treat, ameliorate or prevent DMD that is being Researched, Developed, Manufactured or Commercialized by Vertex (or its Affiliates or Sublicensees).

1.70. "**DMD Program**" means the program of Research, Development, Manufacturing and Commercialization activities for DMD Products conducted by Vertex (or its Affiliates or Sublicensees) pursuant to this Agreement.

1.71. "**DOJ**" has the meaning set forth in Section 4.7.1.

1.72. "**Effective Date**" means the later of (a) the Execution Date or (b) the fourth Business Day after the Schedule Revision Date, *provided* that the Effective Date shall not occur if either Party has exercised its termination right under Section 10.2.1.

1.73. "**EMA**" means the European Medicines Agency and any successor entity thereto.

1.74. "**European Commission**" means the European Commission or any successor entity that is responsible for granting Marketing Approvals authorizing the sale of pharmaceuticals in the European Union.

1.75. "**European Union**" or "**EU**" means (a) the economic, scientific and political organization of member states as it may be constituted from time to time, which as of the Effective Date consists of Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom of Great Britain and Northern Ireland and that certain portion of Cyprus included in such organization, (b) any member country of the European Economic Area that is not otherwise a member of the European Union, and (c) any country not otherwise included in clauses (a) or (b) that participates in the unified filing system under the auspices of the EMA. For clarity, European Union will at all times be deemed to include each of Italy, Germany, France, the United Kingdom and Spain.

1.76. "**Exclusive License**" has the meaning set forth in Section 4.1.1.

1.77. "**Execution Date**" has the meaning set forth in the preamble hereto.

1.78. "**Executive Officer Resolution Period**" has the meaning set forth in Section 3.1.3.

1.79. "**Executive Officers**" means the Chief Executive Officer of CRISPR, initially Samarth Kulkarni, and the Chief Executive Officer of Vertex, initially Jeffrey Leiden.

1.80. "**Existing CRISPR Agreement**" has the meaning set forth in Section 1.45.

1.81. "**Exon**" means, [***]

1.82. "**FDA**" means the United States Food and Drug Administration and any successor entity thereto.

1.83. "**FD&C Act**" means the United States Federal Food, Drug, and Cosmetic Act, as amended, and the rules and regulations promulgated thereunder.

1.84. "**Field**" means the diagnosis, treatment or prevention of DMD or DM1 in humans.

1.85. "**First Commercial Sale**" means with respect to a Product, the first sale of such Product by Vertex, its Affiliate or its Sublicensee to a Third Party resulting in Net Sales in a particular country after any required Marketing Approval for the Product has been obtained in such country.

1.86. "**Force Majeure**" means a condition, the occurrence and continuation of which is beyond the reasonable control of a Party, including an act of God, voluntary or involuntary compliance with any regulation, law or order of any government, war, civil commotion, labor strike or lock-out, epidemic, flood, failure or default of public utilities or common carriers, destruction of production facilities or materials by fire, earthquake, storm or like catastrophe.

1.87. "**FTC**" has the meaning set forth in Section 4.7.1.

1.88. "**FTE Rate**" means, $[***]; *provided* that [***].

1.89. "**GAAP**" means United States generally accepted accounting principles, consistently applied.

1.90. "**GCP**" means good clinical practices, which are the then-current standards for Clinical Trials for pharmaceuticals, as set forth in the FD&C Act or other Applicable Law, and such standards of good clinical practice as are required by the Regulatory Authorities of the European Union and other organizations and Governmental Authorities in countries for which the applicable Product is intended to be Developed, to the extent such standards are not less stringent than United States standards.

1.91. "**[***] Joint Program Know-How**" has the meaning set forth in Section 7.1.2(d).

1.92. "**[***] Joint Program Patents**" has the meaning set forth in Section 7.1.2(d).

1.93. "**[***] Joint Program Technology**" has the meaning set forth in Section 7.1.2(d).

1.94. "**[***]**" means [***].

1.95. "**Generic Product**" means, with respect to a particular Product in a particular country, a product on the market in such country commercialized by any Third Party that is not a Sublicensee and that did not purchase such product in a chain of distribution that included any of Vertex or its Affiliates or Sublicensees, that (a) is approved by the applicable Regulatory Authority, under any then-existing laws and regulations in the applicable country pertaining to approval of generic or biosimilar biologic products, as a "generic" or "biosimilar" version of such Product, which approval uses such Product as a reference product and relies on or references pivotal safety or efficacy data in the Approval Application for such Product or (b) otherwise meets the criteria for constituting a "biosimilar" or "interchangeable" product pursuant to Section 351(k) of the Public Health Service Act (42 U.S.C. § 262(k)) or EMA Directive 2001/83/EC or any foreign equivalent thereof or successors thereto.

1.96. "**GLP**" means the then-current good laboratory practice standards promulgated or endorsed by the FDA as defined in 21 C.F.R. Part 58 or the successor thereto, or comparable regulatory standards in jurisdictions outside of the United States, to the extent such standards are not less stringent than United States standards.

1.97. "**Governmental Authority**" means any court, agency, department, authority or other instrumentality of any national, state, county, city or other political subdivision.

1.98. "**HSR**" means the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, and the rules and regulations promulgated thereunder.

1.99. "**HSR Clearance Date**" means the first date that (a) the waiting period (and any extension thereof) applicable to the transactions contemplated by this Agreement under HSR shall have expired or earlier been terminated; (b) no injunction (whether temporary, preliminary or permanent) prohibiting consummation of the transactions contemplated by this Agreement or any material portion hereof shall be in effect; and (c) no judicial or administrative proceeding opposing consummation of all or any part of this Agreement shall be pending.

1.100. "**IND**" means any Investigational New Drug application, filed with the FDA pursuant to Part 312 of Title 21 of the U.S. Code of Federal Regulations, including any supplements or amendments thereto. References herein to IND will include, to the extent applicable, any comparable filings outside the United States.

1.101. "**Indemnified Party**" has the meaning set forth in Section 9.3.

1.102. "**Indemnifying Party**" has the meaning set forth in Section 9.3.

1.103. **"Initiation**" or "**Initiate**" means, with respect to any Clinical Trial, dosing of the first human subject in such Clinical Trial.

1.104. "**Insolvency Event**" has the meaning set forth in Section 10.2.5.

1.105. "**Joint Advisory Committee**" or "**JAC**" has the meaning set forth in Section 3.1.1.

1.106. "**Joint Development Agreement**" means that certain Joint Development and Commercialization Agreement entered into as of December 12, 2017 by and between Vertex, Vertex Pharmaceuticals (Europe) Limited, CRISPR Therapeutics, Inc., CRISPR, CRISPR Therapeutics Limited, and TRACR Hematology LTD.

1.107. "**Joint Program Know-How**" means [***] Joint Program Know-How, [***] Joint Program Know-How and Other Joint Program Know-How.

1.108. "**Joint Program Patents**" means [***] Joint Program Patents, [***] Joint Program Patents and Other Joint Program Patents.

1.109. "**Joint Program Technology**" means [***] Joint Program Technology, [***] Joint Program Technology and Other Joint Program Technology.

1.110. "**Know-How**" means intellectual property, Materials, data, results, pre-clinical and clinical protocols and data from studies and Clinical Trials, chemical structures, chemical sequences, information, inventions, know-how, formulas, trade secrets, techniques, methods, processes, procedures and developments, whether or not patentable; *provided* that Know-How does not include Patents claiming any of the foregoing.

1.111. "**Knowledge**" means [***].

1.112. "**Liability**" has the meaning set forth in Section 9.1.

1.113. "**Licensed Know-How**" means [***].

1.114. "**Licensed Patents**" means [***].

1.115. "**Licensed Technology**" means, subject to Section 4.1.3 and Section 4.6.2, any and all Licensed Patents and Licensed Know-How.

1.116. "**Major Market Country**" means any one of the following countries: [***].

1.117. "**Manufacture**" or "**Manufactured**" or "**Manufacturing**" means activities directed to making, having made, producing, manufacturing, processing, filling, finishing, packaging, labeling, quality control testing and quality assurance release, shipping or storage of a product.

1.118. "**Marketing Approval**" means, with respect to a Product in a particular jurisdiction, all approvals, licenses, registrations or authorizations necessary for the Commercialization of such Product in such jurisdiction, including, with respect to the United States, approval of an Approval Application for such Product by the FDA and with respect to the European Union, approval of an Approval Application for such Product by the European Commission. For clarity, Marketing Approval excludes Price Approval.

1.119. "**Materials**" means all biological materials or chemical compounds arising out of a Party's activities under this Agreement or otherwise provided by a Party for use by the other Party to conduct activities pursuant to this Agreement, including Clinical Trial samples, cell lines, assays, viruses and vectors.

1.120. "**Milestone Payments**" has the meaning set forth in Section 4.6.1(d).

1.121. "**NDA**" means a new drug application that is submitted to the FDA for marketing approval for a Product, pursuant to 21 C.F.R. § 314.3.

1.122. "**Net Sales**" means the gross invoiced price for a Product sold by Vertex (including sales generated from named patient and compassionate use programs and excluding sales deferred for GAAP accounting purposes until such sales are recognized), its Affiliates or Sublicensees (the "**Selling Party**") to Third Parties, less the following deductions from such gross amounts:

(a) [***];

(b) [***];

(c) [***];

(d) [***]; and

(e) [***].

Generally, only items that are deducted from the Selling Party's gross invoiced sales price of Product(s), as included in the Selling Party's published financial statements and that are in accordance with GAAP, applied on a consistent basis, will be deducted from such gross invoiced sales price for purposes of the calculation of Net Sales. However, compulsory payments required by federal or state governments based upon sales volume or market share of Product(s) (but for clarity excluding taxes on the Selling Party's net income), to the extent borne by the Selling Party, will be deducted from "Net Sales" regardless of its classification in the Selling Party's published financial statements; *provided* that any such deduction will be limited to that share of such compulsory payment proportional to the share of the total sales volume or market share of the Selling Party used to compute the compulsory payment represented by applicable Net Sales of Product(s).

A qualifying amount may be deducted only once regardless of the number of the preceding categories that describe such amount. If a Selling Party makes any adjustment to such deductions after the associated Net Sales have been reported pursuant to this Agreement, the adjustments and payment of any royalties due will be reported with the next quarterly report. Sales between or among Vertex, its Affiliates and Sublicensees will be excluded from the computation of Net Sales if such sales are not intended for end use, but Net Sales will include the subsequent final sales to Third Parties by Vertex or any such Affiliates or Sublicensees. A Product will not be deemed to be sold if the Product is provided free of charge to a Third Party in reasonable quantities as a sample consistent with industry standard promotional and sample practices. [***].

If a sale, transfer or other disposition with respect to a Product involves consideration other than cash or is not at arm's length, then the Net Sales from such sale, transfer or other disposition will be calculated on the [***].

Solely for purposes of calculating Net Sales, if Vertex or its Affiliates or any permitted Sublicensee sells a combination product containing both a Product and one or more other therapeutically or prophylactically active ingredients or delivery devices (whether combined in a single formulation or package, as applicable, or formulated separately but packaged under a single label approved by a Regulatory Authority and sold together for a single price) (a "**Combination Product**"), Net Sales of such Combination Product for the purpose of determining the payments due to CRISPR pursuant to this Agreement will be calculated by multiplying actual Net Sales of such Combination Product as determined in the first

paragraph of the definition of "Net Sales" by the fraction A/(A+B) where [***]. The weighted average invoice prices referenced above will be calculated with reference to the prevailing prices during the applicable Calendar Quarter in those top selling countries that equate to [***]% of Net Sales of the applicable Product in the Territory, with the prices weighted in the calculation to reflect the actual relative sales value of the Product in each of the countries to which the calculation relates. If it is not possible to determine the fraction A/(A+B) based on the criteria specified in the preceding sentence (*e.g.*, if a Product component is not sold separately), the Parties shall determine Net Sales for the Product in such Combination Product in good faith by mutual agreement [***].

1.123. "**[***]**" has the meaning set forth in Section 4.6.1(a).

1.124. "**Non-Breaching Party**" means the Party that believes the other Party is in material breach of this Agreement.

1.125. "**[***]**" has the meaning set forth in Section 4.6.1(d).

1.126. "**Non-Disclosing Party**" has the meaning set forth in Section 11.5.3.

1.127. "**[***] Agreement**" means that certain [***] Agreement entered into as of the Execution Date by and between the Parties.

1.128. "**Other CRISPR-Vertex Agreement**" means the Collaboration Agreement, the [***] Agreement, the Joint Development Agreement, and any other agreement entered into pursuant thereto or hereto between Vertex or any of its Affiliates, on the one hand, and CRISPR or any of its Affiliates, on the other hand.

1.129. "**Other Joint Program Know-How**" has the meaning set forth in Section 7.1.2(e).

1.130. "**Other Joint Program Patents**" has the meaning set forth in Section 7.1.2(e).

1.131. "**Other Joint Program Technology**" has the meaning set forth in Section 7.1.2(e).

1.132. "**Out-of-Pocket Costs**" means, with respect to a Party, costs and expenses paid by such Party to Third Parties (or payable to Third Parties and accrued in accordance with GAAP), other than Affiliates or employees of such Party.

1.133. "**Outside Date**" means (i) with respect to the DMD Program, the [***] anniversary of the Execution Date and (ii) with respect to the DM1 Program, the [***] anniversary of the Execution Date.

1.134. "**Party**" or "**Parties**" has the meaning set forth in the Preamble.

1.135. "**Patent Coordinator**" has the meaning set forth in Section 7.4.

1.136. "**Patent Costs**" means the reasonable fees and expenses paid to outside legal counsel, and filing, maintenance, disbursement and other reasonable Out-of-Pocket Costs paid to Third Parties, in connection with the Prosecution and Maintenance of Patents.

1.137. "**Patents**" means the rights and interests in and to issued patents and pending patent applications in any country, jurisdiction or region (including inventor's certificates and utility models), including all provisionals, non-provisionals, substitutions, continuations, continuations-in-part, divisionals, renewals and all patents granted thereon, and all reissues, reexaminations, extensions, confirmations, revalidations, registrations and patents of addition thereof, including patent term extensions and supplementary protection certificates, international patent applications filed under the Patent Cooperation Treaty (PCT) and any foreign equivalents to any of the foregoing.

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

1.139. "**Phase 1 Clinical Trial**" means any Clinical Trial as described in 21 C.F.R. §312.21(a), or, with respect to a jurisdiction other than the United States, a similar Clinical Trial.

1.140. "**Pivotal Clinical Study**" means a Clinical Trial that is intended (as of the time the Clinical Trial is Initiated) to obtain sufficient data and results to support the filing of an Approval Application.

1.141. "**Price Approval**" means, in any country where a Governmental Authority authorizes reimbursement for, or approves or determines pricing for, pharmaceutical products, receipt (or, if required to make such authorization, approval or determination effective, publication) of such reimbursement authorization or pricing approval or determination.

1.142. "**Proceeding**" means an action, suit or proceeding.

1.143. "**Product**" means any pharmaceutical product, medical therapy, preparation, substance, or formulation comprising or employing, in whole or in part, (a) components of a [***], or (b) the resulting modified human cells or tissue, or another cell- or tissue-based product, or any other therapeutic product [***], in each case ((a) and (b)), for use in the Field.

1.144. "**[***] Joint Program Know-How**" has the meaning set forth in Section 7.1.2(c).

1.145. "**[***] Joint Program Patents**" has the meaning set forth in Section 7.1.2(c).

1.146. "**[***] Joint Program Technology**" has the meaning set forth in Section 7.1.2(c).

1.147. "**Program**" means the DMD Program or the DM1 Program, as applicable.

1.148. "**Prosecution and Maintenance**" or "**Prosecute and Maintain**" means, with regard to a Patent, the preparing, filing, prosecuting and maintenance of such Patent, as well as handling re-examinations, reissues and requests for patent term adjustments with respect to such Patent, together with the conduct of interferences, the defense of oppositions and other similar proceedings with respect to the particular Patent. For clarification, "Prosecution and Maintenance" or "Prosecute and Maintain" will not include any other enforcement actions taken with respect to a Patent.

1.149. "**Receiving Party**" has the meaning set forth in Section 11.1.

1.150. "**Regulatory Approval**" means the technical, medical and scientific licenses, registrations, authorizations and approvals (including approvals of Approval Applications, supplements and amendments, pre- and post- approvals, and labeling approvals) of any Regulatory Authority, necessary for the Research, Development, clinical testing, commercial manufacture, distribution, marketing, promotion, offer for sale, use, import, export or sale of a pharmaceutical product in a regulatory jurisdiction, including Marketing Approval.

1.151. "**Regulatory Authority**" means, with respect to a country in the Territory, any national (*e.g.*, the FDA), supra-national (*e.g.*, the European Commission, the Council of the European Union, or the EMA), regional, state or local regulatory agency, department, bureau, commission, council or other Governmental Authority involved in the granting of Regulatory Approvals or Price Approvals for pharmaceutical products in such country or countries.

1.152. "**Regulatory Filings**" means, collectively: (a) all INDs, Approval Applications, establishment license applications, Drug Master Files, applications for designation as an "Orphan Licensed Product(s)" under the Orphan Drug Act, for "Fast Track" status under Section 506 of the FD&C Act (21 U.S.C. § 356) or for a Special Protocol Assessment under Section 505(b)(4)(B) and (C) of the FD&C Act (21 U.S.C. § 355(b)(4)(B)) and all other similar filings (including counterparts of any of the foregoing in any country or region in the Territory); (b) any applications for Regulatory Approval or Price Approval and other applications, filings, dossiers or similar documents submitted to a Regulatory Authority in any country for the purpose of obtaining Regulatory Approval or Price Approval from that Regulatory Authority; (c) all supplements and amendments to any of the foregoing; and (d) any correspondence with Regulatory Authorities in connection with any of the foregoing.

1.153. "**Research**" means conducting research activities to discover and advance products, including pre-clinical studies and optimization, but specifically excluding Development and Commercialization. When used as a verb, "Researching" means to engage in Research.

1.154. "**Research Costs**" means the costs and expenses that are actually incurred by or on behalf of a Party and specifically identifiable or specifically allocable to the Research activities conducted by such Party, including: (a) a Party's and its Affiliates fully absorbed internal costs with respect to such activities; and (b) all Out-of-Pocket Costs incurred by a Party or its Affiliates, including payments made to Third Parties with respect to such Research activities (except to the extent that such costs have been included in internal costs). [***]. All other costs will be determined from the books and records of the applicable Party and its Affiliates maintained in accordance with GAAP.

1.155. "**Residual Knowledge**" means knowledge, techniques, experience and Know-How that are (a) reflected in any Confidential Information owned or Controlled by the Disclosing Party and (b) retained in the unaided memory of any authorized representative of the Receiving Party after having access to such Confidential Information. A Person's memory will be considered to be unaided if the Person has not intentionally memorized the Confidential Information for the purpose of retaining and subsequently using or disclosing it. In no event, however, will Residual Knowledge include any knowledge, techniques, experience and Know-How to the extent (at any time, for such time) within the scope of any valid patent claim owned or Controlled by the Disclosing Party.

1.156. "**Royalty Term**" means, with respect to a Product in a country, the period commencing on the First Commercial Sale of such Product in such country and ending upon the later of: (a) the expiration of the last Valid Claim of a Licensed Patent, [***] Patent or [***] Joint Program Patent that Covers such Product in such country; (b) [***] years after the First Commercial Sale of such Product in such country; or (c) expiration of all applicable regulatory exclusivity periods, including data exclusivity, in such country with respect to such Product.

1.157. "**Schedule Revision Date**" means the earlier of (a) the fifth day following the HSR Clearance Date and (b) the day on or after the HSR Clearance Date on which CRISPR provides to Vertex either (i) CRISPR's supplemental or additional schedules (if any) pursuant to the proviso in the first sentence of Section 8.2, and a notice that no further supplemental, additional or updated schedules will be provided, or (ii) instead of providing any such supplemental, additional or updated schedules, a notice that no further supplemental, additional or updated schedules will be provided.

1.158. "**Selling Party**" has the meaning set forth in Section 1.122.

1.159. "**Setoff Amount**" has the meaning set forth in Section 10.3.2.

1.160. "**[***]**" has the meaning set forth in Section 10.3.3(a).

1.161. "**Specified Agreement No. 1**" means [***].

1.162. "**Specified Agreement No. 2**" means [***].

1.163. "**Specified Endonuclease Agreement**" means [***].

1.164. "**Specified Intellectual Property Rights**" means all rights, title and interest in [***]; and any worldwide patents and patent applications claiming priority thereto and all inventions covered or claimed by such patent applications (together with all provisionals, non-provisionals, substitutions, continuations, continuations-in-part, divisionals, renewals and all patents granted thereon, and all reissues, reexaminations, extensions, confirmations, revalidations, registrations and patents of addition thereof, including patent term extensions and supplementary protection certificates, international patent applications filed under the Patent Cooperation Treaty (PCT) and any foreign equivalents to any of the foregoing).

1.165. "**Specified Third Party Intellectual Property**" means[***].

1.166. "**Subcontractor**" means, with respect to a Party, a consultant, subcontractor or other vendor engaged by such Party or its Affiliates to perform activities under this Agreement.

1.167. "**Sublicense**" means, directly or indirectly, to sublicense, grant any other right with respect to, or agree not to assert, any licensed right under any Patent, Know-How or other intellectual property right. When used as a noun, "Sublicense" means any agreement to Sublicense.

1.168. "**Sublicensee**" means an Affiliate or Third Party, other than a Distributor, to whom Vertex (or any of its Affiliates or Sublicensees) sublicenses any of the rights granted to Vertex hereunder during the Agreement Term. For clarity, any such Third Party will only be deemed a Sublicensee with respect to a given Product if such Third Party directly or indirectly receives a grant of rights from Vertex or any Affiliate thereof with respect to such Product.

1.169. "**Target**" means [***] of which is associated with a human disease and which is to be edited, [***] in order to treat, ameliorate or prevent such disease.

1.170. "**Targeting**" means [***] a Target or [***] thereof; *provided*, that with respect to [***], Targeting means [***].

1.171. "**Territory**" means all countries of the world.

1.172. "**Third Party**" means any Person other than Vertex, CRISPR or their respective Affiliates.

1.173. "**Third Party Obligations**" means any non-financial encumbrances, obligations, restrictions, or limitations imposed by [***] that are required to be passed through to a sublicensee and relate to a Product, including field or territory restrictions, covenants, diligence obligations or limitations pertaining to enforcement of intellectual property rights.

1.174. "**United States**" or "**U.S.**" means the fifty states of the United States of America and all of its territories and possessions and the District of Columbia.

1.175. "**Valid Claim**" means a claim (a) of any issued, unexpired United States or foreign Patent, which will not, in the country of issuance, have been donated to the public, disclaimed, nor held invalid or unenforceable by a court of competent jurisdiction in an unappealed or unappealable decision, or (b) of any United States or foreign patent application, which will not, in the country in question, have been cancelled, withdrawn or abandoned. Notwithstanding the foregoing, on a country-by-country basis, a patent application pending for more than [***] years, or [***], will not be considered to have any Valid Claim for purposes of this Agreement unless and until a patent meeting the criteria set forth in clause (a) above with respect to such application issues.

1.176. "**Vertex**" has the meaning set forth in the Preamble.

1.177. "**Vertex Background Know-How**" means any Know-How, other than Joint Program Know-How and Vertex Program Know-How, that [***].

1.178. "**Vertex Background Patents**" means any Patent, other than a Joint Program Patent or Vertex Program Patent that [***].

1.179. "**Vertex Indemnified Party**" has the meaning set forth in Section 9.2.

1.180. "**Vertex Program Know-How**" has the meaning set forth in Section 7.1.2(b).

1.181. "**Vertex Program Patents**" has the meaning set forth in Section 7.1.2(b).

1.182. "**Vertex Program Technology**" has the meaning set forth in Section 7.1.2(b).

1.183. "**Vertex Technology**" means (a) the Vertex Background Know-How, (b) the Vertex Background Patents, (c) the Vertex Program Technology and (d) Vertex's interest in any Joint Program Technology.

ARTICLE 2.
DM1 GUIDE RESEARCH

2.1. **DM1 Guide Research Program**.

2.1.1. **DM1 Guide Research Plan**. During the DM1 Guide Research Term, CRISPR will use Commercially Reasonable Efforts to conduct the Research activities set forth in the DM1 Guide Research Plan in accordance with the criteria and timeframes set forth therein. The DM1 Guide Research Plan will include, where applicable, (a) a description of the process and criteria to be used by CRISPR to perform the DM1 Guide Research, (b) projected timelines for activities under the DM1 Guide Research Plan, (c) a budget for activities under such DM1 Guide Research Plan, which budget shall not exceed the amounts specified in the budget criteria attached hereto as Schedule D-2 (the "**DM1 Guide Research Plan Budget**"), and (d) decision points and associated criteria for the DM1 Guide Research. The initial DM1 Guide Research Plan is attached hereto as Schedule D-1. The DM1 Guide Research Plan may only be amended by approval of a proposed amendment thereto by the JAC, acting by consensus. If the JAC cannot reach agreement on a proposed amendment of the DM1 Guide Research Plan within [***] days of the date that the JAC first considers such proposed amendment, such matter will be escalated to the Executive Officers for resolution. If the Executive Officers do not reach agreement on whether to approve such proposed amendment within [***] days of the escalation of such matter to the Executive Officers, such proposed amendment of the DM1 Guide Research Plan will not take effect.

2.1.2. **Conduct of the Research**. CRISPR will, and will require its Affiliates and Subcontractors to, comply with all Applicable Laws in its and their conduct of the activities under the DM1 Guide Research Plan, including where appropriate cGMP and GLP (or similar standards). CRISPR will dedicate such number of FTEs as is reasonably required to perform the activities under the DM1 Guide Research Plan. For the avoidance of doubt, the DM1 Guide Research shall not be conducted in animals.

2.1.3. **Subcontractors**. CRISPR may engage one or more Subcontractors to perform any work under DM1 Guide Research Plan with Vertex's prior written consent, such consent not to be unreasonably withheld, conditioned or delayed; *provided* that [***] or (b) identified on Schedule E. Each contract between CRISPR and a Subcontractor will be consistent with the provisions of this Agreement (including ARTICLE 7 and ARTICLE 11). CRISPR will be responsible for the effective and timely management of and payment of its Subcontractors. The engagement of any Subcontractor in compliance with this Section 2.1.3 will not relieve CRISPR of its obligations under this Agreement or the DM1 Guide Research Plan. CRISPR will be solely responsible for any taxes, including income, withholding, payroll, VAT, sales tax or the like, that arise from the use of a Subcontractor.

2.1.4. **Briefing the JAC**. At each regularly scheduled meeting of the JAC, CRISPR will provide reasonably detailed progress updates on activities conducted under the DM1 Guide Research Plan along with a reasonable summary of data associated with such Research activities, which updates and summaries will be provided to JAC members at least [***] days in advance of any JAC meeting. The agenda for meetings of the JAC will be set by the JAC representatives.

2.1.5. **Research Costs**. Vertex will reimburse CRISPR for a portion of Research Costs for DM1 Guide Research incurred by CRISPR in accordance with Section 6.3.

2.1.6. **End of DM1 Guide Research Term**. Following the conclusion of the DM1 Guide Research Term, [***] will have no further obligation to perform any additional Research activities under this Agreement.

ARTICLE 3.
GOVERNANCE

3.1. **Joint Advisory Committee**.

3.1.1. **Formation**. Within [***] days after the Effective Date, the Parties will establish a joint advisory committee (the "**Joint Advisory Committee**" or "**JAC**") to oversee and coordinate Research and Development activities under this Agreement and perform such other duties specifically described in this Agreement. The JAC will be comprised of [***] representatives from each Party, with one such representative having [***]. The JAC will conduct its responsibilities hereunder in good faith and with reasonable care and diligence. The JAC will meet in person at least (i) once per Calendar Quarter during the DM1 Guide Research Term and (ii) twice per Calendar Year in each Calendar Year following the conclusion of the DM1 Guide Research Term, on such dates and at such times and places as agreed to by the members of the JAC. The purpose of the JAC will be to provide a forum for information sharing relating to Research and Development activities conducted pursuant to this Agreement, including information pertaining to Manufacturing as it relates to such Research and Development activities, including commercial scale-up. The JAC will have no decision-making authority except as expressly provided in Sections 2.1.1 and 3.1.2(e). Each Party will be responsible for its own expenses relating to attendance at or participation in JAC meetings.

3.1.2. **Responsibilities**. The JAC will:

(a) review and discuss any amendments to the DM1 Guide Research Plan and the corresponding DM1 Guide Research Plan Budget;

(b) provide comments and recommendations to each Party with respect to the conduct of activities under the DMD Program, the DM1 Program and the DM1 Guide Research;

(c) provide a forum for the Parties to discuss the objectives and progress under the DMD Program, the DM1 Program and the DM1 Guide Research, and to exchange and review scientific information and data relating to the activities being conducted thereunder;

(d) provide a forum for the Parties to discuss any material Licensed Know-How disclosed by CRISPR as described in Section 4.2.2;

(e) determine [***]; and

(f) perform such other duties as are specifically assigned to the JAC under this Agreement.

3.1.3. **Third Party Expert Determination**. With respect to Section 3.1.2(e) above, if the JAC cannot reach agreement within [***] days of the date that the JAC first considers whether such criteria have been met, such matter will be escalated to the Executive Officers for resolution. If the Executive Officers do not reach agreement within [***] days of the escalation of such matter to the Executive Officers (the "**Executive Officer Resolution Period**"), then such dispute shall be resolved by an independent expert selected mutually by the Parties (or, if the Parties cannot agree on such an expert within [***] days following the Executive Officer Resolution Period, each Party shall appoint an independent expert, and such independent experts shall select a third independent expert, in which case, the determination of the experts shall be made by a majority of such panel of three experts). Either Party may initiate expert determination by giving written notice to the other Party. The expert(s), once appointed, shall have no ex parte communications with either Party concerning the expert determination or the underlying dispute. The Parties agree to cooperate fully in the expeditious conduct of such expert determination and to provide the expert(s) with access to all facilities, books, records, documents, information and personnel necessary to make a fully informed decision in an expeditious manner. Before issuing a final decision, the expert(s) shall issue a draft report and allow the Parties to comment on it, and shall thereafter issue a final, written, reasoned decision. The expert(s) shall endeavor to resolve the dispute within [***] days (but no later than [***] days) after his, her or their appointment, taking into account the circumstances requiring an expeditious resolution of the matter in dispute. The decision of the expert(s) shall be final and binding on the Parties. The costs of the expert determination shall be shared equally by the Parties, regardless of the outcome of the determination.

3.1.4. **Discontinuation of the JAC**. The JAC will continue to exist until the first to occur of [***].

3.2. **Other Committees**. The Parties may, by mutual agreement, form such other committees or working groups as may be necessary or desirable to facilitate the activities under this Agreement. Any dispute arising from such committees or working groups will be escalated to the JAC for resolution.

3.3. **Alliance Managers**.

3.3.1. **Appointment**. Within [***] days following the Effective Date each Party will appoint (and notify the other Party of the identity of) a representative of such Party to act as its alliance manager under this Agreement (each an "**Alliance Manager**"). Each Party may replace its Alliance Manager at any time by written notice to the other Party.

3.3.2. **Specific Responsibilities**. The Alliance Managers may be, but will not be required to be, members of the JAC. The Alliance Managers will serve as the primary contact point between the Parties for the purpose of providing each Party with information regarding the other Parties' activities pursuant to this Agreement and will have the following responsibilities:

(a) schedule meetings of the JAC and circulate draft written minutes from each meeting within [***] days after each such meeting;

(b) facilitate the flow of information and otherwise promote communication, coordination and collaboration between the Parties;

(c) coordinate the various functional representatives of each Party, as appropriate, in developing and executing strategies and plans for Products;

(d) provide a single point of communication for seeking consensus both internally within the respective Party's organization and between the Parties regarding key strategy and planning issues;

(e) coordinate and facilitate budget, finance and billing activities as overseen by the JAC; and

(f) perform such other functions as requested by the JAC.

ARTICLE 4.
LICENSE GRANTS; TECHNOLOGY TRANSFER

4.1. **License Grants**.

4.1.1. **License Grant to Vertex**. Subject to the terms and conditions of this Agreement, CRISPR hereby grants to Vertex and its Affiliates an exclusive (subject to Section 5.1), royalty-bearing, license under CRISPR's and its Affiliates' interest in the Licensed Technology to Research, Develop, Manufacture, have Manufactured, use, keep, sell, offer for sale, import, export and Commercialize Products in the Field in the Territory (such license, the "**Exclusive License**").

4.1.2. **Sublicensing**. Vertex may grant sublicenses through multiple tiers to one or more Sublicensees of any and all rights granted to Vertex by CRISPR under the Exclusive License; *provided that* Vertex, its Affiliates and its Sublicensees shall only be permitted to grant a Sublicense to conduct any Commercialization activities with respect to a Product [***] with CRISPR's prior written consent, such consent not to be unreasonably withheld, conditioned or delayed and *provided*, *further*, that no such consent will be needed with respect to any Sublicense (a) granted to a Third Party to conduct Commercialization activities with respect to a Product in [***] (and not any other [***]), (b) granted to a Distributor or other Third Party to conduct activities on Vertex's or its Affiliates' or any Sublicensee's behalf or (c) granted to a Third Party to Manufacture Products on Vertex's or its Affiliates' or any Sublicensee's behalf. Each such Sublicense will be subject and subordinate to, and consistent with, the terms and conditions of this Agreement and will require such Sublicensee to comply with all applicable terms of this Agreement and all Third Party Obligations to the extent the provisions of such obligations or agreements are specifically disclosed to Vertex in writing (or via electronic data room). Vertex, and each Sublicensee that grants a further Sublicense, shall promptly provide CRISPR with a copy of each fully executed Sublicense agreement that includes any sublicense granted hereunder (which copy may be redacted to remove provisions which are not necessary to monitor compliance with this Section 4.1.2); *provided* that, Vertex and its Sublicensees shall not be required to provide CRISPR with a copy of any sublicense that is granted on a non-exclusive basis to a Subcontractor solely to enable such Subcontractor to perform Research, Development, Manufacturing or

Commercialization activities on behalf of and solely for the benefit of Vertex, its Affiliates or any Sublicensee pursuant to this Agreement. Vertex shall remain primarily liable to CRISPR for the performance of all of Vertex's obligations under, and Vertex's compliance with all provisions of, this Agreement.

4.1.3. **License Conditions; Limitations**. Subject to Section 4.6, any rights and obligations hereunder, including the rights granted pursuant to the Exclusive License, are subject to and limited by any applicable Third Party Obligations to the extent the provisions of such obligations or agreements are specifically disclosed to Vertex in writing (or via electronic data room) (a) with respect to Third Party Obligations existing as of the Execution Date, prior to the Execution Date, and (b) with respect to Third Party Obligations arising after the Execution Date, on or prior to the date on which such Third Party Obligations arise. Vertex may [***] any Third Party Patents and Know-How to which such Third Party Obligations [***]. If Vertex does not [***] such Third Party Patents and Know-How [***], such Third Party Patents and Know-How [***] under this Agreement and Vertex will be subject to the Third Party Obligations [***].

4.1.4. **Licenses to Improvements**.

(a) **License to CRISPR**. Subject to the terms and conditions of this Agreement, Vertex hereby grants to CRISPR a perpetual, irrevocable, non-exclusive, royalty-free, fully paid-up, worldwide, sublicensable, license to all improvements or modifications to the CRISPR Platform Technology Patents, CRISPR Background Patents (to the extent existing on the Effective Date or otherwise claiming the CRISPR Background Know-How set forth on Schedule F), [***] or CRISPR Background Know-How set forth on Schedule F (as may be supplemented by mutual written agreement of the Parties from time to time), whether or not patentable, that arise in the course of performing activities under this Agreement, including Research, Development, Manufacturing or Commercialization activities for a Product, that are Controlled by Vertex or its Affiliates to make, have made, use, sell, keep, offer for sale, export and import products (including Products to the extent permitted by this Agreement), subject to Section 4.4.

(b) **License to Vertex**. Subject to the terms and conditions of this Agreement, CRISPR hereby grants to Vertex a perpetual, irrevocable, non-exclusive, royalty-free, fully paid-up, worldwide, sublicensable license to all improvements or modifications to the Vertex Background Know-How or Vertex Background Patents, whether or not patentable, that arise in the course of performing activities under this Agreement, including the DM1 Guide Research, that are Controlled by CRISPR or its Affiliates to make, have made, use, sell, keep, offer for sale, export and import products (including Products).

4.1.5. **License to Enabling Vertex Technology**. Subject to the terms and conditions of this Agreement, Vertex hereby grants to CRISPR a limited, non-exclusive, royalty-free, fully paid-up, worldwide, sublicensable license to all Vertex Technology, whether or not patentable, solely to the extent necessary for CRISPR to perform its obligations under this Agreement.

4.2. **Technology Transfer**.

4.2.1. **Initial Transfer of Know-How and Materials**. With respect to any material Licensed Know-How existing as of the Effective Date that is relevant to activities in the Field, CRISPR will transfer to Vertex, within [***] days after the Effective Date, (i) a copy of such Licensed Know-How in documented form (whether held in paper or electronic format) and (ii) reasonable quantities of tangible Materials that embody such Licensed Know-How, in each case ((i) and (ii)), to the extent Controlled by CRISPR as of the Effective Date; *provided* that [***].

4.2.2. **[***]**.

4.2.3. **[***]**.

4.2.4. **Rights of Reference**.

(a) **To CRISPR**. Vertex hereby grants to CRISPR the right to rely upon and a right to copy, access, and otherwise use, all Adverse Event information pertaining to each Product (except for any Alternative Product that is not Covered by and does not embody the Licensed Technology) as reasonably required in connection with the Development and Commercialization of products (including the Products to the extent permitted under the Co-Commercialization Agreement, if applicable), and Vertex shall, if requested by CRISPR, provide a signed statement that CRISPR may rely on, and the Regulatory Authority may access, in support of CRISPR's application for Regulatory Approval of such products.

(b) **To Vertex**. CRISPR hereby grants to Vertex the right to rely upon and a right to copy, access, and otherwise use, all Adverse Event information Controlled by CRISPR with respect to any products that are Covered by or embody any of the Licensed Technology, as reasonably required in connection with the Development and Commercialization of Products, and CRISPR shall, if requested by Vertex, provide a signed statement that Vertex may rely on, and the Regulatory Authority may access, in support of Vertex's application for Regulatory Approval of Products.

4.3. **No Implied Licenses**. All rights in and to Licensed Technology not expressly licensed or assigned to Vertex under this Agreement are hereby retained by CRISPR or its Affiliates. Except as expressly provided in this Agreement, no Party will be deemed by estoppel or implication to have granted the other Party any licenses or other right with respect to any intellectual property.

4.4. **Exclusivity**.

4.4.1. **[***]**.

4.4.2. **[***]**:

(a) [***];

(b) [***]

(c) [***].

[***].

4.5. **Change of Control**. If there is a Change of Control of CRISPR, [***].

4.6. **[***] Agreements; Opt-Out**.

4.6.1. **[***]**.

(a) Certain Licensed Technology [***] during the Agreement Term pursuant [***]. For any [***] pursuant to which [***], CRISPR will use Commercially Reasonable Efforts to ensure that [***] with the same [***] (including the right for Vertex [***]) [***] would be [***] and [***] other potential or actual [***]. For clarity, with respect to [***]. If CRISPR is [***], (i) CRISPR will so notify Vertex, and the Parties will [***] and (ii) CRISPR will not [***].

(b) If [***] is contemplating [***], then, with respect to each [***] Vertex and CRISPR shall negotiate in good faith towards an [***]. If the Parties are unable to [***], such dispute shall be resolved in accordance with Schedule A. Following determination of such equitable allocation in accordance with this Section (b), [***] will reimburse [***] in accordance with Section 6.5 for any amounts [***], and [***] shall be solely responsible for all other amounts paid under and, other than the portion payable by [***] pursuant to such equitable allocation, payable under [***].

(c) If [***] is contemplating [***], then (1) [***] may request that [***] use, in which case [***] shall use, Commercially Reasonable Efforts to [***], and such request must be made to [***] in writing within [***] Business Days after the disclosure described in Section 4.6.2(c)(i) is made to [***]; (2) [***] shall be responsible for payment of [***] percent ([***]%) of any obligation due in connection with [***]; and (3) all Know-How and Patents [***]. Notwithstanding the foregoing, if [***] is unsuccessful in [***], [***] shall provide [***] with prompt written notice thereof, and the provisions of Section 4.6.1(b) will apply, *provided* that, notwithstanding clause (ii) of Section 4.6.1(b), [***] will only have [***] Business Days after receipt of such written notice to elect to [***].

(d) If (i) [***], payment obligations arising thereunder shall be allocated as follows: (A) [***] shall be and remain responsible for payment of [***] percent ([***]%) of any obligations that are due in connection with [***]; (B) [***] shall partially reimburse [***] for [***] Except as expressly set forth in the preceding sentence, [***] shall be solely responsible for all amounts payable [***]. Notwithstanding anything to the contrary in this Agreement, the [***] are hereby deemed to be [***], and any amounts payable thereunder shall be treated in accordance with this Section 4.6.1(d).

4.6.2. **[***]**. Notwithstanding Section 4.6.1, Vertex [***] with respect to one or more [***] and, thereafter, [***].

4.7. **HSR Filings**.

4.7.1. Each of Vertex and CRISPR agrees to prepare and make appropriate filings under HSR, and other antitrust requirements relating to this Agreement and the transactions contemplated hereby as soon as reasonably practicable after the Execution Date (but no later than [***] Business Days after the Execution Date), and Vertex shall bear the filing fees associated with any HSR filing, but each Party shall otherwise bear its own costs in connection with such filings. The Parties agree to cooperate in the antitrust clearance process and to furnish promptly to the Federal Trade Commission ("**FTC**"), the Antitrust Division of the Department of Justice ("**DOJ**") and any other agency or authority, any information reasonably requested by them in connection with such filings. With respect to the HSR and other filings made pursuant to this Section 4.7.1, each of Vertex and CRISPR shall, to the extent practicable: (a) promptly notify the other Party of any material communication to that Party from the FTC, the DOJ, or any other agency or authority and, subject to Applicable Laws, discuss with and permit the other Party to review in advance any proposed written communication to any of the foregoing; (b) not agree to participate in any substantive meeting or discussion with the FTC, the DOJ or any other agency or authority in respect of any filings, investigation or inquiry concerning this Agreement unless it consults with the other Party in advance and, to the extent permitted by such the FTC, the DOJ or any other agency or authority, give the other Party the opportunity to attend and participate thereat; and (c) furnish the other Party with copies of all correspondence and communications (and memoranda setting forth the substance thereof) between them and their Affiliates and their respective representatives on the one hand, and the FTC, the DOJ or any other agency or authority or members of their respective staffs on the other hand, with respect to this Agreement.

4.7.2. In furtherance of obtaining clearance for an HSR filing filed pursuant to this Section 4.7, CRISPR and Vertex will use their respective Commercially Reasonable Efforts to resolve as promptly as practicable any objections that may be asserted with respect to this Agreement or the transactions contemplated by this Agreement under any antitrust, competition or trade regulatory law. In connection with obtaining such HSR clearance from the FTC, the DOJ or any other Governmental Authority, Vertex and its Affiliates will not be required to (i) sell, divest (including through a license or a reversion of licensed or assigned rights), hold separate, transfer or dispose of any assets, operations, rights, product lines, businesses or interest therein of Vertex or any of its Affiliates (or consent to any of the foregoing actions); or (ii) litigate or otherwise formally oppose any determination (whether judicial or administrative in nature) by a Governmental Authority seeking to impose any of the restrictions referenced in clause (i) above.

4.7.3. Other than the provisions of this Section 4.7, Section 8.1, Section 8.2, Sections 8.3.1 through 8.3.6, ARTICLE 11, Section 10.2.1, Section 12.5, and Section 12.11, and all definitions necessary to give effect to the foregoing provisions, each of which shall each become effective on the Execution Date, the rights and obligations of the Parties under this Agreement shall not become effective until the Effective Date.

ARTICLE 5.
RESEARCH, DEVELOPMENT, MANUFACTURING AND COMMERCIALIZATION OF PRODUCTS

5.1. **Research and Development**.

5.1.1. **Responsibility**. Except as otherwise provided in this Agreement, Vertex will be solely responsible for, and will have sole and exclusive control over, the Research and Development of Products.

5.1.2. **Subcontractors**. Vertex may engage one or more Subcontractors to perform its Research or Development activities contemplated by this Agreement with respect to Products. Each contract between Vertex and a Subcontractor will be consistent with the provisions of this Agreement (including ARTICLE 7 and ARTICLE 11). Vertex will be responsible for the effective and timely management of and payment of its Subcontractors. The engagement of any Subcontractor in compliance with this Section 5.1.2 will not relieve Vertex of its obligations under this Agreement. Vertex will be solely responsible for any taxes, including income, withholding, payroll, VAT, sales tax or the like, that arise from the use of a Subcontractor.

5.1.3. **Right of Observation**. Upon CRISPR's reasonable request, Vertex will provide to CRISPR the opportunity for up to [***] CRISPR personnel designated by CRISPR (such that the normal business operations of Vertex are not interfered with) to observe the material clinical and regulatory Development activities of Vertex under the DMD Program, at locations designated by Vertex during normal business hours and upon reasonable advanced notice, *provided* that such observation does not (i) delay, interfere with or adversely affect the normal operations of Vertex, or (ii) expose any such CRISPR personnel to any Confidential Information of a Third Party that Vertex is prohibited from disclosing to such CRISPR personnel. To the extent that Development activities are conducted at locations owned by a Vertex Sublicensee or Subcontractor, such right of observation shall apply to such Sublicensee or Subcontractor locations to the extent permitted by the applicable Sublicensee or Subcontractor agreement, and Vertex shall use good faith efforts to obtain such permission in each such applicable Sublicensee or Subcontractor agreement.

5.1.4. **Research and Development Diligence**. Vertex (acting directly or through one or more Affiliates or Sublicensees) will use Commercially Reasonable Efforts to Research and Develop (a) [***], and (b) [***], in each case ((a) and (b)), in all Major Market Countries. [***]

5.1.5. **Reporting**. For so long as Vertex is conducting Research and/or Development activities for the DMD Program or the DM1 Program, no later than [***] and [***] of each Calendar Year, Vertex will provide CRISPR with a reasonably detailed report regarding the status of Vertex's Research and Development under such DMD Program and DM1 Program. Such reports may be provided to CRISPR in conjunction with meetings and other communications between the representatives of Vertex and CRISPR on the JAC.

5.1.6. **CRISPR Option Under DM1 Program**.

(a) **Option Exercise**. CRISPR shall have the option to enter into a worldwide co-exclusive (with Vertex) co-development and co-commercialization agreement (the "**Co-Commercialization Agreement**") for all DM1 Products (the "**DM1 Program Option**"), which option may be exercised by CRISPR by providing written notice of such exercise to Vertex as described in this Section 5.1.6(a). Vertex shall give CRISPR at least [***] days' prior written notice of its intention to file the first IND submission for a DM1 Product under the DM1 Program. Following CRISPR's receipt of such written notice, CRISPR will have until [***] days after the date of the first IND submission for a DM1 Product under the DM1 Program to exercise the DM1 Program Option. If CRISPR is interested in exercising the DM1 Program Option, CRISPR may, at any time during the period beginning [***] days prior to the anticipated first IND submission for a DM1 Product under the DM1 Program and ending [***] Business Days after such IND submission (after Vertex has given CRISPR written notice thereof), request the DM1 Program Data Package by providing written notice to Vertex (the "**DM1 Program Information Notice**"), and Vertex will deliver to CRISPR the DM1 Program Data Package within [***] days of the date of such notice. CRISPR shall have the right to issue a DM1 Program Information Notice one time. Within [***] Business Days after the first IND submission for a DM1 Product under the DM1 Program, unless CRISPR has previously exercised the DM1 Program Option, Vertex shall provide to CRISPR (a) if the DM1 Program Data Package has been previously delivered to CRISPR, a copy of such IND or (b) if the DM1 Program Data Package has not been previously delivered to CRISPR, the DM1 Program Data Package. Unless CRISPR has previously exercised the DM1 Program Option as provided in this Section, CRISPR must exercise the DM1 Program Option within [***] days after the date of the first IND submission for a DM1 Product under the DM1 Program (provided that Vertex has given CRISPR written notice of such submission), or CRISPR will be deemed to have irrevocably waived its rights with respect to the DM1 Program Option. During the period in which CRISPR remains eligible to exercise the DM1 Program Option, CRISPR may request, no more than once in each [***]-month period, that Vertex provide to CRISPR a report setting forth the Research Costs (and, if applicable, expenses relating to the Development of DM1 Products) incurred by or on behalf of Vertex (and its Affiliates and Sublicensees, as applicable) as of the date of such report, and estimated to be incurred by or on behalf of Vertex (and its Affiliates and Sublicensees, as applicable) up to and including the date that is [***] days after the date of the first IND submission for a DM1 Product under the DM1 Program. Vertex shall provide such report within [***] days after receipt of CRISPR's request.

(b) **Negotiation of Co-Commercialization Agreement**. In the event that CRISPR exercises the DM1 Program Option, the Parties shall negotiate in good faith the terms and conditions of the Co-Commercialization Agreement for a period of up to [***] days following the exercise of such option, which terms and conditions will be reasonable and customary for agreements of that type and will include: [***]. For clarity, Vertex will continue to conduct and will be solely responsible for, and continue to have sole and exclusive control over, the Research, Development and Manufacture of DM1 Products during the aforementioned [***]-day negotiation period and during the pendency of any matters referred for resolution pursuant to Section 5.1.6(c), and Vertex will

not be obligated to change any plans with respect to any Phase 1 Clinical Trial of a DM1 Product that are in effect at the time of CRISPR's DM1 Program Option exercise, as a result of such DM1 Program Option exercise. Upon execution of the Co-Commercialization Agreement by the Parties, DM1 Products will no longer be Products under this Agreement.

(c) **Escalation Procedure**. In the event the Parties, despite their good faith negotiations, are unable to agree on the terms and conditions of the Co-Commercialization Agreement before the end of the [***]-day negotiation period referred to in Section 5.1.6(b), the Parties shall refer those terms and conditions to which they have not mutually agreed to the Executive Officers, who shall use reasonable efforts to reach agreement on such terms and conditions. If such Executive Officers are unable to reach consensus with respect to such terms and conditions within [***] days after such referral, the matter shall be referred for resolution in accordance with Schedule A, *provided*, that CRISPR shall have the right at any time after such [***] day period to withdraw its notice of exercise of the DM1 Program Option upon written notice to Vertex, in which case the Parties shall have no further obligations with respect to the negotiation of the Co-Commercialization Agreement.

(d) **Economics Upon Execution**. Upon any execution by both Parties of the Co-Commercialization Agreement, (i) Vertex shall promptly provide to CRISPR a report setting forth the Research Costs (and, if applicable, expenses relating to the Development of DM1 Products) incurred by Vertex (and its Affiliates and Sublicensees, as applicable) prior to the execution of the Co-Commercialization Agreement, and CRISPR shall, within [***] days of receiving such report, reimburse Vertex for [***]% of such costs and (ii) Vertex's obligation to pay the milestone payments under Section 6.2 and Section 6.6.1 (to the extent the corresponding milestone events have not been achieved) and the royalty payments under Section 6.4 and Section 6.6.2 will terminate. If the terms of this Agreement conflict with the terms of the Co-Commercialization Agreement, the terms of the Co-Commercialization-Agreement will control with respect to the DM1 Program and the terms of this Agreement will control with respect to all other matters.

(e) **Effect of No Option Exercise**. In the event that CRISPR does not exercise the DM1 Program Option, or if CRISPR withdraws its notice of exercise pursuant to Section 5.1.6(c), then Vertex shall remain solely responsible for all Development, Manufacturing and Commercialization activities of DM1 Products and the economic provisions set forth in ARTICLE 6 shall apply with respect to any and all DM1 Products.

5.2. **Regulatory Matters**.

5.2.1. **Responsibilities**. Vertex or its designated Affiliates and Sublicensees will have the sole authority to prepare and file Regulatory Filings, each in its own name, and applications for Regulatory Approval and Price Approval for any and all Products, and will have the sole responsibility for communicating with any Regulatory Authority both prior to and following Regulatory Approval and Price Approval, including all communications and decisions with respect to (a) pricing of Products and (b) the negotiation of Product pricing with Regulatory Authorities and other Third Parties.

5.2.2. **Ownership**. Ownership of all right, title and interest in and to any and all Regulatory Filings, Regulatory Approvals and Price Approvals directed to any Product in each country of the Territory will be held in the name of Vertex, its Affiliate, designee or Sublicensee.

5.3. **Commercialization**.

5.3.1. **General**. Vertex will have sole and exclusive control over all matters relating to the Commercialization of Products, except as may be otherwise provided in the Co-Commercialization Agreement (as applicable).

5.3.2. **Commercial Diligence**. On a Major Market Country-by-Major Market Country basis, following receipt of Marketing Approval and Price Approval, as applicable, for a DMD Product or DM1 Product in the applicable Major Market Country, Vertex (acting directly or through one or more Affiliates or Sublicensees) will use Commercially Reasonable Efforts to Commercialize such DMD Product or such DM1 Product in such Major Market Country.

5.3.3. **Branding**. Vertex or its designated Affiliates or Sublicensees will select and own all trademarks used in connection with the Commercialization of any and all Products. CRISPR will not use nor seek to register, anywhere in the world, any trademark that is confusingly similar to any trademark used by or on behalf of Vertex, its Affiliates or Sublicensees in connection with any Product.

5.3.4. **Reporting**. For so long as Vertex is conducting Commercialization activities under the DMD Program or the DM1 Program, no later than [***] and [***] of each Calendar Year, Vertex will provide CRISPR with a high-level report regarding the status of Vertex's Manufacturing and Commercialization activities conducted since the previously provided report.

5.4. **Manufacturing**. Vertex will have the exclusive right to Manufacture and supply Products either itself or through one or more Affiliates or Third Parties selected by Vertex in its sole discretion. The Parties may share information relating to the Manufacture of Products, and other products to be commercialized by CRISPR, to determine whether and how to leverage their respective manufacturing efforts, but shall have no obligation hereunder to enter into an agreement with respect thereto.

5.5. **Applicable Laws**. Each Party will, and will require its Affiliates, Sublicensees and Subcontractors to, comply with all Applicable Law in its and their Research, Development, Manufacture and Commercialization of Products, including where appropriate, cGMP, GCP and GLP (or similar standards).

5.6. **Exchange of Information**. Notwithstanding anything to the contrary in this Agreement, Vertex will not be required to disclose to CRISPR any information (including information regarding any Product) that Vertex is prohibited from disclosing pursuant to Third Party confidentiality obligations, *provided* that, if the DM1 Program Data Package would, absent the provisions of this Section 5.6, be required to contain any such information, Vertex may redact such information from such DM1 Program Data Package solely to the minimum extent necessary to comply with any such Third Party confidentiality obligations.

ARTICLE 6.
FINANCIAL PROVISIONS

6.1. **Up-Front Fee to CRISPR**. Within four Business Days following the Effective Date, Vertex will pay CRISPR a one-time, non-refundable, non-creditable, up-front fee of $175,000,000 payable by wire transfer of immediately available funds to an account designated by CRISPR in writing.

6.2. **Milestone Payments**.

6.2.1. **Development Milestones**. Subject to Section 6.6.1 with respect to Alternative Products, Vertex will pay CRISPR the milestone payments set forth in this Section 6.2.1 with respect to the first achievement by Vertex or any of its Affiliates or Sublicensees of the applicable milestone event with respect to a Product. Each milestone payment set forth below is payable only once, regardless of the number of Products that achieve the relevant milestone event or the number of times a given Product achieves such milestone event such that, (a) [***], and (b) [***].

Milestone Event		[***]			[***]
		[***]	[***]	[***]	
1	[***]				[***]
2	[***]				[***]
3	[***]	[***]	[***]	[***]	[***]
4	[***]	[***]	[***]	[***]	[***]
5	[***]	[***]	[***]	[***]	[***]
6	[***]	[***]	[***]	[***]	[***]
7	[***]	[***]	[***]	[***]	[***]

[***].

6.2.2. **Commercial Milestones**. Subject to Section 6.6.1 with respect to Alternative Products, Vertex will pay CRISPR the milestone payments set forth in this Section 6.2.2 with respect to the first achievement by Vertex or any of its Affiliates or Sublicensees of the applicable milestone event with respect to a Product. Each milestone payment set forth below is payable only once, regardless of the number of Products that achieve the relevant milestone event or the number of times a given Product achieves such milestone event such that, (a) [***], and (b) [***].

Milestone Event	[***]			[***]
	[***]	[***]	[***]	
[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]

6.2.3. **Notice; Payment**. Vertex will provide CRISPR with written notice upon the achievement by Vertex or any of its Affiliates or Sublicensees of each of the milestone events set forth in Section 6.2.1 or 6.2.2, such notice to be provided, (a) with respect to milestones under Section 6.2.1, within [***] days after achievement, and (b) with respect to milestones under Section 6.2.2, [***] for the Calendar Quarter in which such milestone is first achieved. Following receipt of such notice, CRISPR will promptly invoice Vertex for the applicable milestone and Vertex will make the appropriate milestone payment within [***] days after receipt of such invoice.

6.3. **DM1 Guide Research Plan Costs**.

6.3.1. **DM1 Guide Research Plan Cost Share**. With respect to DM1 Guide Research activities conducted pursuant to the DM1 Guide Research Plan by CRISPR, Vertex will, subject to Section 6.3.3, be responsible for [***]% of such Research Costs incurred by CRISPR.

6.3.2. **Research Cost Reports**. As soon as practicable, but in any event within [***] Business Days after the end of each [***], CRISPR will provide Vertex with a flash report estimating reimbursable Research Costs under the DM1 Guide Research Plan, if any, incurred by it and its Affiliates during the just-ended [***]. Within [***] calendar days after the end of each [***], CRISPR will submit to Vertex an itemized report of such Research Costs, if any, incurred by CRISPR and its Affiliates during such [***] (the "**Cost Report**"), including reasonable supporting documentation.

6.3.3. **Reimbursement; Excess Costs**. Vertex will reimburse CRISPR for its share of the Research Costs incurred under the DM1 Guide Research Plan, as set forth in Section 6.3.1, in accordance with the DM1 Guide Research Plan Budget within [***] days after its receipt of the applicable Cost Report. If the Research Costs for the DM1 Guide Research Plan exceed the DM1 Guide Research Plan Budget, CRISPR may include such excess costs in the applicable Cost Report, and Vertex will reimburse its share of such excess costs in accordance with Section 6.3.1, to the extent such excess costs do not exceed [***]% of Vertex's share of the DM1 Guide Research Plan Budget in the applicable [***].

6.4. **Royalties**.

6.4.1. **Royalty Rates**. Subject to Sections 6.4.2, 6.4.3, 6.4.4 and 6.6.2, Vertex will pay CRISPR royalties based on (i) the aggregate Net Sales of all DMD Products, and (ii) the aggregate Net Sales of all DM1 Products (each of (i) and (ii) measured separately for determining royalties below) sold by Vertex, its Affiliates or Sublicensees in the Field in the Territory during a Calendar Year at the rates set forth in the table below. The obligation to pay royalties will be imposed only once with respect to the same unit of a Product.

Calendar Year Net Sales (in Dollars) for DMD Products or DM1 Products in the Territory	**Royalty Rates as a Percentage (%) of the applicable portion of Net Sales**
Portion of Calendar Year Net Sales up to and including $[***]	[***]%
Portion of Calendar Year Net Sales that exceeds $[***], up to and including $[***]	[***]%
Portion of Calendar Year Net Sales that exceeds $[***], up to and including $[***]	[***]%
Portion of Calendar Year Net Sales that exceeds $[***]	[***]%

6.4.2. **Royalty Term**. Vertex will pay royalties to CRISPR under this Section 6.4 on a Product-by-Product and a country-by-country basis during the Royalty Term. Upon the expiration of the Royalty Term for a given Product in a given country, the Exclusive License with respect to such Product will become fully-paid, perpetual and irrevocable.

6.4.3. **[***] Generic Competition**. If one or more Generic Products with respect to a Product is marketed and sold in a given country by one or more Third Parties during any Calendar Quarter during the Royalty Term and the [***] of such Product sold during such Calendar Quarter have [***] relative to average quarterly sales [***] of such Product in such country during the [***] Calendar Quarters immediately prior to the Calendar Quarter during which such Generic Product(s) was first marketed and sold in such country, then the Net Sales for such Product in such country, on a Product-by-Product and country-by-country basis, will thereafter be [***] the applicable royalties payable under Section 6.4.1 for so long as such reduction in [***] persists.

6.4.4. **Third Party Licenses**. Vertex may [***] from the royalties payable to CRISPR under this Section 6.4 [***] paid by Vertex under [***]; *provided*, *however*, that in no event will the royalties that would otherwise be payable to CRISPR, as reduced by Section 6.4.3 [***] under this Section 6.4.4; and *provided further*, that Vertex will be entitled to [***] any amounts with respect to which Vertex [***] pursuant to this Section 6.4.4 but [***] in this Section 6.4.4. [***].

6.4.5. **Royalty Reports**. During the Agreement Term, following the first sale of a Product giving rise to Net Sales, within [***] days after the end of each Calendar Quarter, Vertex will deliver a report to CRISPR specifying on a Product-by-Product and country-by-country basis: (a) gross sales in the relevant Calendar Quarter, (b) Net Sales in the relevant Calendar Quarter, including an accounting of deductions applied to determine Net Sales; (c) a summary of the then-current exchange rate methodology then in use by Vertex, and (d) royalties payable on such Net Sales. All royalty payments due under Section 6.4.1 or Section 6.6.2 for each Calendar Quarter will be due and payable within [***] days after Vertex's delivery of the applicable report under this Section 6.4.5.

6.4.6. **Flash Reports**. As soon as practicable, but in no event later than [***] days from the last day of each Calendar Quarter, Vertex will provide CRISPR with a flash report providing a good faith estimate of Net Sales accrued in the preceding Calendar Quarter and the royalties payable to CRISPR on such Net Sales on a Product-by-Product and country-by-country basis. The flash report may be based on forecasted numbers and it is understood that final reported Net Sales for purposes of calculating the royalty owed under Section 6.4.1 or Section 6.6.2, as applicable, may vary.

6.5. **Payments Under CRISPR In-License Agreements**. Amounts payable by Vertex under Section 4.6.1(b) or Section 4.6.1(d) will be due within [***] days of Vertex's receipt of an invoice therefore from CRISPR. Subject to Section 9.1, any other payment obligations arising under the CRISPR In-License Agreements as a result of the Research, Development or Commercialization of a Product by Vertex, its Affiliates and Sublicensees under this Agreement will be paid solely by CRISPR.

6.6. **Alternative Product Payments**. Notwithstanding anything in this Agreement to the contrary, with respect to any Alternative Product, Vertex shall pay to CRISPR the amounts set forth in Sections 6.6.1 and 6.6.2.

6.6.1. **Alternative Product Milestones**. Vertex shall pay to CRISPR an amount equal to (a) [***]% of the Development milestones set forth in Section 6.2.1, and (b) [***]% of the commercial milestones set forth in Section 6.2.2, in each case ((a) and (b)), upon the achievement of any milestone event set forth in Section 6.2.1 or Section 6.2.2 by such Alternative Product, provided that: (i) in the event that such Alternative

Product achieves a milestone event set forth in Section 6.2.1 or 6.2.2, as applicable, that has already been achieved by a CRISPR Product, then the milestones set forth in this Section 6.6.1 shall not apply and Vertex shall have no further payment obligations with respect thereto, and (ii) in the event that such Alternative Product is the first Product to achieve a milestone event set forth in Section 6.2.1 or 6.2.2, as applicable, and such milestone event is later achieved by a subsequent CRISPR Product, then upon the achievement of the applicable milestone event by such subsequent CRISPR Product, Vertex shall pay to CRISPR an amount equal to the remaining [***]% of such milestone payment such that Vertex will have paid the full milestone payment set forth in Section 6.2.1 or 6.2.2, as applicable.

6.6.2. **Alternative Product Royalties**. In the event that Vertex Commercializes an Alternative Product in the Field during the Term, then for purposes of determining royalties resulting from sales of such Alternative Product, pursuant to Section 6.4.1, Net Sales of such Alternative Product shall be reduced by [***]% of the actual Net Sales of such Alternative Product. For the avoidance of doubt, for purposes of calculating the applicable royalty tier set forth in Section 6.4.1 for DMD Products or DM1 Products, as applicable, such tier shall reflect the total aggregate Net Sales of all CRISPR Products in the applicable Calendar Quarter and [***]% of the total Net Sales of all Alternative Products such Calendar Quarter.

(a) **[***] Generic Competition**. If one or more Generic Products with respect to an Alternative Product is marketed and sold in a given country by one or more Third Parties during any Calendar Quarter during the Royalty Term and the [***] of such Alternative Product sold during such Calendar Quarter [***] relative to average quarterly sales [***] of such Alternative Product in such country during the [***] Calendar Quarters immediately prior to the Calendar Quarter during which such Generic Product(s) was first marketed and sold in such country, then the Net Sales for such Alternative Product in such country, on a Product-by-Product and country-by-country basis, will thereafter [***] the applicable royalties payable under Section 6.6.2 for so long as such reduction in [***] persists.

(b) **Third Party Licenses**. Vertex may [***] from the royalties payable to CRISPR under this Section 6.6.2 [***] paid by Vertex pursuant to [***]; *provided*, *however*, that in no event will the royalties that would otherwise be payable to CRISPR, as reduced by Section 6.6.2(a) [***] under this Section 6.6.2(b); and *provided further*, that Vertex will be entitled to [***] any amounts with respect to which Vertex [***] pursuant to this Section 6.6.2(b) but [***] in this Section 6.6.2(b).

6.7. **Payment Method; Currency**.

6.7.1. All payments under this Agreement will be paid in U.S. Dollars, by wire transfer or ACH transfer to an account designated by CRISPR (which account CRISPR may update from time to time in writing).

6.7.2. If any amounts that are relevant to the determination of amounts to be paid under this Agreement or any calculations to be performed under this Agreement are denoted in a currency other than U.S. Dollars, then such amounts will be converted to their U.S. Dollar equivalent using Vertex's then-current standard procedures and methodology, including its then-current standard exchange rate methodology for the translation of foreign currency expenses into U.S. Dollars or, in the case of Sublicensees, such similar methodology, consistently applied.

6.8. **Withholding Tax**. Where any sum due to be paid to CRISPR hereunder is subject to any withholding or similar tax, Vertex will pay such withholding or similar tax to the appropriate Governmental Authority and deduct the amount paid from the amount then due CRISPR, in a timely manner and promptly transmit to CRISPR an official tax certificate or other evidence of such withholding sufficient to enable CRISPR to claim such payment of taxes. The Parties agree to cooperate with one another and use reasonable efforts to reduce or eliminate tax withholding or similar obligations in respect of royalties, milestone payments, and other payments made by Vertex to CRISPR under this Agreement. CRISPR will provide Vertex any tax forms that may be reasonably necessary in order for Vertex not to withhold tax or to withhold tax at a reduced rate under an applicable bilateral income tax treaty. Each Party will provide the other with reasonable assistance to enable the recovery, as permitted by Applicable Laws, of withholding taxes, value added taxes, or similar obligations resulting from payments made under this Agreement, such recovery to be for the benefit of the Party bearing such withholding tax or value added tax.

6.9. **Records**. During the Agreement Term, Vertex will keep and maintain accurate and complete records regarding Net Sales during the [***] preceding Calendar Years and CRISPR will keep and maintain accurate and complete records regarding the Research Cost covering the [***] preceding Calendar Years. Upon [***] days prior written notice from the other Party (the "**Auditing Party**"), the Party required to maintain such records (as applicable, the "**Audited Party**") will permit an independent certified public accounting firm of internationally recognized standing, selected by the Auditing Party and reasonably acceptable to the Audited Party, to examine the relevant books and records of the Audited Party and its Affiliates, as may be reasonably necessary to verify the royalty reports submitted by Vertex in accordance with Section 6.4.5, or Research Cost reported by CRISPR in accordance with Section 6.3, as applicable. An examination by the Auditing Party under this Section 6.9 will occur not more than [***] in any Calendar Year and will be limited to the pertinent books and records for any Calendar Year ending not more than [***] months before the date of the request. The accounting firm will be provided access to such books and records at the Audited Party's facility or facilities where such books and records are normally kept and such examination will be conducted during the Audited Party's normal business hours. The Audited Party may require the accounting firm to sign a customary non-disclosure agreement before providing the accounting firm access to its facilities or records. Upon completion of the audit, the accounting firm will provide both the Auditing Party and the Audited Party a written report disclosing whether the reports submitted by Vertex, or the Research Cost reported by CRISPR, as applicable, are correct or incorrect and the specific details concerning any discrepancies. No other information will be provided to the Auditing Party. If the report or information submitted by the Audited Party results in an underpayment or overpayment, the Party owing underpaid or overpaid amount will promptly pay such amount to the other Party, and, if, as a result of such inaccurate report or information, such amount is more than [***] of the amount that was owed the Audited Party will reimburse the Auditing Party for the reasonable expense incurred by the Auditing Party in connection with the audit.

6.10. **Late Payment**. Any payments or portions thereof due hereunder that are not paid when due will accrue interest from the date due until paid at an annual rate equal to [***] (or the maximum allowed by Applicable Law, if less).

ARTICLE 7.
INTELLECTUAL PROPERTY

7.1. **Ownership; Assignment**. For the avoidance of doubt, the rights and obligations of the Parties under this ARTICLE 7 are subject to and limited by any applicable Third Party Obligations to the extent the provisions of such obligations or agreements are specifically disclosed to Vertex in writing (or via electronic data room) (a) with respect to Third Party Obligations existing as of the Execution Date, prior to the Execution Date, and (b) with respect to Third Party Obligations arising after the Execution Date, on or prior to the date on which such Third Party Obligations arise.

7.1.1. **CRISPR Technology and Vertex Technology**. As between the Parties, CRISPR will own and retain all of its rights, title and interest in and to the CRISPR Background Know-How, CRISPR Background Patents and CRISPR Platform Technology Patents and Vertex will own and retain all of its rights, title and interest in and to any Vertex Background Know-How and Vertex Background Patents, subject to any assignments, rights or licenses expressly granted by one Party to the other Party under this Agreement.

7.1.2. **Agreement Technology**.

(a) **CRISPR Program Technology**. As between the Parties, CRISPR will be the sole owner of any Know-How discovered, developed, invented or created solely by CRISPR or its Affiliates or Third Parties acting on their behalf in connection with activities under this Agreement, including CRISPR's Research activities under the DM1 Guide Research Plan ("**CRISPR Program Know-How**") and any Patents that cover or claim such Know-How ("**CRISPR Program Patents**" and together with the CRISPR Program Know-How, the "**CRISPR Program Technology**"), but excluding, for the avoidance of doubt, any [***] Patents, and will retain all of its rights, title and interest thereto, subject to any assignment, rights or licenses expressly granted by CRISPR to Vertex under this Agreement. CRISPR will promptly disclose to Vertex in writing, and will cause its Affiliates to so disclose, the discovery, development, invention or creation of any CRISPR Program Technology under this Agreement. CRISPR will not take any action to cause it not to Control all Know-How discovered, developed, invented or created by CRISPR or its Affiliates or Third Parties acting on their behalf in connection with Research activities under the DM1 Guide Research Plan.

(b) **Vertex Program Technology**. As between the Parties, Vertex will be the sole owner of any Know-How discovered, developed, invented or created solely by Vertex or its Affiliates or Third Parties acting on their behalf in connection with activities under this Agreement ("**Vertex Program Know-How**") and any Patents that cover or claim Vertex Program Know-How ("**Vertex Program Patents**" and together with the Vertex Program Know-How, the "**Vertex Program Technology**"), and will retain all of its rights, title and interest thereto, subject to any rights or licenses expressly granted by Vertex to CRISPR under this Agreement. Any [***] Patents and Know-How assigned to Vertex under Section 7.2 will be considered Vertex Program Patents and Vertex Program Know-How, respectively.

(c) **[***] Joint Program Technology**. Any Know-How discovered, developed, invented or created jointly under this Agreement by both (i) Vertex, its Affiliates or Third Parties acting on Vertex's behalf and (ii) CRISPR, its Affiliates or Third Parties acting on CRISPR's behalf, while conducting activities under this Agreement, to the extent [***] ("**[***] Joint Program Know-How**"), and any Patents that [***] ("**[***] Joint Program Patents**," and together with the [***] Joint Program Know-How, the "**[***] Joint Program Technology**"), will be owned solely by [***]. [***] will, and hereby does, assign to [***] or one or more of its designated Affiliates, [***] ownership interest in all [***] Joint Program Patents. Within [***] days after [***] written request, [***] will take all actions and provide [***] with all reasonably requested assistance to effect such assignment and will execute any and all documents necessary to perfect such assignment.

(d) **[***] Joint Program Technology**. Any Know-How discovered, developed, invented or created jointly under this Agreement by both (i) Vertex, its Affiliates or Third Parties acting on Vertex's behalf and (ii) CRISPR, its Affiliates or Third Parties acting on CRISPR's behalf, while conducting activities under this Agreement, to the extent [***] ("**[***] Joint Program Know-How**"), and any Patents that [***] ("**[***] Joint Program Patents**," and together with the [***] Joint Program Know-How, the "**[***] Joint Program Technology**"), will be owned solely by [***]. [***] will, and hereby does, assign to [***] or one or more of its designated Affiliates, [***] ownership interest in all [***]Joint Program Patents. Within [***] days after [***] written request, [***] will take all actions and provide [***] with all reasonably requested assistance to effect such assignment and will execute any and all documents necessary to perfect such assignment. Any Patents assigned to [***] under this Section 7.1.2(d) will be included in [***]. In addition, [***] hereby grants to [***] a perpetual, irrevocable, non-exclusive, royalty-free, fully paid-up, worldwide, sublicensable (through multiple tiers), license to all [***] Joint Program Technology for any use.

(e) **Other Joint Program Technology**. Any Know-How discovered, developed, invented or created jointly under this Agreement by both (i) Vertex, its Affiliates or Third Parties acting on Vertex's behalf and (ii) CRISPR, its Affiliates or Third Parties acting on CRISPR's behalf, while conducting activities under this Agreement, that is not [***] Joint Program Know-How or [***] Joint Program Know-How (the "**Other Joint Program Know-How**"), and any Patents that solely claim or cover such Other Joint Program Know-How (the "**Other Joint Program Patents**," and together with the Other Joint Program Know-How, the "**Other Joint Program Technology**"), will [***] including all rights, title and interest thereto, subject to any assignment, rights or licenses expressly granted by one Party to the other Party under this Agreement. Except as expressly provided in this Agreement, neither Party will have any obligation [***] with respect to, or to [***], Other Joint Program Technology by reason of [***] thereof, and each Party [***] the laws of any jurisdiction [***]. If such [***], each Party [***]. Notwithstanding the foregoing, if either Party [***] such Other Joint Program Technology, it shall [***] the other Party, such [***].

(f) **Disclosure of Joint Program Technology**. Each Party will promptly disclose to the other Party in writing, and will cause its Affiliates to so disclose, the discovery, development, invention or creation of any Joint Program Technology under this Agreement.

7.2. **Assignment of [***] Patents to [***]**. Within [***] days following the Effective Date, [***] will, and hereby does, assign to [***] or one or more of its designated Affiliates [***] ownership interest in any Patents that are [***] and that [***] (each such Patent, a "**[***] Patent**"), as of the Effective Date and as set forth on Schedule G. During the Agreement Term, [***] will, and hereby does, assign to [***] or one or more of its designated Affiliates [***] ownership interest in any Know-How [***], and for the avoidance of doubt, [***] will not have the right to file any Patents on any such Know-How prior to or following such assignment to [***]. [***] will have no further right to control any aspect of the Prosecution and Maintenance of any [***] Patents that have been assigned to [***] pursuant to this Section 7.2. [***] will take all actions and provide [***] with all reasonably requested assistance to effect such assignment and will execute any and all documents necessary to perfect such assignment. Any Patents and Know-How assigned to [***] under this Section 7.2 will be considered [***]. With respect to any Know-How Controlled by [***] that pertains [***], if [***] Prosecutes and Maintains any Patents that [***], [***] will use reasonable efforts to Prosecute and Maintain such Patents so as to create [***] Patents that are separate from Patents that [***], or that [***], and [***] will, and hereby does, assign to [***] or one or more of its designated Affiliates such [***] Patents.

7.3. **Prosecution and Maintenance of Patents**. The Parties hereby agree as follows with respect to the Prosecution and Maintenance of certain Patents, subject, in each case, to Third Party Obligations:

7.3.1. **CRISPR Platform Technology Patents**. Anything herein to the contrary notwithstanding, and subject to Section 7.3.5, CRISPR will control and be responsible for all aspects of the Prosecution and Maintenance of the CRISPR Platform Technology Patents.

7.3.2. **CRISPR Patents**. CRISPR will control and be responsible for all aspects of the Prosecution and Maintenance of CRISPR Background Patents, CRISPR Program Patents and [***] Joint Program Patents. CRISPR will use Commercially Reasonable Efforts to Prosecute and Maintain all CRISPR Background Patents, CRISPR Program Patents and [***] Joint Program Patents.

7.3.3. **Vertex Patents**. Vertex will control and be responsible for all aspects of the Prosecution and Maintenance of all Vertex Background Patents, Vertex Program Patents and [***] Joint Program Patents.

7.3.4. **Other Joint Program Patents**. The Parties will discuss and agree upon an allocation of responsibility for the Prosecution and Maintenance of the Other Joint Program Patents.

7.3.5. **Other Matters Pertaining to Prosecution and Maintenance of Patents**.

(a) CRISPR will keep Vertex informed through its Patent Coordinator as to material developments with respect to the Prosecution and Maintenance of the CRISPR Platform Technology Patents, CRISPR Background Patents, CRISPR Program Patents and any applicable Joint Program Patents. Without limiting the foregoing, solely with respect to CRISPR Program Patents and any applicable Joint Program Patents, CRISPR will (i) provide Vertex with copies of any office actions or office action responses or other correspondence that CRISPR provides to or receives from any patent office, including notice of all interferences, reissues, re-examinations, or oppositions, and all patent-related filings, and (ii) provide Vertex the timely opportunity to have reasonable input into the strategic aspects of such Prosecution and Maintenance activities.

(b) If, during the Agreement Term, CRISPR intends to abandon a CRISPR Program Patent, or any applicable Joint Program Patent Covering a Product that CRISPR is responsible for Prosecuting and Maintaining in a particular country, then CRISPR will notify Vertex of such intention at least [***] days before such Patent will become abandoned, and Vertex will have the right, but not the obligation, to assume responsibility for the Prosecution and Maintenance thereof at its own expense with counsel of its own choice.

7.4. **Patent Coordinators**. Each Party will appoint a patent coordinator reasonably acceptable to the other Party (each, a "**Patent Coordinator**") to serve as such Party's primary liaison with the other Party on matters relating to the Prosecution and Maintenance and enforcement of Licensed Patents and Joint Program Patents. The Patent Coordinators (or their designees) will meet in person or by means of telephone or video conference at least once each Calendar Quarter during the Agreement Term. Each Party may replace its Patent Coordinator at any time by providing notice in writing to the other Party. The initial Patent Coordinators will be:

For Vertex: [***]

For CRISPR: [***]

7.5. **Patent Costs**. Patent Costs arising after the Effective Date will be borne by Party responsible for the Prosecution and Maintenance of the applicable Patent under this Agreement, except as otherwise set forth in the Co-Commercialization Agreement.

7.6. **Defense of Claims Brought by Third Parties**. If a Third Party initiates a Proceeding against either Party claiming a Patent owned by or licensed to such Third Party is infringed by the Research, Development, Manufacture or Commercialization of a Product, each Party that is named as a defendant in such Proceeding will have the right to defend itself in such Proceeding. The other Party will reasonably assist the defending Party in defending such Proceeding and cooperate in any such litigation at the request and expense of the defending Party. The defending Party will provide the other Party with prompt written notice of the commencement of any such Proceeding and will keep the other Party apprised of the progress of such Proceeding and will promptly furnish the other Party with a copy of each communication relating to the alleged infringement that is received by such Party. If both Parties are named as defendants in any Proceeding, both Parties may defend such Proceeding and the Parties will reasonably cooperate with respect to such defense.

7.7. **Enforcement of Patents Against Competitive Infringement**.

7.7.1. **Duty to Notify of Competitive Infringement**. If either Party learns of an infringement, unauthorized use, misappropriation or threatened infringement by a Third Party with respect to any Licensed Patents by reason of the making, using, offering to sell, selling or importing of (a) a product containing a [***] or (b) the resulting [***] made by such [***] in the Field (a "**Competitive Infringement**") or any other infringement, unauthorized use, misappropriation or threatened infringement by a Third Party with respect to any CRISPR Platform Technology Patent, such Party will promptly notify the other Party in writing and will provide such other Party with available information regarding such Competitive Infringement or other infringement.

7.7.2. **Infringement Proceeding**. Vertex will have the first right, but not the obligation, to institute, prosecute, and control a Proceeding with respect to any Competitive Infringement by counsel of its own choice at its own expense, and CRISPR will have the right, at its own expense, to be represented in that action by counsel of its own choice; *provided* that in such Proceeding, Vertex shall reasonably consider CRISPR's comments with respect to which Patents to seek to enforce against such infringing party, taking into consideration the overall value of the Patents Covering the relevant Product to CRISPR and its licensees. If Vertex fails to initiate a Proceeding within a period of [***] after written notice of such Competitive Infringement is first provided by a Party under Section 7.7.1, CRISPR will have the right to initiate and control a Proceeding with respect to such Competitive Infringement by counsel of its own choice, and Vertex will have the right to be represented in any such action by counsel of its own choice at its own expense; *provided* that if Vertex notifies CRISPR during such [***] period that it is electing in good faith not to institute any Proceeding against such Competitive Infringement for strategic reasons intended to maintain the commercial value of the relevant Patent and any Product Covered thereby, CRISPR will not have the right to initiate and control any Proceeding with respect to such Competitive Infringement. Notwithstanding anything to the contrary contained herein, CRISPR will at all times have the sole right to institute, prosecute, and control any Proceeding under this Section 7.7.2 to the extent involving any CRISPR Platform Technology Patents but will (a) keep Vertex reasonably apprised of the progress of such Proceeding, (b) reasonably consider Vertex's comments with respect to the conduct of such Proceeding and (c) not enter a settlement, consent judgment or other voluntary final disposition of a Proceeding that disclaims, limits the scope of, admits the invalidity or unenforceability of, or grants a license, covenant not to sue or similar immunity that has an adverse effect on Vertex's rights hereunder with respect to a CRISPR Platform Technology Patent without Vertex's prior written consent, not to be unreasonably withheld, conditioned or delayed.

7.7.3. **Joinder**.

(a) If a Party initiates a Proceeding in accordance with this Section 7.7 or Section 7.8 the other Party agrees to be joined as a party plaintiff where necessary and to give the first Party reasonable assistance and authority to file and prosecute the Proceeding. Subject to Section 7.7.4, the costs and expenses of each Party incurred pursuant to this 7.7.3 will be borne by the Party initiating such Proceeding. CRISPR agrees to use Commercially Reasonable Efforts to cause Third Parties to be joined as a party plaintiff where necessary.

(b) If one Party initiates a Proceeding in accordance with this Section 7.7, the other Party may join such Proceeding as a party plaintiff where necessary for such other Party to seek lost profits with respect to such infringement.

7.7.4. **Share of Recoveries**. Any damages or other monetary awards recovered with respect to a Proceeding brought pursuant to this Section 7.7 with respect to Competitive Infringement will be shared as follows:

(a) the amount of such recovery will first [***]; then

(b) except to the extent otherwise set forth in a Co-Commercialization Agreement entered into pursuant to this Agreement, any remaining proceeds constituting direct or actual damages will be paid to, or retained by, [***]; and

(c) except to the extent otherwise set forth in a Co-Commercialization Agreement entered into pursuant to this Agreement, any remaining proceeds constituting punitive or treble damages will be allocated between the Parties as follows: [***].

7.7.5. **Settlement**. Notwithstanding anything to the contrary under this ARTICLE 7, neither Party may enter a settlement, consent judgment or other voluntary final disposition of a suit under this ARTICLE 7 that disclaims, limits the scope of, admits the invalidity or unenforceability of, or grants a license, covenant not to sue or similar immunity under a Patent Controlled by the other Party or its Affiliates without first obtaining the written consent of the Party that Controls the relevant Patent; *provided* that the foregoing limitation shall not apply to CRISPR's rights with respect to the CRISPR Platform Technology Patents (subject to the restriction set forth in Section 7.7.2).

7.8. **Other Infringement**.

7.8.1. **Joint Program Patents**. With respect to the infringement of a Joint Program Patent that is not a Competitive Infringement, the Parties will cooperate in good faith to bring suit together against such infringing party or the Parties may decide to permit one Party to solely bring suit. Any damages or other monetary awards recovered with respect to a Proceeding brought pursuant to this Section 7.8.1 will be shared as follows: (a) the amount of such recovery [***]; then (b) any remaining proceeds will be allocated as follows: (i) [***]; and (ii) [***].

7.8.2. **Patents Solely Owned by CRISPR**. CRISPR will retain all rights to pursue an infringement of any Patent solely owned by CRISPR that is not a Competitive Infringement and CRISPR will retain all recoveries with respect thereto.

7.8.3. **Patents Solely Owned by Vertex**. Vertex will retain all rights to pursue an infringement of any Patent solely owned by Vertex and Vertex will retain all recoveries with respect thereto.

7.9. **Patent Listing**. Vertex will have the sole right, but not the obligation, to submit to all applicable Regulatory Authorities patent information pertaining to each applicable Product pursuant to 21 U.S.C. § 355(b)(1)(G) (or any amendment or successor statute thereto), any similar statutory or regulatory requirement enacted in the future regarding biologic products,

or any similar statutory or regulatory requirement in any non-U.S. country or other regulatory jurisdiction; *provided* that Vertex shall not be permitted to provide any such information with respect to CRISPR Platform Technology Patents without CRISPR's prior written consent.

7.10. **CREATE Act**. Notwithstanding anything to the contrary in this ARTICLE 7, neither Party will have the right to make an election under the CREATE Act when exercising its rights under this ARTICLE 7 without the prior written consent of the other Party, which will not be unreasonably withheld, conditioned or delayed. With respect to any such permitted election, the Parties will use reasonable efforts to cooperate and coordinate their activities with respect to any submissions, filings or other activities in support thereof. The Parties acknowledge and agree that this Agreement is a "joint research agreement" as defined in the CREATE Act.

7.11. **Additional Right and Exceptions**. Notwithstanding any provision of this ARTICLE 7, CRISPR retains the sole right to Prosecute and Maintain CRISPR Platform Technology Patents and to control any enforcement of CRISPR Platform Technology Patents, subject to the restrictions set forth in Section 7.7.

7.12. **Patent Term Extension**. The Parties will cooperate with each other in obtaining patent term restoration in any country in the Territory under any statute or regulation equivalent or similar to 35 U.S.C. § 156, where applicable to a Product. Vertex will determine which patents from among the Vertex Background Patents, Vertex Program Patents and Joint Program Patents will be extended (including, without limitation, by filing supplementary protection certificates and any other extensions that are now or in the future become available). CRISPR will abide by Vertex's determination and cooperate, as reasonably requested by Vertex, in connection with the foregoing (including by providing appropriate information and executing appropriate documents).

7.13. **Recording**. If Vertex deems it necessary or desirable to register or record this Agreement or evidence of this Agreement with any patent office or other appropriate Governmental Authority in one or more jurisdictions in the Territory, CRISPR will reasonably cooperate to execute and deliver to Vertex any documents accurately reflecting or evidencing this Agreement that are necessary or desirable, in Vertex's reasonable judgment, to complete such registration or recordation. Vertex will reimburse CRISPR for all reasonable Out-of-Pocket Costs, including attorneys' fees, incurred by CRISPR in complying with the provisions of this Section 7.13.

ARTICLE 8.
REPRESENTATIONS AND WARRANTIES

8.1. **Representations and Warranties of Vertex**. Vertex hereby represents and warrants to CRISPR, as of the Effective Date and the Execution Date, that:

8.1.1. Vertex is duly organized, validly existing and in good standing under the laws of the jurisdiction of its incorporation or organization and has full corporate power and authority to enter into this Agreement and to carry out the provisions hereof;

8.1.2. Vertex (a) has the requisite power and authority and the legal right to enter into this Agreement and to perform its obligations hereunder and (b) has taken all requisite action on its part to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder;

8.1.3. Vertex has the requisite resources and expertise to perform its obligations hereunder;

8.1.4. this Agreement has been duly executed and delivered on behalf of each of Vertex, and constitutes a legal, valid and binding obligation, enforceable against each of Vertex in accordance with the terms hereof;

8.1.5. the execution, delivery and performance of this Agreement by Vertex will not constitute a default under or conflict with any agreement, instrument or understanding, oral or written, to which Vertex is a party or by which Vertex is bound, or violate any law or regulation of any court, governmental body or administrative or other agency having jurisdiction over Vertex; and

8.1.6. Vertex has obtained all necessary consents, approvals and authorizations of all Governmental Authorities and other Persons or entities required to be obtained by it in connection with the execution and delivery of this Agreement.

8.2. **Representations and Warranties of CRISPR**. CRISPR hereby represents and warrants to Vertex, as of the Execution Date and the Effective Date, that, except as otherwise set forth on Schedule H, which schedule may be supplemented or updated within five days following the HSR Clearance Date (*provided* that any such supplement or update may only contain information arising after the Execution Date):

8.2.1. CRISPR is duly organized, validly existing and in good standing under the laws of the jurisdiction of its incorporation or organization and has full corporate power and authority to enter into this Agreement and to carry out the provisions hereof;

8.2.2. CRISPR (a) has the requisite power and authority and the legal right to enter into this Agreement and to perform its obligations hereunder and (b) has taken all requisite action on its part to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder;

8.2.3. to CRISPR's Knowledge, CRISPR has the requisite resources and expertise to perform its obligations hereunder;

8.2.4. this Agreement has been duly executed and delivered on behalf of CRISPR, and constitutes a legal, valid and binding obligation, enforceable against it in accordance with the terms hereof;

8.2.5. the execution, delivery and performance of this Agreement by CRISPR will not constitute a default under or conflict with any agreement, instrument or understanding, oral or written, to which it is a party or by which it is bound, or violate any law or regulation of any court, governmental body or administrative or other agency having jurisdiction over it;

8.2.6. except with respect to any required HSR approvals, CRISPR has obtained all necessary consents, approvals and authorizations of all Governmental Authorities and other Persons or entities required to be obtained by CRISPR in connection with the execution and delivery of this Agreement;

8.2.7. the Licensed Technology constitutes all of the Patents and Know-How Controlled by CRISPR that are necessary to Research, Develop, Manufacture or Commercialize Products in the Field;

8.2.8. CRISPR is the sole and exclusive owner or exclusive licensee of the [***], all of which are free and clear of any liens, charges and encumbrances, and, as of the Execution Date and the Effective Date, neither any license granted by CRISPR to any Third Party, nor any license granted by any Third Party to CRISPR conflicts with the license grants to Vertex hereunder and CRISPR is entitled to grant all rights and licenses (or sublicenses, as the case may be) under such Patents it purports to grant to Vertex under this Agreement;

8.2.9. Schedule H sets forth a true, correct and complete list of all CRISPR Platform Technology Patents and CRISPR Background Patents as of the Execution Date and the Effective Date and indicates (a) whether each such Patent is [***] or a [***] and (b) whether such Patent is owned by CRISPR or licensed by CRISPR from a Third Party and if so, identifies the licensor or sublicensor from which the Patent is licensed;

8.2.10. CRISPR has independently developed all Licensed Technology or otherwise has a valid right to use, and to permit Vertex, Vertex's Affiliates and Vertex's Sublicensees to use, the Licensed Technology for all permitted purposes under this Agreement;

8.2.11. the CRISPR Background Know-How is free and clear of liens, charges or encumbrances other than licenses granted to Third Parties that are not inconsistent with the rights and licenses granted to Vertex hereunder;

8.2.12. [***];

8.2.13. the field of the licenses granted under [***] of the Specified Agreement No. 2 includes the Field and the Specified Agreement No. 2 does not impose any material restrictions on Vertex's exercise of its rights granted hereunder;

8.2.14. it has complied with all Applicable Laws, including any disclosure requirements of the United States Patent and Trademark Office or any analogous foreign Governmental Authority, in connection with the Prosecution and Maintenance of the CRISPR Platform Technology Patents and CRISPR Background Patents and has timely paid all filing and renewal fees payable with respect to any such Patents for which it controls Prosecution and Maintenance;

8.2.15. it has obtained assignments from the inventors of all inventorship rights relating to the [***] and [***] that it owns, and all such assignments of inventorship rights relating to such Patents are valid and enforceable;

8.2.16. except for the Existing CRISPR Agreements, there is no agreement between CRISPR (or any of its Affiliates) and any Third Party pursuant to which CRISPR has acquired Control of any of the Licensed Technology, and no Third Party has any right, title or interest in or to, or any license under, any of the Licensed Technology. All Existing CRISPR Agreements are in full force and effect and have not been modified or amended (except for amendments provided to Vertex prior to the Execution Date).

CRISPR has no Knowledge that the Third Party licensor in an Existing CRISPR Agreement is in default with respect to a material obligation under such Existing CRISPR Agreement, and neither such party has claimed or has grounds upon which to claim that the other party is in default with respect to a material obligation under, any Existing CRISPR Agreement;

8.2.17. CRISPR and its Affiliates have taken commercially reasonable measures consistent with industry practices to protect the secrecy, confidentiality and value of all CRISPR Background Know-How that constitutes trade secrets under Applicable Law (including requiring all employees, consultants and independent contractors to execute binding and enforceable agreements requiring all such employees, consultants and independent contractors to maintain the confidentiality of such CRISPR Background Know-How) and, [***] such CRISPR Background Know-How has not been used, disclosed to or discovered by any Third Party except pursuant to such confidentiality agreements and there has not been a breach by any party to such confidentiality agreements;

8.2.18. no Licensed Technology is subject to any funding agreement with any government or governmental agency;

8.2.19. [***];

8.2.20. there are no judgments or settlements against or owed by [***], pending or threatened claims or litigation, in either case relating to the Licensed Technology;

8.2.21. there is no action, claim, demand, suit, proceeding, arbitration, grievance, citation, summons, subpoena, inquiry or investigation of any nature, civil, criminal, regulatory or otherwise, in law or in equity, pending or, [***] threatened against CRISPR, any of its Affiliates or any Third Party, in each case, in connection with the Licensed Technology or relating to the transactions contemplated by this Agreement; and

8.2.22. CRISPR has not employed (and, [***] has not used a contractor or consultant that has employed) any Person debarred by the FDA (or subject to a similar sanction of EMA or foreign equivalent), or any Person that is the subject of an FDA debarment investigation or proceeding (or similar proceeding of EMA or foreign equivalent), in any capacity in connection with this Agreement.

8.3. **CRISPR Covenants**. CRISPR hereby covenants to Vertex that, except as expressly permitted under this Agreement:

8.3.1. CRISPR will maintain, and will not [***] breach, any CRISPR In-License Agreements that provide a grant of rights from such Third Party to CRISPR that are Controlled by CRISPR and are licensed or may become subject to a license from CRISPR to Vertex for a Product under this Agreement;

8.3.2. CRISPR will promptly notify Vertex of any material breach by CRISPR or any Affiliate thereof or a Third Party of any CRISPR In-License Agreements that provides a grant of rights from such Third Party to CRISPR or any such Affiliate and are licensed or may become subject to a license from CRISPR to Vertex for a Product under this Agreement, and in the event of a breach by [***], will [***] as soon as possible, but in no event later than the date on which [***];

8.3.3. it will not amend, modify or terminate any CRISPR In-License Agreement in a manner that would have a material adverse effect on Vertex's rights hereunder without first obtaining Vertex's written consent, which consent may be withheld in Vertex's sole discretion;

8.3.4. it will not enter into any new agreement or other obligation with any Third Party, or amend an existing agreement with a Third Party, in each case that materially and adversely restricts, limits or encumbers the rights granted to Vertex under this Agreement;

8.3.5. it will promptly exercise its Option (as defined in the Specified Agreement No. 1) to each Relevant Capsid (as defined in the Specified Agreement No. 1) pursuant to and in accordance with [***] of the Specified Agreement No. 1;

8.3.6. it will not, and will cause its Affiliates not to (a) license, sell, assign or otherwise transfer to any Person any Licensed Technology (or agree to do any of the foregoing) or (b) incur or permit to exist, with respect to any Licensed Technology, any lien, encumbrance, charge, security interest, mortgage, liability or other restriction (including in connection with any indebtedness), except, in each case ((a) and (b)), as will not materially and adversely restrict, limit or encumber the rights granted to Vertex under this Agreement;

8.3.7. it will use Commercially Reasonable Efforts to obtain and maintain the requisite resources and expertise to perform its obligations hereunder;

8.3.8. all employees and Subcontractors of CRISPR performing Research or Development activities hereunder on behalf of CRISPR will be obligated to assign to CRISPR all right, title and interest in and to any inventions developed by them, whether or not patentable, or, solely with respect to Subcontractors, grant exclusive license rights to CRISPR with a right to grant sublicenses through multiple tiers;

8.3.9. it will not engage, in any capacity in connection with this Agreement any Person who either has been debarred by the FDA, is the subject of a conviction described in Section 306 of the FD&C Act or is subject to any such similar sanction; and

8.3.10. CRISPR will inform Vertex in writing promptly if it or any Person engaged by CRISPR or any of its Affiliates who is performing services under this Agreement or any ancillary agreements is debarred or is the subject of a conviction described in Section 306 of the FD&C Act, or if any action, suit, claim, investigation or legal or administrative proceeding is pending or, to CRISPR's Knowledge, is threatened, relating to the debarment or conviction of CRISPR, any of its Affiliates or any such Person performing services hereunder or thereunder.

8.4. **Vertex Covenants**. Vertex hereby covenants to CRISPR that, except as expressly permitted under this Agreement:

8.4.1. it will use Commercially Reasonable Efforts to obtain and maintain the requisite resources and expertise to perform its obligations hereunder;

8.4.2. Vertex will not engage, in any capacity in connection with this Agreement, any Person who either has been debarred by the FDA, is the subject of a conviction described in Section 306 of the FD&C Act or is subject to any such similar sanction; and

8.4.3. Vertex will inform CRISPR in writing promptly if it or any Person engaged by Vertex or any of its Affiliates who is performing services under this Agreement or any ancillary agreements is debarred or is the subject of a conviction described in Section 306 of the FD&C Act, or if any action, suit, claim, investigation or legal or administrative proceeding is pending or, [***] is threatened, relating to the debarment or conviction of CRISPR, any of its Affiliates or any such Person performing services hereunder or thereunder.

8.5. **Disclaimer**. Except as otherwise expressly set forth in this Agreement, neither Party nor its Affiliates makes any representation or extends any warranty of any kind, either express or implied, including any warranty of merchantability or fitness for a particular purpose. Vertex and CRISPR understand that each Product is the subject of ongoing Research and Development and that neither Party can assure the safety, usefulness or commercial or technical viability of any Product.

ARTICLE 9.
INDEMNIFICATION; INSURANCE

9.1. **Indemnification by Vertex**. Vertex will indemnify, defend and hold harmless CRISPR, each of its Affiliates, and each of its and its Affiliates' employees, officers, directors and agents (each, an "**CRISPR Indemnified Party**") from and against any and all liability, loss, damage, expense (including reasonable attorneys' fees and expenses) and cost (collectively, a "**Liability**") that the CRISPR Indemnified Party may be required to pay to one or more Third Parties to the extent resulting from or arising out of:

9.1.1. any claims of any nature arising out of the Research, Development, Manufacture, Commercialization or use of any Product by, on behalf of, or under the authority of, Vertex (other than by any CRISPR Indemnified Party), other than (a) claims by Third Parties relating to misappropriation of trade secrets or other intellectual property rights arising out of the exercise of rights under the Licensed Know-How, or (b) claims for which CRISPR is required to indemnify Vertex pursuant to Section 9.2; or

9.1.2. the material breach by Vertex of any of its representations, warranties or covenants set forth in this Agreement, except to the extent caused by the negligence or intentional acts of CRISPR or any CRISPR Indemnified Party.

9.2. **Indemnification by CRISPR**. CRISPR will indemnify, defend and hold harmless Vertex, its Affiliates, Sublicensees, Distributors and each of its and their respective employees, officers, directors and agents (each, a "**Vertex Indemnified Party**") from and against any and all Liabilities that the Vertex Indemnified Party may be required to pay to one or more Third Parties to the extent resulting from or arising out of:

9.2.1. the material breach by CRISPR of any of its representations, warranties or covenants set forth in this Agreement, except to the extent caused by the negligence or intentional acts of Vertex or any Vertex Indemnified Party; or

9.2.2. any claims of any nature arising out of the Research activities performed by CRISPR (a) with respect to any Product prior to the Effective Date, or (b) under the DM1 Guide Research Plan, in each case ((a) and (b)), other than claims for which Vertex is required to indemnify CRISPR pursuant to Section 9.1.

9.3. **Procedure**. Each Party will notify the other Party in writing if it becomes aware of a claim for which indemnification may be sought hereunder. In case any proceeding (including any governmental investigation) will be instituted involving any Party in respect of which indemnity may be sought pursuant to this ARTICLE 9, such Party (the "**Indemnified Party**") will give prompt written notice of the indemnity claim to the other Party (the "**Indemnifying Party**") and provide a copy to the Indemnifying Party of any complaint, summons or other written or verbal notice that the Indemnified Party receives in connection with any such claim. An Indemnified Party's failure to deliver written notice will relieve the Indemnifying Party of liability to the Indemnified Party under this ARTICLE 9 only to the extent such delay is prejudicial to the Indemnifying Party's ability to defend such claim. *Provided* that the Indemnifying Party is not contesting the indemnity obligation, the Indemnified Party will permit the Indemnifying Party to control any litigation relating to such claim and the disposition of such claim by negotiated settlement or otherwise and any failure to contest prior to assuming control will be deemed to be an admission of the obligation to indemnify. The Indemnifying Party will act reasonably and in good faith with respect to all matters relating to such claim and will not settle or otherwise resolve such claim without the Indemnified Party's prior written consent which will not be withheld, delayed or conditioned unreasonably other than settlements only involving the payment of monetary awards for which the Indemnifying Party will be fully-responsible. The Indemnified Party will cooperate with the Indemnifying Party in such Party's defense of any claim for which indemnity is sought under this Agreement, at the Indemnifying Party's sole cost and expense.

9.4. **Insurance**. Each Party will maintain, at its cost, reasonable insurance against liability and other risks associated with its activities contemplated by this Agreement and will furnish to the other Party evidence of such insurance upon request. Notwithstanding the foregoing, Vertex may self-insure to the extent that it self-insures for its other activities.

9.5. **Limitation of Consequential Damages**. Except for (a) claims of a Third Party that are subject to indemnification under this ARTICLE 9, (b) claims arising out of a Party's willful misconduct, (c) CRISPR's breach of Section 4.4.1, or (d) a Party's breach of ARTICLE 11, neither Party nor any of its Affiliates will be liable to the other Party or its Affiliates for any incidental, consequential, special, punitive or other indirect damages or lost or imputed profits or royalties, lost data or cost of procurement of substitute goods or services, whether liability is asserted in contract, tort (including negligence and strict product liability), indemnity or contribution, and irrespective of whether that Party or any representative of that Party has been advised of, or otherwise might have anticipated the possibility of, any such loss or damage.

ARTICLE 10.
TERM; TERMINATION

10.1. **Agreement Term; Expiration**. Except with respect to Section 4.7, which shall become effective on the Execution Date, this Agreement is effective as of the Effective Date and, unless earlier terminated pursuant to the other provisions of this ARTICLE 10, will continue in full force and effect until this Agreement expires as follows:

10.1.1. on a country-by-country and CRISPR Product-by-CRISPR Product or Alternative Product-by-Alternative Product basis, on the date of expiration of all payment obligations under this Agreement and the Co-Commercialization Agreement, if applicable, with respect to such CRISPR Product or Alternative Product in such country; and

10.1.2. in its entirety upon the expiration of all payment obligations under this Agreement and the Co-Commercialization Agreement, if applicable, with respect to all CRISPR Products and Alternative Products in all countries pursuant to Section 10.1.1.

10.2. **Termination of the Agreement**.

10.2.1. **Termination for Failure to Obtain HSR Clearance**. If the Effective Date has not occurred within [***] after the Execution Date, this Agreement may be terminated by either Party on written notice to the other Party. In such event, neither Party shall have any further obligations under this Agreement, except for such Party's obligations of non-disclosure pursuant to ARTICLE 11, which shall survive for the period set forth therein.

10.2.2. **Vertex's Termination for Convenience**. Vertex will be entitled to terminate this Agreement as a whole, or terminate this Agreement in part with respect to a Program, for convenience by providing CRISPR [***] days' written notice of such termination; *provided, however*, that if any termination under this Section 10.2.2 applies to a Product for which Vertex has received Marketing Approval, Vertex will provide CRISPR no less than [***] days' notice of such termination. If Vertex terminates this Agreement in part with respect to a Program pursuant to this Section 10.2.2, then, from and after the effective date of such termination and notwithstanding anything to the contrary set forth in this Agreement, the Field shall cease to include the diagnosis, treatment or prevention of (x) DMD, in the case of termination with respect to the DMD Program or (y) DM1 in the case of termination of the DM1 Program.

10.2.3. **Termination for Material Breach**.

(a) **Vertex's Right to Terminate**. If CRISPR is in material breach of this Agreement, then Vertex may deliver notice of such material breach to CRISPR. If the breach is curable, CRISPR will have [***] days from the receipt of such notice to cure such breach. If either CRISPR fails to cure such breach within such [***]-day period or the breach is not subject to cure (a "**CRISPR Breach Event**"), Vertex in its sole discretion may either (i) terminate this Agreement (A) if such breach relates solely relates to a Program, with respect to the Program affected by such breach (a "**CRISPR Program Breach**") or (B) if such breach relates to both the DMD Program and the DM1 Program or this Agreement as a whole (a "**CRISPR Agreement Breach**"), in its entirety, by providing written notice to CRISPR or (ii) elect to exercise the alternate remedy provisions set forth in Section 10.3 (in lieu of termination).

(b) **CRISPR's Right to Terminate**.

(i) If Vertex is in material breach of this Agreement, then CRISPR may deliver notice of such material breach to Vertex. If the breach is curable, Vertex will have [***] days from the receipt of such notice to cure such breach (except to the extent such breach involves the failure to make a payment when due, which breach must be cured within [***] Business Days following receipt of such notice). If either Vertex fails to cure such breach within the [***]-day or [***]-Business Day period, as applicable, or the breach is not subject to cure, CRISPR in its sole discretion may terminate this Agreement (i) if such breach

relates solely to the DMD Program or the DM1 Program, with respect to the Program affected by such breach, or (ii) if such breach relates to both the DMD Program and the DM1 Program or this Agreement as a whole, in its entirety, by providing written notice to Vertex.

(ii) If Vertex (A) commences or actively and voluntarily participates in any action or proceeding (including any patent opposition or re-examination proceeding), or otherwise asserts any claim, challenging or denying the validity or enforceability of any claim of any Patent that is licensed to Vertex under this Agreement or (B) actively and voluntarily assists any other Person in bringing or prosecuting any action or proceeding (including any patent opposition or re-examination proceeding) challenging or denying the validity or enforceability of any claim of any Patent that is licensed to Vertex under this Agreement (each of (A) and (B), a "**Patent Challenge**"), then, to the extent permitted by Applicable Law, CRISPR shall have the right, in its sole discretion, to give notice to Vertex that CRISPR may terminate the license(s) granted under such Patent to Vertex [***] days following such notice, and, unless Vertex withdraws or causes to be withdrawn all such challenge(s) (or in the case of *ex-parte* proceedings, multi-party proceedings, or other Patent Challenges that Vertex does not have the power to unilaterally withdraw or cause to be withdrawn), Vertex ceases assisting any other party to such Patent Challenge and, to the extent Vertex is a party to such Patent Challenge, it withdraws from such Patent Challenge within such [***]-day period, CRISPR shall have the right to terminate this Agreement by providing written notice thereof to Vertex. The foregoing right to terminate shall not apply with respect to any Patent Challenge where the Patent Challenge is made in defense of an assertion of the relevant Patent that is first brought by CRISPR against Vertex. For the avoidance of doubt, any participation by Vertex or its employees in any claim, challenge or proceeding in response to a subpoena or as required under a pre-existing agreement between Vertex's employee(s) or consultant(s) and their prior employer(s) shall not constitute active and voluntary participation or assistance and shall not give rise to CRISPR's right to terminate any license hereunder.

10.2.4. **Disputes Regarding Material Breach**. Notwithstanding the foregoing, if the Breaching Party in Section 10.2.3 disputes in good faith the existence, materiality, or failure to cure of any such breach that is not a payment breach, and provides notice to the Non-Breaching Party of such dispute within the relevant cure period, the Non-Breaching Party will not have the right to terminate this Agreement in accordance with Section 10.2.3, or the right to exercise the alternative remedy provisions of 10.3, as applicable, unless and until the relevant dispute has been resolved. Any dispute not resolved through the Parties' good faith discussions shall be referred to the Executive Officers for resolution. If the Executive Officers are unable to resolve any such dispute within [***] days after the date such reference is made to the Executive Officers, either Party may pursue any rights or remedies of such Party under this Agreement at law or in equity. It is understood and acknowledged that during the pendency of such dispute, all the terms and conditions of this Agreement will remain in effect and the Parties will continue to perform all of their respective obligations hereunder.

10.2.5. **Termination for Insolvency**. If CRISPR makes an assignment for the benefit of creditors, appoints or suffers appointment of a receiver or trustee over all or substantially all of its property, files a petition under any bankruptcy or insolvency act or has any such petition filed against it that is not discharged within [***] days of the filing thereof (each, an "**Insolvency Event**"), then Vertex may terminate this Agreement in its entirety effective immediately upon written notice to CRISPR. If Vertex terminates this Agreement pursuant to this Section 10.2.5:

(a) All rights and licenses now or hereafter granted by CRISPR to Vertex under or pursuant to this Agreement, including, for the avoidance of doubt, any Exclusive Licenses are, for all purposes of Section 365(n) of the U.S. Bankruptcy Code, licenses of rights to "intellectual property" as defined in the U.S. Bankruptcy Code. Upon the occurrence of any Insolvency Event with respect to CRISPR, CRISPR agrees that Vertex, as licensee of such rights under this Agreement, will retain and may fully exercise all of its rights and elections under the U.S. Bankruptcy Code. CRISPR will, during the term of this Agreement, create and maintain current copies or, if not amenable to copying, detailed descriptions or other appropriate embodiments, to the extent feasible, of all intellectual property licensed under this Agreement. Each Party acknowledges and agrees that "embodiments" of intellectual property within the meaning of Section 365(n) include laboratory notebooks, cell lines, product samples and inventory, research studies and data, all Regulatory Approvals (and all applications for Regulatory Approval) and rights of reference therein, the Licensed Technology and all information related to the Licensed Technology. If (x) a case under the U.S. Bankruptcy Code is commenced by or against CRISPR, (y) this Agreement is rejected as provided in the U.S. Bankruptcy Code, and (z) Vertex elects to retain its rights hereunder as provided in Section 365(n) of the U.S. Bankruptcy Code, CRISPR (in any capacity, including debtor-in-possession) and its successors and assigns (including a trustee) will:

(i) provide to Vertex all such intellectual property (including all embodiments thereof) held by CRISPR and such successors and assigns, or otherwise available to them, immediately upon Vertex's written request. Whenever CRISPR or any of its successors or assigns provides to Vertex any of the intellectual property licensed hereunder (or any embodiment thereof) pursuant to this Section 10.2.5(a)(i), Vertex will have the right to perform CRISPR's obligations hereunder with respect to such intellectual property, but neither such provision nor such performance by Vertex will release CRISPR from liability resulting from rejection of the license or the failure to perform such obligations; and

(ii) not interfere with Vertex's rights under this Agreement, or any agreement supplemental hereto, to such intellectual property (including such embodiments), including any right to obtain such intellectual property (or such embodiments) from another entity, to the extent provided in Section 365(n) of the U.S. Bankruptcy Code.

(b) All rights, powers and remedies of Vertex provided herein are in addition to and not in substitution for any and all other rights, powers and remedies now or hereafter existing at law or in equity (including the U.S. Bankruptcy Code) in the event of the commencement of a case under the U.S. Bankruptcy Code with respect to CRISPR. The Parties agree that they intend the following rights to extend to the maximum extent permitted by Applicable Law, and to be enforceable under U.S. Bankruptcy Code Section 365(n):

(i) the right of access to any intellectual property rights (including all embodiments thereof) of CRISPR, or any Third Party with whom CRISPR contracts to perform an obligation of CRISPR under this Agreement, and, in the case of any such Third Party, which is necessary for the Manufacture, use, sale, import or export of Products; and

(ii) the right to contract directly with any Third Party to complete the contracted work.

10.3. **Alternative Remedies to Termination**.

10.3.1. **Alternative Remedy**. If a CRISPR Breach Event occurs, Vertex may elect the alternative remedy provisions of this Section 10.3.1 with respect to the Program that is the subject of such CRISPR Breach Event by providing written notice of such election to CRISPR, in which case, this Agreement will continue in full force and effect with respect to such Program, except that the milestone payments under Section 6.2 or 6.6.1, as applicable, and the royalty payments under Section 6.4 or 6.6.2, as applicable will be reduced by [***]% (after giving effect to all other applicable deductions under such Section 6.4 or 6.6, as applicable). If Vertex exercises its rights under this Section 10.3.1, such exercise shall be Vertex's sole remedy in connection with such CRISPR Breach Event; Vertex shall have no other rights hereunder or at law or in equity with respect to the relevant CRISPR Breach Event; and CRISPR shall have no obligation to cure such CRISPR Breach Event.

10.3.2. **[***]**. If (a) CRISPR commits a breach or series of breaches of this Agreement, (b) Vertex incurs at least $[***] in aggregate losses, damages and expenses as a result of such breach or breaches, (c) Vertex does not terminate this Agreement due to such breach or breaches, and (d) Vertex has not exercised its rights under Section 10.3.1 with respect to such breach or breaches, then, in addition to any other remedies Vertex may have under this Agreement, at law or in equity or otherwise, [***]. [***] Vertex will provide CRISPR with a written certificate, signed by Vertex's Chief Financial Officer, certifying [***]. Notwithstanding the foregoing, if CRISPR notifies Vertex in writing that it disputes Vertex's assertion that CRISPR is in breach of this Agreement [***], then (a) Vertex will initiate the dispute resolution process set forth in Section 10.3.3, and (b) pending the Parties' agreement regarding the appropriate [***] or a determination by the mediator [***] in accordance with Section 10.3.3(b), Vertex will [***]. If the Parties cannot settle their dispute by mutual agreement, then, in accordance with Section 10.3.3(b), the mediator will determine (1) [***], (2) whether any portion of the escrow account should be released to CRISPR and (3) [***] as a result of CRISPR's breach of this Agreement, in which case Vertex will promptly pay CRISPR the amount of such excess plus interest accruing on such amount.

10.3.3. **[***]**.

(a) **Escalation**. If Vertex has exercised its [***] rights under Section 10.3.2, and there is a dispute regarding whether CRISPR is in breach of this Agreement [***], either Party may make a written request that [***] be referred for resolution to Executive Officers of each Party (or their designees). Within [***] days after such request, the Executive Officers of each Party (or their designees) will meet in person at a mutually acceptable time and location or by means of telephone or video conference to negotiate a settlement of a [***]. Each Party may elect to have such Party's JAC representatives participate in such meeting, if desired, *provided* that it provides the other Party with reasonable advance notice of such intent so as to enable the other Party to have its JAC representatives also participate in such meeting, if desired. In the event that the Executive Officers of each Party (or their designees) fail to resolve the [***] within such [***] period the [***] will be referred to mediation under Section 10.3.3(b).

(b) **Mediation**. If a [***] cannot be resolved pursuant to Section 10.3.3(a), the Parties agree to try in good faith to resolve any such [***] by non-binding mediation administered by JAMS End Dispute in accordance with its commercial mediation rules. The mediation will be conducted by a single mediator appointed by agreement of the Parties who will have previous financial experience in the pharmaceutical industry, or failing such agreement by JAMS End Dispute in accordance with its commercial mediation rules. Unless otherwise mutually agreed upon by the Parties, the mediation proceedings will be conducted in Boston, Massachusetts. The Parties agree that [***] the cost of the mediation, including filing and hearing fees, and the cost of the mediator(s). Each Party will bear its own attorneys' fees and associated costs and expenses. If the Parties are unable to resolve a [***] pursuant to such mediation, then at the completion of such mediation the mediator will decide the following issues, which decision will be binding on the Parties pending final resolution of the [***] by a court of competent jurisdiction:

(i) Whether the [***] by Vertex pursuant to Section 10.3.2 exceeds the mediator's objective good faith estimate of [***]; and

(ii) What amount (if any) may Vertex [***], which [***].

(c) **Mediator Resolution**.

(i) If the mediator determines that [***] by Vertex pursuant to Section 10.3.2 [***], the Parties will promptly cause [***] as provided for in Section 6.10. [***].

(ii) If the mediator determines [***], Vertex may [***].

(iii) The decisions rendered by mediator with respect to [***] will be binding on the Parties pending resolution of the [***] by the agreement of the Parties or by a court of competent jurisdiction in accordance with this Agreement.

10.4. **Consequences of Expiration or Termination of the Agreement**. If this Agreement expires or is terminated by a Party in accordance with this ARTICLE 10, at any time and for any reason, the following terms will apply to any Product in any country or Program that is the subject of such expiration or termination (or, if this Agreement expires or is terminated in its entirety, to all Products in all countries and all Programs):

10.4.1. Solely in the event of a termination of this Agreement, the Parties will return (or destroy, as directed by the other Party) all data, files, records and other materials containing or comprising the other Party's Confidential Information, except to the extent such Confidential Information (i) is subject to a license or similar grant of rights that survives such termination, (ii) is necessary or useful to conduct activities for surviving Products or a surviving Program, or (iii) is Confidential Information under an Other CRISPR-Vertex Agreement and such Other CRISPR-Vertex Agreement has not been terminated at the time of termination of this Agreement. Notwithstanding the foregoing, the Parties will be permitted to retain one copy of such data, files, records, and other materials for archival and legal compliance purposes.

10.4.2. Termination or expiration of this Agreement for any reason will be without prejudice to any rights or financial compensation that will have accrued to the benefit of a Party prior to such termination or expiration. Such termination or expiration will not relieve a Party from obligations that are expressly indicated to survive the termination or expiration of this Agreement.

10.4.3. The following provisions of this Agreement will survive any expiration or termination of this Agreement: ARTICLE 1 (Definitions), Section 4.1.1 (License Grant to Vertex) (to the extent set forth in Section 6.4.2), Section 4.1.4 (Licenses to Improvements), Section 4.3 (No Implied Licenses), Section 6.7 (Payment Method; Currency) through Section 6.10 (Late Payment) (in each case, solely to the extent of accrued obligations as contemplated by Section 10.4.2 and any payment obligations arising in respect of Alternative Products after the effective date of termination pursuant to the final sentence of this Section 10.4.3), Section 7.1 (Ownership; Assignment), Section 7.6 (Defense of Claims Brought by Third Parties) through Section 7.8 (Other Infringement) (in each case, with respect to proceedings to the extent relating to events occurring prior to the effective date of termination), Section 7.10 (CREATE Act), ARTICLE 9 (Indemnification; Insurance), this Section 10.4, Section 11.1 (Confidentiality) through Section 11.4 (Residual Knowledge Exception), and ARTICLE 12 (Miscellaneous). Except with respect to any termination by Vertex under Section 10.2.3(a), in the event of a termination of this Agreement, Vertex's payment obligations set forth in Section 6.6.1 and Section 6.6.2 shall survive such termination of this Agreement.

10.4.4. Except as set forth in Section 10.4.6, in the event of a termination of this Agreement, either with respect to a Product or Program or in its entirety, the applicable licenses granted by CRISPR to Vertex under this Agreement will terminate and Vertex and its Affiliates will cease all Research, Development, Manufacture and Commercialization activities with respect to the applicable terminated Products or Program, except for any Alternative Product that is not Covered by and does not embody the Licensed Technology.

10.4.5. Effective upon (a) a termination of this Agreement with respect to a Program, Vertex will, and hereby does, assign to CRISPR, or one or more of its designated Affiliates, Vertex's ownership interest in any (i) [***] Patents and (ii) Know-How assigned to Vertex under Section 7.2, in each case ((i) and (ii)), pertaining solely to Products under the terminated Program, and (b) a termination of this Agreement in its entirety, Vertex will, and hereby does, assign to CRISPR, or one or more of its designated Affiliates, Vertex's ownership interest in all [***] Patents and all Know-How assigned to Vertex under Section 7.2.

10.4.6. Any permitted Sublicense of Vertex will, at the Sublicensee's option, survive such termination; *provided* that the Sublicensee is not in material breach of any of its obligations under such Sublicense. In order to effect this provision, at the request of the Sublicensee, CRISPR will enter into a direct license with the Sublicensee on substantially the same terms as this Agreement (taking into account the scope of the licensee granted under such Sublicense); *provided* that CRISPR will not be required to undertake obligations in addition to those required by this Agreement, and that CRISPR's rights under such direct license will be consistent with its rights under this Agreement, taking into account the scope of the license granted under such direct license.

ARTICLE 11.
CONFIDENTIALITY

11.1. **Confidentiality**. Except to the extent expressly authorized by this Agreement or otherwise agreed in writing, the Parties agree that, during the Agreement Term and for [***] years thereafter, each Party (the "**Receiving Party**") receiving any Confidential Information of the other Party (the "**Disclosing Party**") hereunder will: (a) keep the Disclosing Party's Confidential Information confidential; (b) not publish, or allow to be published, and will not otherwise disclose, or permit the disclosure of, the Disclosing Party's Confidential Information in any manner not expressly authorized pursuant to the terms of this Agreement or, to the extent Confidential Information under this Agreement is also Confidential Information under an Other CRISPR-Vertex Agreement, such Other CRISPR-Vertex Agreement; and (c) not use, or permit to be used, the Disclosing Party's Confidential Information for any purpose other than as expressly authorized pursuant to the terms of this Agreement or, to the extent Confidential Information under this Agreement is also Confidential Information under an Other CRISPR-Vertex Agreement, the terms of such Other CRISPR-Vertex Agreement. Without limiting the generality of the foregoing, to the extent that a Party or any of its Affiliates provides to the other Party or any of its Affiliates any Confidential Information owned by any Third Party, the receiving Party will, and will cause its Affiliates to, handle such Confidential Information in accordance with the terms and conditions of this ARTICLE 11 applicable to a Receiving Party.

11.2. **Authorized Disclosure**. Notwithstanding the foregoing provisions of Section 11.1, each Party may disclose Confidential Information belonging to the other Party to the extent such disclosure is reasonably necessary to:

11.2.1. file or prosecute patent applications as contemplated by this Agreement or, to the extent Confidential Information under this Agreement is also Confidential Information under an Other CRISPR-Vertex Agreement, such Other CRISPR-Vertex Agreement;

11.2.2. prosecute or defend litigation;

11.2.3. exercise its rights and perform its obligations hereunder or, to the extent Confidential Information under this Agreement is also Confidential Information under an Other CRISPR-Vertex Agreement, under such Other CRISPR-Vertex Agreement; or

11.2.4. comply with Applicable Law.

If a Party deems it reasonably necessary to disclose Confidential Information belonging to the other Party pursuant to this Section 11.2, the Disclosing Party will to the extent possible give reasonable advance written notice of such disclosure to the other Party and take reasonable measures to ensure confidential treatment of such information. In addition to the foregoing and except as otherwise prohibited or limited by clause (b) of the following sentence, [***] may disclose [***] Confidential Information to Third Parties as reasonably required to facilitate the actual or potential Research, Development, Manufacture or Commercialization of Products; *provided* that such disclosure is covered by terms of confidentiality and non-use similar to those set forth herein.

Notwithstanding anything to the contrary contained herein, (a) in no event may [***] disclose [***] Confidential Information to any Third Party (including any of [***] investors, collaborators or licensees) engaged in [***], and (b) in no event may [***] disclose [***] Confidential Information, other than the terms and conditions of this Agreement, to any Third Party (including any of [***] investors, collaborators or licensees) that [***] as its primary business.

11.3. **SEC Filings and Other Disclosures**. Either Party may disclose the terms of this Agreement (i) to the extent required to comply with Applicable Law, including the rules and regulations promulgated by the United States Securities and Exchange Commission or any equivalent governmental agency in any country in the Territory; *provided* that such Party will reasonably consider the comments of the other Party regarding confidential treatment sought for such disclosure and (ii) to its advisors (including financial advisors, attorneys and accountants), actual or potential acquisition partners, strategic partners, collaborators or services providers, actual or potential financing sources or investors and actual or potential underwriters on a need to know basis; *provided* that such disclosure is covered by terms of confidentiality similar to those set forth herein (which may include professional ethical obligations).

11.4. **Residual Knowledge Exception**. Notwithstanding any provision of this Agreement to the contrary, Confidential Information will not include Residual Knowledge. Any use made by the Receiving Party of Residual Knowledge is on an "as is, where is" basis, with all faults and all representations and warranties disclaimed and at its sole risk.

11.5. **Public Announcements; Publications**.

11.5.1. **Coordination**. CRISPR and Vertex will, from time to time and at the request of the other Party, discuss the general information content relating to this Agreement that may be publicly disclosed; *provided*, *however*, that [***] will have no obligation to consult with [***] with respect to any scientific publication or public announcement concerning [***] Research, Development, Manufacture, Commercialization or use of any Product, except as otherwise expressly set forth in Section this ARTICLE 11.

11.5.2. **Announcements**. The Parties will jointly issue a press release, in a form mutually agreed by the Parties in good faith, regarding the signing of this Agreement on a date to be determined by the Parties within [***] Business Days following the Effective Date. Except as set forth in the preceding sentence and as may be expressly permitted under Section 11.3 or this Section 11.5.2, or as required to comply with Applicable Law (including the rules and regulations promulgated by the United States Securities and Exchange Commission or any equivalent governmental agency in any country in the Territory), neither Party will make any public announcement regarding this Agreement without the prior written approval of the other Party. For the sake of clarity, nothing in this Agreement will prevent (i) [***] from making any scientific publication or public announcement concerning [***] Research, Development, Manufacture or Commercialization activities with respect to any Product under this Agreement; *provided*, *however*, that, except as permitted under Section 11.2, [***] will not disclose any of [***] Confidential Information in any such publication or announcement without obtaining [***] prior written consent to do so; and (ii) [***] from making any (A) scientific publication concerning [***] activities arising from, relating to or otherwise in connection [***]; and (B) public announcement or statement (including an Internet posting) regarding the identity of the Products, the nature of the collaboration of the Parties contemplated by this Agreement and the nature of each Party's activities under this Agreement and the transactions contemplated hereby, in each case of this clause (B), to the extent previously publicly disclosed by [***] or as otherwise permitted under Section 11.3 or Section 11.5.4; *provided*, *however*, that (x) except as permitted under Section 11.2, [***] will not disclose any of [***] Confidential Information in any such publication, announcement, statement or Internet posting and (y) except as permitted under Section 11.2 or Section 11.5.4, [***] will not disclose any information related to the Research, Development, Manufacture or Commercialization of Products in any such publication, announcement, statement or Internet posting, in each case ((x) and (y)), without obtaining [***] prior written consent to do so.

11.5.3. **Publications**. During the Agreement Term, each Party will submit to the other Party (the "**Non-Disclosing Party**") for review and approval any proposed academic, scientific and medical publication or public presentation related to any activities conducted hereunder; *provided* that, except as otherwise permitted in this Article 11, CRISPR shall not have the right to make any publications with respect to Products. In each such instance, such review and approval will be conducted for the purposes of preserving the value of the Licensed Technology and the Vertex Technology, the rights granted to the Parties hereunder and determining whether any portion of the proposed publication or presentation containing the Non-Disclosing Party's Confidential Information should be modified or deleted. Written copies of such proposed publication or presentation required to be submitted hereunder will be submitted to the Non-Disclosing Party no later than [***] days before submission for publication or presentation (or five Business Days in advance in the case of an abstract). The Non-Disclosing Party will provide its comments with respect to such publications and presentations within [***] Business Days of its receipt of such written copy (or [***] Business Days in the case of an abstract). The review period may be extended for an additional [***] days if the Non-Disclosing Party reasonably requests such extension including for the preparation and filing of patent applications. Notwithstanding anything to the contrary, the Non-Disclosing Party may require that the other Party

redact the Non-Disclosing Party's Confidential Information from any such proposed publication or presentation; provided, that neither Party shall be required to redact any information permitted to be disclosed pursuant to Section 11.3. CRISPR and Vertex will each comply with standard academic practice regarding authorship of scientific publications and recognition of contribution of other parties in any publication. Notwithstanding the foregoing, (i) Vertex's obligation to submit any publication to CRISPR for review and approval under this Section 11.5.3 will not apply to any publication that does not contain CRISPR's Confidential Information or disclose any non-public information included in the Licensed Technology; *provided*, that where reasonably possible, Vertex will provide CRISPR with an advance copy of such publication if such publication is reasonably likely to have a material adverse effect on the value of the Licensed Technology, and (ii) CRISPR's obligation to submit any publication to Vertex for review and approval under this Section 11.5.3 will not apply to any publication that does not contain any of Vertex's Confidential Information, any information (other than that information described in Section 11.3, Section 11.5.2 or Section 11.5.4) related to the Research, Development, Manufacture or Commercialization of Products or any non-public information included in the Vertex Technology; *provided*, that where reasonably possible, CRISPR will provide Vertex with an advance copy of such publication if such publication is [***].

11.5.4. **Product Disclosures**. The Parties will, from time to time, discuss in good faith and endeavor to agree upon high-level talking points with respect to the status and progress of the Products for public disclosure. Notwithstanding anything to the contrary in this Section 11.5, following any such agreement, nothing herein shall prohibit CRISPR from including such high-level talking points in any public announcement, presentation, publication or other public disclosure.

ARTICLE 12.
MISCELLANEOUS

12.1. **Assignment**. Neither this Agreement nor any interest hereunder will be assignable by either Party without the prior written consent of the other Party, except as follows: (a) Vertex, and subject to Section 12.2, CRISPR, may, subject to the terms of this Agreement, assign its rights and obligations under this Agreement by way of sale of itself or the sale of the portion of such Party's business to which this Agreement relates, through merger, sale of assets or sale of stock or ownership interest; *provided* that such sale is not primarily for the benefit of its creditors; and (b) either Party may assign, in whole or in part, its rights and/or obligations under this Agreement to any of its Affiliates; *provided* that such Party will remain liable for all of its rights and obligations under this Agreement. An assigning Party will promptly notify the other Party of any assignment or transfer under the provisions of this Section 12.1. This Agreement will be binding upon the successors and permitted assigns of the Parties and the name of a Party appearing herein will be deemed to include the names of such Party's successors and permitted assigns to the extent necessary to carry out the intent of this Agreement. Any assignment not in accordance with this Section 12.1 will be void.

12.2. **Change of Control of CRISPR**.

12.2.1. **Notification**. CRISPR will notify Vertex in writing promptly (and in any event within [***] Business Days) following the execution of a definitive agreement by CRISPR that could reasonably be expected to result in a Change of Control of CRISPR.

12.2.2. **Effects of Change of Control of CRISPR**. If, during the Agreement Term, CRISPR undergoes a Change of Control to a Competitor, then upon the effective date of such Change of Control [***].

12.3. **Force Majeure**. Each Party will be excused from the performance of its obligations under this Agreement to the extent that such performance is prevented by Force Majeure and the nonperforming Party promptly provides notice of the prevention to the other Party. Such excuse will be continued so long as the condition constituting Force Majeure continues and the nonperforming Party uses Commercially Reasonable Efforts to remove the condition.

12.4. **Representation by Legal Counsel**. Each Party hereto represents that it has been represented by legal counsel in connection with this Agreement and acknowledges that it has participated in the drafting hereof. In interpreting and applying the terms and provisions of this Agreement, the Parties agree that no presumption will exist or be implied against the Party that drafted such terms and provisions.

12.5. **Notices**. All notices which are required or permitted hereunder will be in writing and sufficient if delivered personally, sent by nationally-recognized overnight courier or sent by electronic mail, confirmation of receipt requested, addressed as follows:

If to Vertex:

Vertex Pharmaceuticals Incorporated
Attn: Business Development
50 Northern Avenue
Boston, Massachusetts 02110
E-mail: [***]

with a copy to:

Vertex Pharmaceuticals Incorporated
Attn: Corporate Legal
50 Northern Avenue
Boston, Massachusetts 02110
E-mail: [***]

and:

Ropes & Gray LLP
Attn: [***]
Prudential Tower
800 Boylston Street
Boston, Massachusetts 02199-3600
E-mail: [***]

If to CRISPR:

CRISPR Therapeutics AG
Attn: Chief Executive Officer
Baarerstrasse 14

6300 Zug

Switzerland

E-mail: [***]

with a copy to:

CRISPR Therapeutics AG
Attn: General Counsel
Baarerstrasse 14
6300 Zug
Switzerland
E-mail: [***]

and:

Goodwin Procter LLP
Attn: [***]
100 Northern Avenue
Boston, Massachusetts 02210
E-mail: [***]

or to such other address as the Party to whom notice is to be given may have furnished to the other Party in writing in accordance herewith. In addition, each Party will deliver a courtesy copy to the other Party's Alliance Manager concurrently with such notice. Any such notice will be deemed to have been given: (a) when delivered if personally delivered on a Business Day (or, if delivered or sent on a non-Business Day, then on the next Business Day); (b) on receipt if sent by overnight courier; or (c) when confirmation of receipt is sent, if sent by electronic mail.

12.6. **Amendment**. No amendment, modification or supplement of any provision of this Agreement will be valid or effective unless made in writing and signed by a duly authorized officer of each of Vertex and CRISPR.

12.7. **Waiver**. No provision of this Agreement will be waived by any act, omission or knowledge of a Party or its agents or employees except by an instrument in writing expressly waiving such provision and signed by a duly authorized officer of the waiving Party. The waiver by either of Vertex or CRISPR of any breach of any provision hereof by the other Party will not be construed to be a waiver of any succeeding breach of such provision or a waiver of the provision itself.

12.8. **Severability**. If any clause or portion thereof in this Agreement is for any reason held to be invalid, illegal or unenforceable, the same will not affect any other portion of this Agreement, as it is the intent of the Parties that this Agreement will be construed in such fashion as to maintain its existence, validity and enforceability to the greatest extent possible. In any such event, this Agreement will be construed as if such clause of portion thereof had never been contained in this Agreement, and there will be deemed substituted therefor such provision as will most nearly carry out the intent of the Parties as expressed in this Agreement to the fullest extent permitted by Applicable Law.

12.9. **Descriptive Headings**. The descriptive headings of this Agreement are for convenience only and will be of no force or effect in construing or interpreting any of the provisions of this Agreement.

12.10. **Export Control**. This Agreement is made subject to any restrictions concerning the export of products or technical information from the United States of America or other countries that may be imposed upon or related to CRISPR or Vertex from time to time. Each Party agrees that it will not export, directly or indirectly, any technical information acquired from the other Party under this Agreement or any products using such technical information to a location or in a manner that at the time of export requires an export license or other governmental approval, without first obtaining the written consent to do so from the appropriate Governmental Authority.

12.11. **Governing Law**. This Agreement, and all claims arising under or in connection therewith, will be governed by and interpreted in accordance with the substantive laws of The Commonwealth of Massachusetts, without regard to conflict of law principles thereof.

12.12. **Entire Agreement**. This Agreement, together with the Other CRISPR-Vertex Agreements, constitutes and contains the complete, final and exclusive understanding and agreement of the Parties and cancels and supersedes any and all prior negotiations, correspondence, understandings and agreements, whether oral or written, between the Parties respecting the subject matter hereof and thereof, including those certain Letter Agreements between Vertex and CRISPR dated March 7, 2019 and April 30, 2019, which are hereby superseded and replaced in their entirety as of the Execution Date, and any Confidential Information disclosed by the Parties under such agreements will be treated in accordance with the provisions of ARTICLE 11.

12.13. **Independent Contractors**. Both Parties are independent contractors under this Agreement. Nothing herein contained will be deemed to create an employment, agency, joint venture or partnership relationship between the Parties hereto or any of their agents or employees, or any other legal arrangement that would impose liability upon one Party for the act or failure to act of the other Party. Neither Party will have any express or implied power to enter into any contracts or commitments or to incur any liabilities in the name of, or on behalf of, the other Party, or to bind the other Party in any respect whatsoever.

12.14. **Interpretation**. Except where the context expressly requires otherwise, (a) the use of any gender herein will be deemed to encompass references to either or both genders, and the use of the singular will be deemed to include the plural (and vice versa), (b) the words “include,” “includes” and “including” will be deemed to be followed by the phrase “without limitation,” (c) the word “will” will be construed to have the same meaning and effect as the word “shall,” (d) any definition of or reference to any agreement, instrument or other document herein will be construed as referring to such agreement, instrument or other document as from time to

time amended, supplemented or otherwise modified (subject to any restrictions on such amendments, supplements or modifications set forth herein), (e) any reference herein to any Person will be construed to include the Person's successors and assigns, (f) the words "herein," "hereof" and "hereunder," and words of similar import, will be construed to refer to this Agreement in its entirety and not to any particular provision hereof, (g) all references herein to Sections, Schedules or Exhibits will be construed to refer to Sections, Schedules or Exhibits of this Agreement, and references to this Agreement include all Schedules and Exhibits hereto, (h) the word "notice" will mean notice in writing (whether or not specifically stated) and will include notices, consents, approvals and other written communications contemplated under this Agreement, (i) provisions that require that a Party, the Parties or any committee hereunder "agree," "consent" or "approve" or the like will require that such agreement, consent or approval be specific and in writing, whether by written agreement, letter, approved minutes or otherwise (but excluding e-mail and instant messaging), (j) references to any specific law, rule or regulation, or article, section or other division thereof, will be deemed to include the then-current amendments thereto or any replacement or successor law, rule or regulation thereof, and (k) the term "or" will be interpreted in the inclusive sense commonly associated with the term "and/or."

12.15. **No Third Party Rights or Obligations**. No provision of this Agreement will be deemed or construed in any way to result in the creation of any rights or obligations in any Person not a Party to this Agreement.

12.16. **Further Actions**. Each Party agrees to execute, acknowledge and deliver such further instruments, and to do all such other acts, as may be necessary or appropriate in order to carry out the purposes and intent of this Agreement.

12.17. **Counterparts**. This Agreement may be executed in two counterparts, each of which will be an original and both of which will constitute together the same document. Counterparts may be signed and delivered by facsimile or digital transmission (.pdf), each of which will be binding when received by the applicable Party.

[SIGNATURE PAGE FOLLOWS]

* - * - * - *

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their representatives thereunto duly authorized as of the Execution Date.

VERTEX PHARMACEUTICALS INCORPORATED

By: /s/ Jeffrey Leiden
Name: Jeffrey Leiden
Title: Chairman, President and Chief Executive Officer

CRISPR THERAPEUTICS AG

By: /s/ Rodger Novak
Name: Rodger Novak
Title: President

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

Schedule A

[***] Arbitration Procedures

[***]

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

Schedule B

CRISPR In-License Agreements

[***]

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

Schedule C

DM1 Guide Milestone Criteria

[***]

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

Schedule D-1

Initial DM1 Guide Research Plan

[***]

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

Schedule D-2

DM1 Guide Research Plan Budget

[***]

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

Schedule E

Subcontractors

[***]

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

Schedule F

CRISPR Background Know-How
(as of the Execution Date)

[***]

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

Schedule G

[***] Patents

[***]

[***] Certain information in this document has been omitted from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

Schedule H

CRISPR Disclosures

[***]

Exhibit 31.1

CERTIFICATIONS

I, Samarth Kulkarni, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of CRISPR Therapeutics AG;

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

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

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

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

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

5. The registrant's other certifying officer(s) 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: July 29, 2019

By: /s/ Samarth Kulkarni
Samarth Kulkarni
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATIONS

I, Michael Tomsicek, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of CRISPR Therapeutics AG;

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

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

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

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

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

5. The registrant's other certifying officer(s) 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: July 29, 2019

By: /s/ Michael Tomsicek
Michael Tomsicek
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of CRISPR Therapeutics AG (the "Company") for the period ended June 30, 2019 as filed with the Securities and Exchange Commission on or about the date hereof (the "Report"), the undersigned officers of the Company hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 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 as of, and for, the periods presented in the Report.

/s/ Samarth Kulkarni
Samarth Kulkarni
Chief Executive Officer
(Principal Executive Officer)

July 29, 2019

/s/ Michael Tomsicek
Michael Tomsicek
Chief Financial Officer
(Principal Financial and Accounting Officer)

July 29, 2019