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 March 31, 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	**Not Applicable**
(State or other jurisdiction of incorporation or organization)	**(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)

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 April 25, 2019, there were 52,909,973 shares of registrant's common shares outstanding.

Index

	Page Number
PART I: FINANCIAL INFORMATION	
Item 1. Condensed Consolidated Financial Statements (unaudited)	
Condensed Consolidated Balance Sheets as of March 31, 2019 and December 31, 2018	2
Condensed Consolidated Statements of Operations and Comprehensive Loss for the Three Months Ended March 31, 2019 and 2018	3
Condensed Consolidated Statements of Shareholders' Equity for the Three Months Ended March 31, 2019 and 2018	4
Condensed Consolidated Statements of Cash Flows for the Three Months Ended March 31, 2019 and 2018	5
Notes to Condensed Consolidated Financial Statements	6
Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations	15
Item 3. Quantitative and Qualitative Disclosures about Market Risk	21
Item 4. Controls and Procedures	21
PART II: OTHER INFORMATION	
Item 1. Legal Proceedings	21
Item 1A. Risk Factors	22
Item 6. Exhibits	22
SIGNATURES	23

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	
	March 31, 2019	**December 31, 2018**
Assets		
Current assets:		
Cash and cash equivalents	$ 437,549	$ 456,649
Accounts receivable, including related party amounts of $331 and $88 as of March 31, 2019 and December 31, 2018, respectively	331	88
Prepaid expenses and other current assets, including related party amounts of $4,775 and $3,417 as of March 31, 2019 and December 31, 2018, respectively	11,916	9,658
Total current assets	449,796	466,395
Property and equipment, net	18,871	18,500
Intangible assets, net	276	289
Restricted cash	3,163	3,163
Operating lease assets	25,098	—
Other non-current assets	669	669
Total assets	$ 497,873	$ 489,016
Liabilities and shareholders' equity		
Current liabilities:		
Accounts payable	$ 7,131	$ 5,069
Accrued expenses, including related party amounts of $2,483 and $1,700 as of March 31, 2019 and December 31, 2018, respectively	15,680	20,852
Accrued tax liabilities	615	402
Deferred rent	—	1,202
Operating lease liabilities	4,899	—
Other current liabilities	73	221
Total current liabilities	28,398	27,746
Deferred revenue non-current, including related party amounts of $57,755 and $57,780 as of March 31, 2019 and December 31, 2018, respectively	57,755	57,780
Deferred rent non-current	—	11,052
Operating lease liabilities, net of current portion	31,728	—
Other non-current liabilities	182	243
Total liabilities	118,063	96,821
Commitments and contingencies, see Note 5		
Shareholders' equity:		
Common shares, CHF 0.03 par value, 53,325,963 and 52,183,139 shares authorized at March 31, 2019 and December 31, 2018, respectively, 52,943,581 and 52,160,798 shares issued at March 31, 2019 and December 31, 2018, respectively, 52,635,645 and 51,852,862 shares outstanding at March 31, 2019 and December 31, 2018, respectively, 20,498,996 shares in conditional capital at March 31, 2019 and December 31, 2018.	1,589	1,584
Treasury shares, at cost, 307,936 shares at March 31, 2019 and December 31, 2018	(57)	(57)
Additional paid-in capital	718,255	682,245
Accumulated deficit	(339,977)	(291,569)
Accumulated other comprehensive loss	—	(8)
Total shareholders' equity	379,810	392,195
Total liabilities and shareholders' equity	$ 497,873	$ 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 March 31,	
	2019	**2018**
Collaboration revenue (1)	$ 328	$ 1,358
Operating expenses:		
Research and development (2)	33,822	19,519
General and administrative	14,929	8,836
Total operating expenses	48,751	28,355
Loss from operations	(48,423)	(26,997)
Other income (expense):		
Loss from equity method investment	(1,025)	(1,091)
Other income (expense), net	1,125	(126)
Total other income (expense), net	100	(1,217)
Net loss before income taxes	(48,323)	(28,214)
Provision for income taxes	(85)	(86)
Net loss	(48,408)	(28,300)
Foreign currency translation adjustment	8	12
Comprehensive loss	$ (48,400)	$ (28,288)
Reconciliation of net loss to net loss attributable to common shareholders:		
Net loss	$ (48,408)	$ (28,300)
Net loss per share attributable to common shareholders—basic and diluted	$ (0.93)	$ (0.62)
Weighted-average common shares outstanding used in net loss per share attributable to common shareholders—basic and diluted	52,093,208	45,877,428
(1) Including the following revenue from a related party, see Notes 6 & 11:	$ 328	$ 1,082
(2) Including the following research and development expense with a related party, see Notes 6 & 11:	$ 7,587	$ 1,106

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				Accumulated	
	Shares	CHF 0.03 Par Value	Shares	Amount, at cost	Additional Paid-in Capital	Accumulated Deficit	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 stock, 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
Balance at December 31, 2018	51,852,862	1,584	307,936	(57)	682,245	(291,569)	(8)	392,195
Issuance of common stock, 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

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)

	Three Months Ended March 31,	
	2019	**2018**
Operating activities:		
Net loss	$ (48,408)	$ (28,300)
Reconciliation of net loss to net cash used in operating activities:		
Depreciation and amortization	812	826
Equity-based compensation	9,671	5,582
Loss from equity method investment	1,025	1,091
Changes in:		
Accounts receivable	(243)	1,366
Prepaid expenses and other assets	(3,051)	(2,426)
Accounts payable and accrued expenses	(3,324)	(439)
Deferred revenue	(25)	(218)
Deferred rent	—	(195)
Other liabilities, net	(194)	25
Net cash used in operating activities	(43,737)	(22,688)
Investing activities:		
Purchase of property and equipment	(1,097)	(555)
Net cash used in investing activities	(1,097)	(555)
Financing activities:		
Proceeds from issuance of common shares, net of issuance costs	23,894	122,597
Proceeds from exercise of options	1,832	2,654
Net cash provided by financing activities	25,726	125,251
Effect of exchange rate changes on cash	8	12
(Decrease) increase in cash	(19,100)	102,020
Cash, cash equivalents and restricted cash, beginning of period	459,812	242,912
Cash, cash equivalents and restricted cash, end of period	$ 440,712	$ 344,932
Supplemental disclosure of non-cash investing and financing activities		
Property and equipment purchases in accounts payable and accrued expenses	$ 579	$ 307
Equity issuance costs in accounts payable and accrued expenses	$ 181	$ —

	As of March 31,	
Reconciliation to amounts within the condensed consolidated balance sheets	**2019**	**2018**
Cash and cash equivalents	$ 437,549	$ 341,767
Restricted cash	3,163	3,165
Cash, cash equivalents and restricted cash at end of period	440,712	344,932

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 interim periods ended March 31, 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.

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 under the circumstances. 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 months ended March 31, 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, 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	
	March 31, 2019	December 31, 2018
Computer equipment	$ 592	$ 443
Furniture, fixtures and other	2,453	2,453
Laboratory equipment	9,571	8,964
Leasehold improvements	13,776	13,776
Construction work in process	825	239
Total property and equipment, gross	27,217	25,875
Accumulated depreciation	(8,346)	(7,375)
Total property and equipment, net	$ 18,871	$ 18,500

Depreciation expense for the three months ended March 31, 2019 and 2018 was $1.0 million and $0.8 million, respectively.

3. Accrued Expenses

Accrued expenses consist of the following (in thousands):

	As of	
	March 31, 2019	December 31, 2018
Payroll and employee-related costs	$ 3,834	$ 7,321
Research costs	8,023	7,973
Licensing fees	105	625
Professional fees	2,446	1,848
Intellectual property costs	1,101	2,193
Accrued property and equipment	103	294
Other	68	598
Total	$ 15,680	$ 20,852

4. Commitments and Contingencies

Litigation

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.

Letters of Credit

As of March 31, 2019, the Company had restricted cash of $3.2 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 March 31, 2019.

Research Agreements

The Company has engaged several research institutions and companies to identify new delivery strategies and applications of the 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 $2.1 million and $1.9 million in 2019 and 2020, respectively. For the three months ended March 31, 2019, the Company paid $1.7 million 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 $4.0 million in upfront payments, which were recorded as prepaid expenses as of March 31, 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 with 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 addition, the Company rents certain offices 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 March 31, 2019 (in thousands):

	As of March 31, 2019
Assets	
Operating lease assets	$ 25,098
Total lease assets	25,098
Liabilities	
Current	
Operating lease liabilities	4,899
Non-current	
Operating lease liabilities, net of current portion	31,728
Total lease liabilities	$ 36,627

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 months ended March 31, 2019 (in thousands):

	Three months ended March 31, 2019
Operating lease costs	$ 1,822
Short-term lease costs	1,138
Variable lease costs	730
Sublease income	(525)
Net lease cost	$ 3,165

The following table summarizes the maturity of undiscounted payments due under lease liabilities and the present value of those liabilities as of March 31, 2019 (in thousands):

	Total
2019	$ 6,367
2020	6,866
2021	7,072
2022	5,874
2023	5,855
Thereafter	18,639
Total	$ 50,673
Present value adjustment	(14,046)
Present value of lease liabilities	$ 36,627

The following table summarizes the lease term and discount rate as of March 31, 2019:

	As of March 31, 2019
Weighted-average remaining lease term (years)	
Operating leases	7.2
Weighted-average discount rate	
Operating leases	9.7%

The following table summarizes the cash paid for amounts included in the measurement of lease liabilities for the three months ended March 31, 2019 (in thousands):

	Three months ended March 31 2019
Cash paid for amounts included in the measurement of lease liabilities	$ 1,818
Operating cash flows from operating leases	$ 1,818

6. Significant Contracts

Collaboration Agreement with and Joint Development Agreement with Vertex Pharmaceuticals, Inc.

Summary of Agreement

On October 26, 2015, the Company entered into a strategic collaboration, option and license agreement ("Collaboration Agreement") with Vertex Pharmaceuticals, Inc. ("Vertex"). The 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 Collaboration Agreement (the "Amendment") and the Joint Development Agreement (the "JDA"). The Amendment, among other things, modified certain definitions and provisions of the 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 Collaboration Agreement. The Amendment also amended other provisions of the Collaboration Agreement, including the expiration terms.

In connection with the Collaboration Agreement, Vertex made a nonrefundable upfront payment of $75.0 million. Under the 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, 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 Collaboration Agreement, Amendment 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 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 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 months ended March 31, 2019 and 2018, respectively. As of March 31, 2019, there was $57.8 million of non-current deferred revenue related to the collaboration with Vertex, which is unchanged from December 31, 2018. The transaction price allocated to the remaining performance obligations is $57.9 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 two-and-a-half-year research term. As of March 31, 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 Collaboration Agreement

The Company evaluated the milestones that may be received in connection with the 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 in any clinical trial in the initial shared product and is currently fully constrained. 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
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 $7.1 million and $4.4 million of research and development expense related to the collaboration with Vertex for the three months ended March 31, 2019 and 2018, respectively. Research and development expense for the three months ended March 31, 2019 and 2018 was net of $4.5 million and $3.1 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 (“Bayer”), to establish a joint venture (“Bayer 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 $14.2 million and $12.5 million for the three months ended March 31, 2019 and 2018, respectively. Unrecognized equity method losses in excess of the Company’s equity investment in Casebia were $51.9 million and $45.3 million as of March 31, 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 months ended March 31, 2019 and 2018, the Company recognized $0.2 million and $1.1 million of revenue, respectively, related to the collaboration with Casebia. During the three months ended March 31, 2019 and 2018, the Company recognized $0.5 million and $1.1 million, respectively, of research and development expense, related to the collaboration with Casebia. During the three months ended March 31, 2019 and 2018, the Company recognized a loss from equity method investment of $1.0 million and $1.1 million, respectively, related to stock-based compensation expense for Casebia employees.

7. Share Capital

The Company had 53,325,963 authorized common shares as of March 31, 2019, with a par value of CHF 0.03 per share. Included in the authorized common shares as of March 31, 2019 are 13,962 shares of unvested restricted stock awards, 307,936 treasury shares which are legally outstanding but not considered outstanding for accounting purposes and 368,420 shares registered and reserved for future issuance. The Company had conditional capital reserved for future issuance of 15,579,296 common shares for employee benefit plans and 4,919,700 common shares for debt instruments as of March 31, 2019. Under Swiss law, authorized share capital consisted of 17,756,799 common shares as of March 31, 2019.

At-the-Market Offering

In August 2018, the Company entered into an At-The-Market ("ATM") sales 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 months ended March 31, 2019, the Company sold 631,580 shares of common stock for net cash proceeds of $23.9 million, after deducting commission fees of $0.7 million. The Company sold an additional 493,017 shares of common stock under this agreement subsequent to March 31, 2019 through April 29, 2019, resulting in net cash proceeds of approximately $18.7 million.

8. Stock-based Compensation

During the three months ended March 31, 2019 and 2018, the Company recognized the following stock-based compensation expense (in thousands):

	Three Months Ended March 31,	
	2019	2018
Research and development	$ 4,962	$ 2,916
General and administrative	4,709	2,666
Loss from equity method investment	1,025	1,091
Total	$ 10,696	$ 6,673

Stock option activity

The following table summarizes stock option activity for the three months ended March 31, 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	1,545,573	$ 35.25		
Exercised	(148,743)	$ 13.35		
Cancelled or forfeited	(53,559)	$ 39.57		
Outstanding at March 31, 2019	8,032,582	$ 27.44	8.5	$ 102,371
Exercisable at March 31, 2019	2,798,109	$ 17.17	7.7	$ 58,010
Vested and expected to vest at March 31, 2019	8,032,582	$ 27.44	8.5	$ 102,371

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

	Three Months Ended March 31,	
	2019	2018
Assumptions		
Weighted-average expected volatility	69.3%	70.5%
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 March 31, 2019, total unrecognized compensation expense related to stock options was $107.6 million which the Company expects to recognize over a remaining weighted-average period of 3.1 years.

Restricted stock activity

The following table summarizes restricted stock activity for the three months ended March 31, 2019:

	Restricted Stock	Weighted-Average Grant Date Fair Value
Unvested balance as of December 31, 2018	327,342	$ 36.72
Granted	40,000	32.06
Vested	(10,046)	4.88
Cancelled or forfeited	(12,000)	38.33
Unvested balance as of March 31, 2019	345,296	$ 37.05

As of March 31, 2019, total unrecognized compensation expense related to unvested restricted common shares was $9.4 million which the Company expects to recognize over a remaining weighted-average vesting period of 1.6 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 equivalent shares 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 stock equivalent shares):

	As of	
	March 31, 2019	March 31, 2018
Outstanding options	8,032,582	6,638,120
Unvested restricted common shares	345,296	147,472
Total	8,377,878	6,785,592

10. Income Taxes

During the three months ended March 31, 2019 and 2018, the Company recorded an income tax provision of $0.1 million and $0.1 million, respectively, representing an effective tax rate of -0.2% 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 owners 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, Inc.*" and "*Joint Venture with Bayer Healthcare LLC*" for discussion of transactions with Casebia and Vertex, related parties.

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 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. 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 the disease. 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 stock 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 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 FDA approved our Investigational New Drug application for CTX110, our wholly-owned allogeneic CAR-T cell therapy targeting CD19+ malignancies. Furthermore, we obtained approval from Health Canada for its Clinical Trial Application.

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 March 31, 2019, we had $437.5 million in cash and cash equivalents and an accumulated deficit of $339.9 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

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

In December 2017, we and Vertex entered into an amendment to the collaboration agreement ("Amendment"). The Amendment, among other things, modified certain definitions and provisions of the Collaboration Agreement to make them consistent with the Joint Development Agreement ("JDA") and clarified how many options are exercised (or deemed exercised) in connection with certain targets specified under the Collaboration Agreement. The Amendment also amended other provisions of the Collaboration Agreement, including the expiration terms of the Collaboration Agreement.

In December 2017, we entered into the 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.

We and Vertex are planning to conduct clinical trials for CTX001 in multiple countries for both beta thalassemia and severe sickle cell disease (SCD) trials 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 study is currently being conducted at multiple clinical trial sites in Canada and Europe. In addition, we and Vertex expanded the U.S. Investigational New Drug Application (IND) for CTX001 to include beta thalassemia. CTX001 was recently granted Fast Track Designation (FTD) by the U.S. Food and Drug Administration (FDA) for the treatment of TDT.

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 beta thalassemia, 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 enrolled in this trial. The study is currently being conducted at clinical trial sites in the U.S. CTX001 was granted Fast Track Designation by the U.S. Food and Drug Administration (the "FDA") for the treatment of SCD. In addition, we and Vertex have obtained approvals of Clinical Trial Applications (CTAs) for CTX001 for SCD in Canada and additional countries in Europe.

Joint Venture Agreement- Casebia

In December 2015, we entered into an agreement, (the "JV Agreement"), with Bayer 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 months ended March 31, 2019 and 2018, we recognized $0.3 million and $1.4 million of revenue related to our collaboration arrangements with Vertex and Casebia, respectively. As of March 31, 2019, we had not received any milestone or royalty payments under the Vertex collaboration agreement. For additional information about our revenue recognition policy, see Note 2 “Summary of Significant Accounting Policies” in Form 10-K.

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 Investigational New Drug-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 March 31, 2019 and 2018 (in thousands):

	Three Months Ended March 31,		Period to Period Change
	2019	2018	
Collaboration revenue	$ 328	$ 1,358	$ (1,030)
Operating expenses:			
Research and development	33,822	19,519	14,303
General and administrative	14,929	8,836	6,093
Total operating expenses	48,751	28,355	20,396
Loss from operations	(48,423)	(26,997)	(21,426)
Other income (expense), net	100	(1,217)	1,317
Net loss before income taxes	(48,323)	(28,214)	(20,109)
Provision for income taxes	(85)	(86)	1
Net loss	$ (48,408)	$ (28,300)	$ (20,108)

Collaboration Revenue

Collaboration revenue for the three months ended March 31, 2019 was $0.3 million, compared to $1.4 million for the three months ended March 31, 2018. The decrease of approximately $1.0 million was primarily attributable to a decrease in research conducted under the JV Agreement with Casebia. Please refer to Note 6 for further information.

Research and Development Expenses

Research and development expenses were $33.8 million for the three months ended March 31, 2019, compared to $19.5 million for the three months ended March 31, 2018. The increase of approximately $14.3 million was primarily attributable to the following:

- $5.7 million of increased employee compensation, benefit, and other headcount related expenses, of which $2.0 million is increased stock-based compensation expense, primarily due to an increase in headcount to support overall growth;
- $4.9 million of increased variable research and development costs and license fees; and
- $1.9 million of increased facility-related expenses.

General and Administrative Expenses

General and administrative expenses were $14.9 million for the three months ended March 31, 2019, compared to $8.8 million for the three months ended March 31, 2018. The increase of approximately $6.1 million was primarily attributable to the following:

- $3.0 million of increased employee compensation, benefit, and other headcount related expenses, of which $2.0 million is stock-based compensation expense, primarily due to an increase in headcount to support overall growth; and
- $1.9 million of increased professional and consulting fees.

Other Income (Expense), Net

Other income was $0.1 million for the three months ended March 31, 2019, compared to $1.2 million of expense for the three months ended March 31, 2018. The change was primarily due to interest income earned on cash and cash equivalents for the three months ended March 31, 2019.

Liquidity and Capital Resources

As of March 31, 2019, we had cash and cash equivalents of approximately $437.5 million of which approximately $434.4 million was held outside of the United States. In August 2018, the Company entered into an At-The-Market ("ATM") sales 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 months ended March 31, 2019, the Company sold 631,580 shares of common stock for net cash proceeds of $23.9 million, after deducting commission fees of $0.7 million. The Company sold an additional 493,017 shares of common stock under this agreement subsequent to March 31, 2019 through April 29, 2019, resulting in net cash proceeds of approximately $18.7 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 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):

	Three Months Ended March 31,		Period to Period
	2019	2018	Change
Net cash used in operating activities	$ (43,737)	$ (22,688)	$ (21,049)
Net cash used in investing activities	(1,097)	(555)	(542)
Net cash provided by financing activities	25,726	125,251	(99,525)
Effect of exchange rate changes on cash	8	12	(4)
Net (decrease) increase in cash	$ (19,100)	$ 102,020	$ (121,120)

Net Cash Used in Operating Activities

Net cash used in operating activities was $43.7 million for the three months ended March 31, 2019, compared to $22.7 million for the three months ended March 31, 2018. The $21.0 million increase in cash used in operating activities was partially due to the increase in net loss during this period of $20.1 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 three months ended March 31, 2019 was $1.1 million, compared to $0.6 million for the three months ended March 31, 2018. The net cash used in investing activities for the three months ended March 31, 2019 consisted primarily of purchases of property and equipment.

Net Cash Provided by Financing Activities

Net cash provided by financing activities for the three months ended March 31, 2019 was $25.7 million, compared with $125.3 million for the three months ended March 31, 2018. The net cash provided by financing activities for the three months ended March 31, 2019 consisted of proceeds from the issuance of common shares in connection with the ATM, which resulted in $23.9 million of net cash proceeds to the Company, after deducting $0.7 million in commissions, as well as exercises 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. 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 to the accompanying financial statements.

Off-Balance Sheet Arrangements

As of March 31, 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 the Annual Report.

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 March 31, 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 March 31, 2019, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control over Financial Reporting

During the quarter ended March 31, 2019, we implemented certain internal controls in connection with our adoption of ASC 842. There were no other changes in our internal control over financial reporting during the first quarter of 2019, 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.

Item 1A. Risk Factors.

There have been no material changes from the risk factors previously disclosed in Part I, Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2018.

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
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	Financials in XBRL format.

* The certification attached as Exhibit 32.1 that accompany this Quarterly Report on Form 10-Q are not deemed filed with the SEC 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.

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: April 29, 2019

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

Dated: April 29, 2019

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

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: April 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: April 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 March 31, 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)

April 29, 2019

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

April 29, 2019