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 September 30, 2016

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.)**
Aeschenvorstadt 36 **4051 Basel, Switzerland** **(Address of principal executive offices)**	**Not Applicable** **(zip code)**

+41 61 228 7800
(Registrant's telephone number, including area code)

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). YES ☒ NO ☐

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

Large Accelerated Filer	☐	Accelerated Filer	☐
Non-accelerated Filer	☒ (Do not check if smaller reporting company)	Smaller Reporting Company	☐

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

As of November 21, 2016, there were 39,808,801 shares of registrant's common shares outstanding.

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PART I. FINANCIAL INFORMATION

Item 1. Financial Statements.

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

	September 30, 2016	December 31, 2015
Assets		
Current assets:		
Cash	$ 228,613	$ 155,961
Accounts receivable, including related party amounts of $459 and $0 as of September 30, 2016 and December 31, 2015, respectively (see Note 13)	2,092	339
Prepaid expenses and other current assets	946	540
Total current assets	231,651	156,840
Property and equipment, net	3,862	1,328
Equity method investment	35,686	—
Intangible assets, net	413	454
Restricted cash	3,153	700
Other non-current assets	3,888	101
Total assets	$ 278,653	$ 159,423
Liabilities, redeemable convertible preferred shares and shareholders' deficit		
Current liabilities:		
Accounts payable	$ 1,943	$ 1,584
Accrued expenses	12,402	8,430
Accrued tax liabilities	82	81
Deferred gain	63,608	—
Other current liabilities	62	60
Total current liabilities	78,097	10,155
Convertible loan, including accrued interest of $0 and $97 as of September 30, 2016 and December 31, 2015, respectively	—	38,336
Deferred revenue	76,949	75,090
Other non-current liabilities	574	445
Total liabilities	155,620	124,026
Commitments and contingencies (Note 7)		
Redeemable convertible preferred shares:		
Series A-1 redeemable convertible preferred shares, CHF 0.03 par value, 440,001 shares authorized, issued, and outstanding in share capital at September 30, 2016, and December 31, 2015, respectively; aggregate liquidation preference of CHF 502 and CHF 502 at September 30, 2016 and December 31, 2015, respectively	1,169	1,169
Series A-2 redeemable convertible preferred shares, CHF 0.03 par value, 3,120,001 shares authorized, issued, and outstanding in share capital at September 30, 2016, and December 31, 2015, respectively; aggregate liquidation preference of CHF 9,512 and CHF 9,512 at September 30, 2016 and December 31, 2015, respectively	10,394	10,394
Series A-3 redeemable convertible preferred shares, CHF 0.03 par value, 0, 10,758,006 shares authorized, issued, and outstanding in share capital at September 30, 2016 and December 31, 2015, respectively; aggregate liquidation preference of $45,700 and $22,850 at September 30, 2016 and December 31, 2015, respectively	45,368	22,518
Series B redeemable convertible preferred shares, CHF 0.03 par value, 12,817,876 and 4,519,016 shares authorized, issued, and outstanding in share capital at September 30, 2016 and December 31, 2015, respectively; aggregate liquidation preference of CHF 28,000 and $111,487, and CHF 28,000 at September 30, 2016 and December 31, 2015, respectively	128,634	30,440
Shareholders' deficit:		
Common shares, CHF 0.03 par value, 5,662,126 shares authorized and issued, and 5,307,845 shares outstanding, and 5,528,079 shares authorized, issued and outstanding in share capital at September 30, 2016 and December 31, 2015, respectively; 38,453,593 and 2,444,364 shares in conditional capital at September 30, 2016 and December 31, 2015, respectively	174	181
Treasury shares, at cost; 274,184 shares at September 30, 2016 and no shares at December 31, 2015	—	—
Additional paid-in capital	11,553	4,636
Accumulated deficit	(74,182)	(33,906)
Accumulated other comprehensive loss	(26)	(8)
Total CRISPR Therapeutics AG shareholders' deficit	(62,481)	(29,097)
Noncontrolling interest	(51)	(27)
Total shareholders' deficit	(62,532)	(29,124)
Total liabilities, redeemable convertible preferred shares and shareholders' deficit	$ 278,653	$ 159,423

See accompanying notes to these unaudited consolidated financial statements.

CRISPR Therapeutics AG
Consolidated Statement of Operations and Comprehensive Loss
(unaudited)
(In thousands, except share and per share data)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2016	2015	2016	2015
Collaboration revenue (1)	$ 1,549	$ —	$ 2,820	$ —
Operating expenses:				
Research and development	12,052	3,749	26,666	6,399
General and administrative	4,107	2,453	18,974	7,164
Total operating expenses	16,159	6,202	45,640	13,563
Loss from operations	(14,610)	(6,202)	(42,820)	(13,563)
Other (expense) income:				
Interest expense	(1)	(8)	(8,051)	(9)
Loss from equity method investment	—	—	(686)	—
Gain on extinguishment of convertible loan	—	—	11,482	—
Other (expense) income, net	(75)	9	(141)	(33)
Total other (expense) income, net	(76)	1	2,604	(42)
Net loss before (provision for) benefit from income taxes	(14,686)	(6,201)	(40,216)	(13,605)
(Provision for) benefit from income taxes	(8)	(153)	(84)	63
Net loss	(14,694)	(6,354)	(40,300)	(13,542)
Foreign currency translation adjustment	(1)	(4)	(18)	(2)
Comprehensive loss	$ (14,695)	$ (6,358)	$ (40,318)	$ (13,544)
Reconciliation of net loss to net loss attributable to common shareholders:				
Net loss	$ (14,694)	$ (6,354)	$ (40,300)	$ (13,542)
Loss attributable to noncontrolling interest	14	1	24	309
Net loss attributable to common shareholders	$ (14,680)	$ (6,353)	$ (40,276)	$ (13,233)
Net loss per share attributable to common shareholders—basic and diluted	$ (2.77)	$ (1.15)	$ (7.43)	$ (2.72)
Weighted-average common shares outstanding used in net loss per share attributable to common shareholders—basic and diluted	5,292,348	5,528,079	5,422,617	4,872,048

(1) Including the following amounts of revenue from a related party, see Note 13: $ 385 $ — $ 385 $ —

See accompanying notes to these unaudited consolidated financial statements.

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

	Nine Months Ended September 30,	
	2016	2015
Operating activities		
Net loss	$ (40,300)	$(13,542)
Reconciliation of net loss to net cash used in operating activities:		
Depreciation and amortization expense	513	68
Equity-based compensation expense	6,816	2,508
Non-cash interest expense	8,050	—
Loss from disposal of property and equipment	28	—
Unrealized foreign currency remeasurement loss	(7)	(99)
Gain on extinguishment of convertible loan	(11,482)	—
Loss from equity method investment	686	—
Changes in:		
Restricted cash	(2,453)	(551)
Accounts receivable	(1,753)	—
Prepaid expenses and other assets	(694)	(513)
Accounts payable and accrued expenses	3,275	2,504
Deferred revenue	1,220	—
Deferred rent	196	—
Other liabilities, net	11	49
Net cash used in operating activities	(35,894)	(9,576)
Investing activities		
Purchase of property and equipment	(2,788)	(651)
Proceeds from contribution of intellectual property to equity method investee	20,000	—
Cash investment in equity method investee	(100)	—
Net cash provided by (used in) investing activities	17,112	(651)
Financing activities		
Proceeds from issuance of common shares	16	—
Proceeds from issuance of Series A-2 preferred shares	—	5,293
Proceeds from issuance of Series A-3 preferred shares	22,850	22,850
Proceeds from issuance of Series B preferred shares	38,075	30,478
Issuance costs for preferred share financings	(1,810)	(370)
Payment of proposed public offering costs	(2,677)	—
Proceeds from issuance of convertible loans	35,000	—
Net cash provided by financing activities	91,454	58,251
Effect of exchange rate changes on cash	(20)	80
Increase in cash	72,652	48,104
Cash, beginning of period	155,961	945
Cash, end of period	$228,613	$ 49,049
Supplemental disclosure of non-cash investing and financing activities		
Property and equipment purchases in accounts payable and accrued expenses	$ 246	$ 32
Conversion of Vertex and Bayer convertible loans and accrued interest	$ 61,929	$ —
Noncash contribution of intellectual property to Casebia LLP	$ 36,372	$ —
Costs for proposed public offering in accounts payable and accrued expenses	$ 825	$ —

See accompanying notes to these unaudited consolidated financial statements.

CRISPR Therapeutics AG
Notes to Consolidated Financial Statements
(unaudited)

1. Organization and Operations

The Company

CRISPR Therapeutics AG ("CRISPR" or the "Company") was formed on October 28, 2013 in Basel, Switzerland. The Company was established to translate CRISPR/Cas9, a genome editing technology, into transformative gene-based medicines for the treatment of serious human diseases. The foundational intellectual property underlying the Company's operations was licensed to the Company and its subsidiaries in April 2014. The Company devotes substantially all of its efforts to product research and development activities, initial market development and raising capital. The Company's principal offices and operations are in Cambridge, Massachusetts.

On January 23, 2014, the founders of the Company formed TRACR Hematology Limited ("TRACR") in the United Kingdom, to further the development of the CRISPR/Cas9 technology into medicines for the treatment of blood-borne illnesses. As the Company was funding and managing TRACR's operations in 2014, it has been consolidated by the Company from the date that the Company established a variable interest in TRACR in April 2014. In March 2015, the Company acquired 82.1% of the outstanding equity of TRACR in a share exchange transaction.

On February 7, 2014, the Company formed a wholly-owned subsidiary in the United Kingdom, CRISPR Therapeutics Limited ("CRISPR Ltd."), and on February 16, 2015, the Company formed a wholly-owned subsidiary in the United States, CRISPR Therapeutics, Inc. ("CRISPR Inc."), as its principal research and development operation.

In October 2016, the Company completed an initial public offering ("IPO") whereby the Company sold 4,429,311 of its common shares ("Common Shares"), inclusive of 429,311 Common Shares sold by the Company pursuant to the partial exercise of an overallotment option granted to the underwriters in connection with the offering, at a price to the public of $14.00 per share. The shares began trading on the NASDAQ Global Market on October 19, 2016. The aggregate net proceeds received by the Company from the offering were $54.1 million, after deducting underwriting discounts and commissions and other offering expenses payable by the Company. Concurrent with the IPO, the Company issued and sold 2,500,000 Common Shares to Bayer Global Investments B.V., in a private placement, at the IPO price of $14.00 per share, for aggregate net proceeds of $35.0 million.

Upon the closing of the IPO, all 27,135,884 of the Company's outstanding preferred shares converted into Common Shares on a one-for-one basis and the Company issued 328,017 Common Shares to Dr. Emmanuelle Charpentier in exchange for the remaining non-controlling equity interest in TRACR pursuant to a call option agreement. Accordingly, in October 2016, TRACR became a wholly-owned subsidiary. See Note 4 for further details. The significant increase in shares outstanding in the fourth quarter of 2016 is expected to impact the year-over-year comparability of the Company's net loss per share calculations for the next twelve months.

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

The Company had an accumulated deficit of $74.2 million as of September 30, 2016 and has financed its operations to date from proceeds obtained from a series of preferred shares and convertible loan issuances and upfront fees received under its collaboration and joint venture arrangements. The Company will require substantial additional capital to fund its research and development and ongoing operating expenses.

Liquidity

The Company believes its cash of $228.6 million at September 30, 2016 and the net proceeds received from the IPO and concurrent private placement subsequent to September 30, 2016 will be sufficient to fund the Company's current operating plan for at least the next 24 months. Thereafter, the Company will be required to obtain additional funding. There can be no assurance that the Company will be able to obtain additional debt or equity financing or generate product revenue or revenues from collaborative partners, on terms acceptable to the Company, on a timely basis or at all. The failure of the Company to obtain sufficient funds on acceptable terms when needed could have a material adverse effect on the Company's business, results of operations, and financial condition.

2. Summary of Significant Accounting Policies

Unaudited Interim Financial Information

The consolidated financial statements of the Company included herein have been prepared, without audit, pursuant to the rules and regulations of the Securities and Exchange Commission (the "SEC"). Certain information and footnote disclosures normally included in financial statements prepared in accordance with accounting principles generally accepted in the United States of America have been condensed or omitted from this report, as is permitted by such rules and regulations. Accordingly, these consolidated financial statements should be read in conjunction with the financial statements and notes thereto included in the Company's Prospectus that forms a part of the Company's Registration Statement on Form S-1 (File No. 333-213577), which was filed with the SEC pursuant to Rule 424(b)(4) on October 19, 2016 (the "Prospectus"). In the opinion of management, the information furnished reflects all adjustments, all of which are of a normal and recurring nature, necessary for a fair representation of the results for the reported interim periods.

Summary of Significant Accounting Policies

The Company's significant accounting policies are described in Note 2, "Summary of Significant Accounting Policies," in the Prospectus. There have been no material changes to the significant accounting policies during the period ended September 30, 2016.

Basis of Presentation and Use of Estimates

The accompanying consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("GAAP"), and include the accounts of (i) the Company, (ii) its wholly-owned subsidiaries, CRISPR Ltd. and CRISPR Inc., and (iii) TRACR, a consolidated variable interest entity ("VIE") and an 82.1% owned subsidiary as of December 31, 2015 and September 30, 2016. All intercompany accounts and transactions have been eliminated. Any reference in these notes to applicable guidance is meant to refer to the authoritative United States generally accepted accounting principles as found in the Accounting Standards Codification ("ASC") and Accounting Standards Updates ("ASUs") of the Financial Accounting Standards Board ("FASB"). The Company accounts for its 50% investment share of Casebia Therapeutics LLP under the equity method of accounting. See Note 8 for further details.

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. On an ongoing basis, the Company's management evaluates its estimates, which include, but are not limited to, equity-based compensation expense, revenue recognition, equity method investments, and reported amounts of expenses during the reported period. Significant estimates in these consolidated financial statements have been made in connection with the calculation of revenues, research and development expenses, equity-based compensation expense, fair value of Common Shares, fair value of intangible assets, and the provision for or benefit from income taxes. The Company bases its estimates on historical experience and other market-specific or other relevant assumptions that it believes to be reasonable under the circumstances. Actual results may differ from those estimates or assumptions.

The Company utilizes significant estimates and assumptions in determining the fair value of its Common Shares. The Company utilized various valuation methodologies in accordance with the framework of the 2004 and 2013 American Institute of Certified Public Accountants Technical Practice Aids, Valuation of Privately- Held Company Equity Securities Issued as Compensation, to estimate the fair value of its Common Shares. Each valuation methodology includes estimates and assumptions that require the Company's judgment. These estimates and assumptions include a number of objective and subjective factors, including external market conditions affecting the biotechnology industry sector, the prices at which the Company sold preferred shares, the superior rights and preferences of securities senior to the Company's Common Shares at the time, the likelihood of achieving a liquidity event, such as an initial public offering or a sale of the Company, and the Company's discounted cash flows from forecasted operations. Significant changes to the key assumptions used in the valuations could result in different fair values of Common Shares at each valuation date and materially affect the financial statements.

Amendment to Articles of Association

In connection with preparing for its IPO, the Company's board of directors and shareholders approved an amendment to the Company's articles of association in July 2016. This amendment became effective upon registration in the Switzerland commercial register on July 27, 2016 and publication in the Swiss Official Gazette of Commerce on August 2, 2016. Pursuant to this amendment a 3 $^{1}/_{3}$-for-one share split was effected. All share and per share amounts in the financial statements and notes thereto have been retrospectively adjusted for all periods presented to give effect to the share split.

Recent Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2014-09, Revenue From Contracts With Customers ("ASU 2014-09"). ASU No. 2014-09 amends Accounting Standards Codification ("ASC") Topic 605, *Revenue Recognition*, by outlining a single comprehensive model for entities to use in accounting for revenue arising from contracts with customers. ASU No. 2014-09 will be effective for the Company for interim and annual periods beginning after December 15, 2017. The Company is evaluating the impact that this ASU may have on its consolidated financial statements.

In August 2014, the FASB issued ASU No. 2014-15, Presentation of Financial Statements—Going Concern ("ASU 2014-15"), which requires management to assess an entity's ability to continue as a going concern every reporting period, and provide certain disclosures if management has substantial doubt about the entity's ability to operate as a going concern, or an express statement if not, by incorporating and expanding upon certain principles that are currently in U.S. auditing standards. This guidance is effective for the annual period ending after December 15, 2016, and for annual periods and interim periods within annual periods beginning thereafter. Early application is permitted. The Company is in process of evaluating this guidance and determining the expected effect on its consolidated financial statements, but does not expect it to have a significant impact on the Company's results of operations, cash flows or financial position.

In August 2016, the FASB issued ASU No. 2016-15, Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments ("ASU 2016-15"). The guidance addresses diversity in practice in how certain cash receipts and cash payments are presented and classified in the statement of cash flows under Topic 230, Statement of Cash Flows, and other Topics. The updated guidance is effective for annual periods beginning after December 15, 2017. Early adoption is permitted. The Company is currently evaluating the impact of the adoption of ASU 2016-15 on its consolidated financial statements.

In February 2016, the FASB issued ASU No. 2016-02, Leases ("ASU 2016-02"), which applies to all leases and will require lessees to record most leases on the balance sheet, but recognize expense in a manner similar to the current standard. ASU 2016-02 is effective for fiscal years beginning after December 15, 2018 and interim periods within those years, which is the year ended December 31, 2019 for the Company. Entities are required to use a modified retrospective approach of adoption for leases that exist or are entered into after the beginning of the earliest comparative period in the financial statements. Full retrospective application is prohibited. The Company is evaluating the new guidance and the expected effect on its consolidated financial statements.

In March 2016, the FASB issued ASU No. 2016-09, Compensation—Stock Compensation (Topic 718) ("ASU 2016-09"). The guidance changes how companies account for certain aspects of equity-based payments to employees. Entities will be required to recognize income tax effects of awards in the income statement when the awards vest or are settled. The guidance also allows an employer to repurchase more of an employee's shares than it can under current guidance for tax withholding purposes providing for withholding at the employee's maximum rate as opposed to the minimum rate without triggering liability accounting and to make a policy election to account for forfeitures as they occur. The updated guidance is effective for annual periods beginning after December 15, 2017. Early adoption is permitted. The Company is currently evaluating the impact of the adoption of ASU 2016-09 on its consolidated financial position and results of operations.

In October 2016, the FASB issued ASU 2016-16, Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory ("ASU 2016-16"). The guidance aims to reduce the diversity in practice and complexity associated with accounting for the income tax consequences of intra-entity transfers of assets other than inventory. The new guidance will be effective for annual reporting periods beginning after December 15, 2017, including interim reporting periods within those annual reporting periods, with early adoption permitted in the first interim period only. The amendments are to be applied on a modified retrospective basis through a cumulative-effect adjustment directly to retained earnings as of the beginning of the period of adoption. The Company is currently evaluating the impact of the adoption of this standard on its consolidated financial statements.

For a discussion of other recent accounting pronouncements please refer to Note 2, "Summary of Significant Accounting Policies," in the Prospectus. The Company did not adopt any new accounting pronouncements during the three months ended September 30, 2016.

3. Property and Equipment, net

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

	As of September 30, 2016	As of December 31, 2015
Computer equipment and software	$ 110	$ 118
Furniture, fixtures, and other	351	238
Laboratory equipment	2,758	861
Leasehold improvements	124	88
Construction work in process	1,063	95
	4,406	1,400
Accumulated Depreciation	(544)	(72)
Property and equipment, net	$ 3,862	$ 1,328

Depreciation expense for the three and nine months ended September 30, 2016 and 2015, was $0.2 million, $27,000, $0.5 million and $27,000, respectively.

4. Variable Interest Entities

TRACR Hematology Limited

On January 23, 2014, the founders of the Company formed TRACR in the United Kingdom, to further the development of the CRISPR/Cas9 technology into medicines for the treatment of blood-borne illnesses. On April 14, 2014, TRACR licensed certain foundational intellectual property rights under joint ownership from Dr. Charpentier to develop and commercialize products for the treatment or prevention of human diseases related to hemoglobinopathies. See Note 8 for further details of the technology license agreement with Dr. Charpentier.

On April 14, 2014 the Company determined that it became the primary beneficiary of TRACR based on, among other factors, the Company's power to direct the activities that significantly impacted the economic performance of TRACR and the Company's financing of contractual obligations on behalf of TRACR, and the period in which the Company began to benefit from research and development of TRACR technology. Accordingly, the Company consolidated TRACR's financial statements as a consolidated VIE beginning on April 14, 2014.

The Company determined that TRACR met the definition of a business under the terms of ASC 805. As such, the Company accounted for the initial consolidation of TRACR as a business combination and measured the assets, liabilities and noncontrolling interests of TRACR in accordance with ASC 805 at the date the Company first became the primary beneficiary on April 14, 2014. The Company recorded $0.5 million of intangible assets on the Company's consolidated balance sheet for TRACR's intellectual property rights along with a related deferred tax liability of $0.1 million. TRACR did not have material operations prior to consolidation on April 14, 2014.

On March 24, 2015, the Company acquired 4,600 ordinary shares of TRACR, representing 82.1% of the ordinary share capital, pursuant to a share exchange transaction with the shareholders of TRACR. In exchange for 4,600 ordinary shares of TRACR and the assignment of certain rights to subscribe ordinary shares of TRACR, the Company issued 852,846 Common Shares to two founders of TRACR, 656,031 restricted Common Shares to certain employees and non-employees, and 459,217 Common Shares to Fay Participation Corporation ("Fay Corp."), an entity formed to hold Common Shares for future issuance to certain employees and non-employees. As of December 31, 2015 and September 30, 2016, the Company held 4,600 ordinary shares of TRACR, representing 82.1% of the ordinary share capital of TRACR.

Upon the share exchange on March 24, 2015, the Company recorded an adjustment of $0.1 million to decrease the carrying amount of the noncontrolling interest in TRACR and reflect the Company's increased ownership interest in TRACR's net assets. This adjustment was recognized directly in equity through additional paid-in capital and is attributable to the controlling interest.

Pursuant to the share exchange transaction on March 24, 2015, the Company also entered into a free standing call option agreement with Dr. Charpentier for 1,000 ordinary shares of TRACR, representing the remaining 17.9% of the ordinary share capital of TRACR. Under the terms of the call option agreement, the Company has the option to acquire the remaining 1,000 shares of TRACR held by Dr. Charpentier in exchange for 328,017 Common Shares of the Company.

Upon the Company's IPO in October 2016, the remaining 1,000 ordinary shares of TRACR held by Dr. Charpentier were automatically exchanged for 328,017 Common Shares of the Company and TRACR became a wholly-owned subsidiary of the Company.

5. Accrued Expenses

Accrued expenses consist of the following (in thousands):

	As of September 30, 2016	As of December 31, 2015
Payroll and employee-related costs	$ 1,987	$ 773
Research costs	1,752	910
Licensing fees	281	1,055
Professional fees	1,971	2,412
Intellectual property costs	4,232	2,592
Advance pay liability	2,007	—
Other	172	688
Total	$ 12,402	$ 8,430

6. Convertible Loans

2015 Convertible Loan Agreement with Vertex and certain existing shareholders

On October 26, 2015, the Company entered into a convertible loan agreement with Vertex Pharmaceuticals Incorporated ("Vertex") and certain existing shareholders (the "Vertex Convertible Loan") under which the Company could borrow up to $40.0 million. The Vertex Convertible Loan accrues interest at 2.5% per annum and had an initial maturity date of April 26, 2016 subject to acceleration upon the occurrence of certain conditions stated in the loan agreement (the "Maturity Date"). On various dates between November 23, 2015 and December 7, 2015, the Company borrowed aggregate net proceeds of $38.2 million. The Vertex Convertible Loan included various embedded conversion, redemption and other features, as further described below, none of which required separate accounting from the host instrument under ASC 815. On January 29, 2016, all of the outstanding principal plus accrued interest of $0.2 million under the Vertex Convertible Loan was automatically converted into 2,859,278 Series B Preferred Shares in connection with a qualified financing described below.

The conversion terms, redemption terms, and other features of the Vertex Convertible Loan are included in the Prospectus. There were no changes to the conversion terms, redemption terms, and other features of the Vertex Convertible Loan during the nine months ended September 30, 2016.

Convertible Loan with Bayer Global Investments B.V.

Concurrent with the execution of the Bayer Joint Venture agreement, the Company also entered into a Convertible Loan Agreement ("Bayer Convertible Loan") with Bayer Global Investments B.V., or Bayer BV for $35.0 million. The Bayer Convertible Loan accrued interest at 2.0% per annum and matured on January 29, 2016 (the "Maturity Date"). On January 29, 2016, the Company issued the Bayer Convertible Loan in exchange for aggregate net proceeds of $35.0 million. The Bayer Convertible Loan included various embedded conversion, redemption and other features, none of which required separate accounting from the host instrument under ASC 815.

Conversion of Convertible Loans to Series B Preferred Shares

On January 29, 2016, concurrent with the issuance of the Bayer Convertible Loan, all of the outstanding principal under the $35.0 million Bayer Convertible Loan automatically converted into 2,605,330 Series B Preferred Shares at $13.43 per share. The Company determined the fair value of the Bayer Convertible Loan to be $24.5 million based on the fair value of the underlying Series B Preferred Shares that were exchanged as part of the immediate conversion. As the Bayer Convertible Loan was executed in contemplation of the joint venture agreement with Bayer, the Company evaluated the Bayer Convertible Loan as part of one multiple-element arrangement and using a relative fair value allocation allocated $27.0 million of aggregate arrangement consideration to the Bayer Convertible Loan upon issuance (See Note 8). Upon conversion, the Company accreted the Bayer Convertible Loan to its face value of $35.0 million through a charge to interest expense of $8.0 million and converted the $35.0 million to Series B Preferred Shares under the conversion model.

The receipt of $35.0 million in proceeds under the Bayer Convertible Loan in exchange for equity securities, combined with the $38.2 million in proceeds from Vertex Convertible Loan, triggered an automatic conversion provision of the Vertex Convertible Loan Agreement. Accordingly, on January 29, 2016, the Vertex Convertible Loan, including loans from existing shareholders, plus accrued interest also converted into 2,859,278 of Series B Preferred Shares at $13.43 per share. The Company determined the fair value of the Vertex Convertible Loan to be $26.9 million based on the fair value of the underlying Series B Preferred Shares that were exchanged as part of the conversion. Upon extinguishment, the Company recorded a gain on extinguishment of $11.5 million for the difference between the carrying value of the debt and the fair value of the Series B Preferred Shares issued to settle the debt under the general extinguishment model.

7. Commitments and Contingencies

Operating Leases

The Company had four non-cancellable operating leases for office, laboratory, and corporate housing spaces as of December 31, 2015. As of September 30, 2016, two of these have expired. The lease of the Company's primary research facility space expires in February 2022, with one optional five-year extension period. Rental expense for the three months ended September 30, 2016 and 2015 was $0.5 million and $0.4 million, respectively, and for the nine months ended September 30, 2016 and 2015, was $1.4 million and $0.7 million, respectively.

Future minimum payments required under the leases as of December 31, 2015, are as follows (in thousands):

Year Ending December 31:	Amount
2016	$1,291
2017	1,341
2018	1,381
2019	1,422
2020	1,465
Thereafter	1,700
Total minimum lease payments	$8,600

During the nine months ended September 30, 2016, the Company entered into two sublease agreements for office and laboratory space, not included in the table above. The first of these began on April 1, 2016, and expires on January 31, 2017, and may continue on a tenancy-at-will basis with either party having the right to terminate with thirty days of notice. The Company's contractual obligation related to lease payments over the term of this sublease is approximately $0.3 million.

The second lease is expected to begin in December 2016, and expires ten years from the commencement date. The Company has the option to extend the term of the lease by five years. The Company's contractual obligation related to lease payments over the term of the sublease is approximately $56.2 million.

In April 2016, the Company entered a $2.5 million letter of credit to secure the Company's obligations under a facility lease in Cambridge, Massachusetts. The letters of credit are secured by cash held in a restricted depository account.

Letters of Credit

As of December 31, 2015, and September 30, 2016, the Company had restricted cash of $0.7 million and $3.2 million, respectively, representing letters of credit securing the Company's obligations under the facility leases in Cambridge, Massachusetts and certain credit card arrangements. The letters of credit are secured by cash held in a restricted depository account.

Sponsored Research Agreements

The Company has engaged several research institutions to identify new delivery strategies and applications of the CRISPR/Cas9 technology. As a result of these efforts, the Company has agreed to sponsor three research programs during 2016, with one of these programs continuing through 2018. In association with these agreements, the Company has committed to making payments for related research and development services of $1.2 million, $0.4 million, and $0.2 million in 2016, 2017, and 2018, respectively.

License Agreement with Anagenesis Biotechnologies SAS

On June 7, 2016, the Company entered into a license agreement with Anagenesis Biotechnologies SAS ("Anagenesis") pursuant to which the Company received an exclusive worldwide license to Anagenesis' proprietary technology for all human based muscle diseases. Pursuant to the license agreement, the Company made a one-time upfront payment of $0.5 million to Anagenesis and is required to pay Anagenesis up to $89.0 million upon the achievement of future clinical, regulatory and sales milestones for each of the first allogeneic and autologous licensed products developed pursuant to the license agreement, as well as low single digit royalty payments on future sales of commercialized product candidates. The Company recorded the $0.5 million payment during the nine months ended September 30, 2016 as research and development expense on the consolidated statement of operations.

Licensing Agreements

In April 2014, the Company and TRACR entered into technology license agreements with Dr. Charpentier pursuant to which the Company and TRACR licensed Dr. Charpentier's interest to certain intellectual property rights jointly owned by Dr. Charpentier and others to develop and commercialize products for the treatment or prevention of human diseases. See Note 8 for further details.

Litigation

Under the license agreement with Dr. Charpentier, the Company licenses a U.S. patent application that is currently subject to interference proceedings declared by the Patent Trial and Appeal Board of the U.S. Patent and Trademark Office. If the Company's licensed patent family does not prevail in these proceedings, claims could be asserted against the Company during development or commercialization of a product that relies on this technology. Defense of any such claims would involve substantial litigation expense, and any successful claim of infringement against the Company could require the Company to pay substantial damages.

Shareholder Settlement

For the year ended December, 31, 2015, the Company has determined that it is considered a passive foreign investment company ("PFIC"). Under the terms of a shareholder agreement existing prior to the IPO, if a U.S. common shareholder elected to file a Qualified Electing Fund ("QEF") and notified the Company of this election, the Company was required to make advance payments to the shareholder related to their individual 2015 tax liability. Under the shareholder agreement, the Company was obligated to notify investors 30 days after December 31, 2015 that it was considered a PFIC; however, the Company did not finalize the determination of its PFIC status until after this date. If timely notification had been given to the U.S. common shareholders and all U.S. common shareholders notified the Company that a QEF election was made, the Company estimates that it may have been required to make advance payments of up to $2.6 million for the tax year ended December 31, 2015. As no QEF elections had been made prior to the date the Company issued its December 31, 2015 financial statements, the Company has not paid or accrued any amounts as of December 31, 2015.

In September 2016, the Company formally offered an aggregate settlement up to $2.0 million to certain U.S common shareholders in order to release the Company from any and all obligations or claims concerning and/or arising out of the Company's status as a PFIC or a Controlled Foreign Corporation (a "CFC") for any taxable year from 2013 through 2015, including for potential lack of timely notification of the Company's PFIC status for the year ended December 31, 2015. This amount represented the Company's best estimate of its probable liability related to this matter and was recorded in accrued expenses

in its consolidated balance sheet as of September 30, 2016. The Company recorded charges of $0.1 million and $2.0 million in general and administrative expenses in the consolidated statement of operations for the three months and nine months ended September 30, 2016, respectively.

Following the formal settlement offer in September 2016, this settlement has been accepted by substantially all of the U.S. common shareholders representing $1.8 million of the aggregate settlement of $2.0 million. In October 2016, the Company made payments of $1.8 million under the terms of the accepted settlements.

If the settlement is not accepted by the remaining U.S. common shareholder, the Company believes the maximum obligation to make advance payments under the shareholder agreement is $0.2 million. The obligation to make advance payments under the shareholder agreement for tax years subsequent to 2015 terminated upon the closing of the IPO.

8. Significant Contracts

Intellectual Property Agreements

CRISPR Therapeutics AG—Charpentier License Agreement

In April 2014, the Company entered into a technology license agreement with Dr. Charpentier pursuant to which the Company licensed certain intellectual property rights under joint ownership from Dr. Charpentier to develop and commercialize products for the treatment or prevention of human diseases other than hemoglobinopathies ("CRISPR—Charpentier License Agreement"). In consideration for the granting of the license, the Company paid Dr. Charpentier an upfront fee of CHF 0.1 million ($0.1 million), and agreed to pay an immaterial annual license maintenance fee if Dr. Charpentier is not otherwise engaged in a service arrangement with the Company. During the three and nine months ended September 30, 2015 and 2016, Dr. Charpentier has been in a consulting arrangement with the Company, as such, no annual payments have been made under this provision. Dr. Charpentier is entitled to receive nominal clinical milestone payments. The Company is also obligated to pay Dr. Charpentier a low single digit percentage of sublicensing payments received under any sublicense agreement with a third party. In addition, the Company is also obligated to pay to Dr. Charpentier a low single-digit percentage royalty based on annual net sales of licensed products and licensed services by the Company and its affiliates and sublicensees.

During the three and nine months ended September 30, 2016 and 2015, the Company recorded $0, $0, $0.3 million, and $0, respectively, of sublicensing fees due to Dr. Charpentier in research and development expense under the terms of the CRISPR—Charpentier License Agreement that was triggered by the execution of the Vertex collaboration agreement and the Bayer joint venture agreement.

TRACR Hematology Limited—Charpentier License Agreement

In April 2014, TRACR entered into a technology license agreement ("TRACR—Charpentier License Agreement") with Dr. Charpentier pursuant to which TRACR licensed certain intellectual property rights under joint ownership from Dr. Charpentier to develop and commercialize products for the treatment or prevention of human diseases related to hemoglobinopathies. In consideration for the granting of the license, Dr. Charpentier is entitled to receive nominal clinical milestone payments. TRACR is also obligated to pay Dr. Charpentier a low single digit percentage of sublicensing payments received under any sublicense agreement with a third party. In addition, TRACR is obligated to pay to Dr. Charpentier low single digit percentage royalties based on annual net sales of licensed products and licensed services by the Company and its affiliates and sublicensees.

During the three months and nine months ended September 30, 2015 and 2016, no amounts were paid under the terms of the TRACR—Charpentier License Agreement.

Patent Assignment Agreement

In November 2014, the Company entered into a patent assignment agreement ("Patent Assignment Agreement") with Dr. Charpentier, Dr. Ines Fonfara, and the University of Vienna (collectively, the "Assignors"), pursuant to which the Company was assigned all rights, title and interest in and to certain patent rights claimed in the U.S. Patent Application No.61/905,835. In consideration for the assignment of such rights, the Assignors are entitled to receive clinical milestone payments totaling up to €0.3 million (approximately $0.4 million) in the aggregate for the first human therapeutic product. The Company is also obligated to pay to the Assignors low single digit royalties based on annual net sales of licensed products and licensed services by the Company and its affiliates and sublicensees.

During the three months and nine months ended September 30, 2016 and 2015, the Company did not record any sublicensing fees due to the Assignors in research and development expense under the terms of the Patent Assignment Agreement that was triggered by the execution of the Vertex collaboration agreement and the Bayer joint venture agreement.

Collaboration Agreement with Vertex Pharmaceuticals, Incorporated

Summary of Agreement

On October 26, 2015, the Company entered into a strategic collaboration, option, and license agreement ("Collaboration Agreement") with Vertex, focused on the use of CRISPR's gene editing technology, known as CRISPR/Cas9, to discover and develop potential new treatments aimed at the underlying genetic causes of human disease. The collaboration will evaluate the use of CRISPR-Cas9 across multiple diseases where targets have been validated through human genetics. Vertex and CRISPR will focus their initial gene editing research on discovering treatments to address the mutations and genes known to cause and contribute to sickle cell disease, beta-thalessemia and cystic fibrosis. Vertex and CRISPR will also evaluate a specified number of other genetic targets as part of the collaboration. For up to six targets, Vertex has an exclusive option to obtain: (1) an exclusive license to commercialize CRISPR technology ("Exclusive License") or (2) a co-exclusive license with respect to hemoglobinopathy and beta-globin targets ("Co-exclusive License").

The collaborative program of research to be undertaken by the parties pursuant to the Collaboration Agreement will be conducted in accordance with a mutually agreed upon research plan which outlines each party's research and development responsibilities across the three research areas. The Company's research and development responsibilities under the research plan ("R&D Services") are related to generating genome editing reagents that modify gene targets selected by Vertex. Except with respect to the Company's obligations under the mutually agreed upon research plan, Vertex has sole responsibility, at its own costs, for the worldwide research, development, manufacturing and commercialization of products resulting from the exclusive licenses obtained.

The research collaboration will end on the earlier of the date on which Vertex has exercised six options to obtain exclusive/co-exclusive licenses with respect to a collaboration target, or the fourth anniversary of the effective date of the agreement. The research term may be extended as mutually agreed by the parties up to nine additional months to complete any research activities under the approved research plan that are incomplete on the fourth anniversary of the effective date.

The Collaboration Agreement will be managed on an overall basis by a project leader from each of the Company and Vertex. In addition, the activities under the collaboration agreement during the research term will be governed by a joint research committee ("JRC") formed by an equal number of representatives from the Company and Vertex. Decisions by the JRC will be made by consensus of the group, however, Vertex will have final decision-making authority in the event of disagreement, provided it is in good faith and not contrary to any explicit clause of the agreement.

In connection with the agreement, Vertex made a nonrefundable upfront payment of $75.0 million. In addition, Vertex will fund all of the discovery activities conducted pursuant to the agreement. 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 would lead all development and global commercialization activities. For each of up to six targets that Vertex elects to license, other than hemoglobinopathy and beta-globin targets, the Company has the potential to receive up to $420.0 million in development, regulatory and commercial milestones and royalties on net product sale.

Vertex is entitled to terminate the Collaboration Agreement as a whole, or terminate the Collaboration Agreement in part with respect to a particular collaboration program, for convenience by providing the Company 90 days' written notice of such termination; provided, however, that if any termination applies to a product for which Vertex has received marketing approval, Vertex will provide CRISPR no less than 270 days' notice of such termination. If Vertex is in material breach of this Collaboration Agreement, the Company has the right to terminate the Collaboration Agreement in full at its discretion 90 days after delivery of written notice to Vertex.

The Company evaluated the Collaboration Agreement in accordance with the provisions of ASC 605-25. The Company's arrangement with Vertex contains the following initial deliverables: (i) a non-exclusive research license; (ii) the option to obtain an exclusive license for up to six Collaboration Targets; (iii) the option to obtain a co-exclusive license for hemoglobinopathy or beta-globin targets (which would be included within the maximum number of the aforementioned six collaboration targets); (iv) R&D Services; and (v) JRC participation.

Management considered whether any of these deliverables could be considered separate units of accounting. Regarding the non-exclusive research license, the Company concluded that it does not have stand-alone value separate from the option to exercise the exclusive or co-exclusive license since Vertex would not benefit from acquiring a research license without the ability to obtain the license to commercialize the results of that research. As a result, the Company concluded that the research license should be combined with those options.

Regarding the R&D Services, the Company concluded that there are other vendors in the market that could perform the related services. As such the Company concluded the R&D Services represent a separate unit of accounting.

Regarding the JRC obligations, the Company concluded that the JRC obligations deliverable has standalone value from the option to license because the services could be performed by an outside party. As such the Company concluded the JRC obligations represent a separate unit of accounting.

As a result, management concluded that there are four units of accounting at the inception of the agreement: (i) a combined unit of accounting representing the non-exclusive research license, and the option for up to six exclusive licenses to develop and commercialize the collaboration targets as these options do not have stand- alone value; (ii) a combined unit of accounting representing the non-exclusive research license, and the option for a co-exclusive license (subject to the aforementioned six license limit) to develop and commercialize the hemoglobinopathy or beta-globin targets as these options do not have stand-alone value; (iii) the performance of R&D Services; and (iv) the participation in the JRC.

The Company has determined that neither VSOE of selling price nor TPE of selling price is available for any of the units of accounting identified at inception of the arrangement. Accordingly, the selling price of each unit of accounting was determined based on the Company's BESP. The Company developed the BESP for all of the units of accounting included in the collaboration agreement 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 Company developed the BESP for the R&D Services and the JRC participation primarily based on the nature of the services to be performed and estimates of the associated effort and cost of the services, adjusted for a reasonable profit margin that would be expected to be realized under similar contracts. The Company's BESP for the R&D Services was $26.7 million. The Company's BESP for the JRC participation services was de minimis based on an estimate of time spent on preparation, participation, review and travel for the meetings.

The Company's BESP for each combined unit of the non-exclusive research license and the option for an exclusive license to develop and commercialize a single collaboration target is $37.7 million. As the Company expects Vertex to exercise five of these options, the total BESP is $188.5 million. BESP for this item was determined based on probability and present value adjusted cash flows from the royalties and milestones outlined in the Collaboration Agreement. BESP reflects the level of risk and expected probability of success inherent in the nature of the associated research area.

The Company's BESP for a non-exclusive research license and the option for a co-exclusive license to develop and commercialize a single hemoglobinopathy or beta-globin collaboration target is $12.5 million. As the Company expects Vertex to exercise one of these options, the total BESP is $12.5 million. BESP for this item was determined based on probability and present value adjusted cash flows from the equal sharing of project worldwide net profit or net loss. BESP reflects the level of risk and expected probability of success inherent in the nature of the associated research area.

Allocable arrangement consideration at inception is comprised of: (i) the up-front payment of $75.0 million, (ii) the estimated R&D services of $26.7 million and (iii) payments related to the estimated exercise of options on future exclusive licenses for five targets of $50.0 million. The aggregate allocable arrangement consideration of $151.7 million was allocated among the separate units of accounting using the relative selling price method as follows: (i) R&D Services: $17.8 million, (ii) non-exclusive research license, and the option for an Exclusive License to develop and commercialize the five collaboration targets: $125.5 million, (iii) non-exclusive research license, and the option for one Co-exclusive License to develop and commercialize one hematology target: $8.4 million.

The amount allocated to R&D Services will be recognized as the R&D Services are performed. The Company will recognize as license revenue an equal amount of the total arrangement consideration allocated to the exclusive licenses as each individual license is delivered to Vertex upon Vertex's exercise of its options to such licenses. The Company will recognize $8.4 million as license revenue when the Co-exclusive License is delivered to Vertex upon Vertex's exercise of its options to such license.

The Company has evaluated all of the milestones that may be received in connection with the Collaboration Agreement. In evaluating if a milestone is substantive, the Company assesses whether: (i) the consideration is commensurate with either the Company's performance to achieve the milestone or the enhancement of the value of the delivered item(s) as a result of a specific outcome resulting from the Company's performance to achieve the milestone, (ii) the consideration relates solely to past performance, and (iii) the consideration is reasonable relative to all of the deliverables and payment terms within the arrangement. The Company notes that the $10.0 million due upon the exercise of each option for an Exclusive License was determined to be part of the fixed and determinable consideration allocable at contract inception and is not subject to milestone method accounting.

The first potential milestone the Company will be entitled to receive is the $10.0 million milestone due upon the filing of an Investigational New Drug Application ("IND") for a selected Exclusive License. As the first developmental milestone of the agreement relates to the filing of an IND, the Company has considered it to be substantive. Accordingly, such amounts will be recognized as revenue in full in the period in which the associated milestone is achieved, assuming all other revenue recognition criteria are met. There are no other substantive milestones. As such the total amount of substantive milestones subject to milestone method accounting treatment is $10.0 million for each selected Exclusive License.

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. 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 IND, 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 POC for a Product
3. Initiation of the first Phase 3 Clinical Trial of a Product
4. Acceptance of Approval Application by the FDA for a Product
5. Acceptance of Approval Application by the EMA for a Product
6. Acceptance of Approval Application by a Regulatory Authority in Japan for a Product
7. Marketing Approval in the US 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
2. Annual Net Sales for Products with respect to a Collaboration Target exceed $1,000 million

After Vertex has exercised an Exclusive License option, Vertex will be solely responsible for all research, development, manufacturing, and commercialization of licensed agents and products for the relevant target. As the Company's involvement in this process is limited to observer status, management determined that milestones are not considered substantive because they do not relate solely to the past performance of the Company. Upon the achievement of a milestone, management will evaluate whether the triggering event occurs during or after the research term. If the triggering event occurs during the research term, management has elected to treat the milestone similar to an up-front payment. In these cases, if and when any of these milestones are received, the amount will be included in the overall arrangement consideration and allocated to the remaining identified deliverables. To the extent all deliverables have been satisfied, any additional consideration allocated to them could be immediately recognized. If the triggering event occurs after the research term, the Company will recognize the associated revenue in the period in which the event occurs. The Company will recognize royalty revenue in the period of sale of the related product(s), based on the underlying contract terms, provided that the reported sales are reliably measurable and the Company has no remaining performance obligations, assuming all other revenue recognition criteria are met.

During the three and nine months ended September 30, 2016 and 2015, the Company recognized $1.2 million, $0, $2.4 million, and $0 of revenue with respect to the collaboration with Vertex. Research and development expense incurred by the Company in relation to its performance under the Collaboration Agreement for the three and nine months ended September 30, 2016 and 2015, was $1.7 million, $0, $4.5 million, and $0, respectively. As of September 30, 2016, and December 31, 2015, there is $76.3 million and $75.1 million of non-current deferred revenue related to the Company's collaboration with Vertex.

Joint Venture with Bayer Healthcare LLC

On December 19, 2015, the Company entered into an agreement to establish a joint venture ("Bayer Joint Venture") with Bayer to 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"), a limited liability partnership formed in the United Kingdom. Bayer and the Company each received a 50% equity interest in the entity in exchange for their 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.

Bayer will provide up to $300.0 million in research and development funding to Casebia over the first five years, subject to certain conditions, of which the first $45.0 million was contributed upon formation in the first quarter of 2016. Under the joint venture agreement, the Company has no obligation to provide any additional funding and the Company's ownership interest will not be diluted from future contributions from Bayer. The activities of Casebia are controlled by a management board under the joint control of the Company and Bayer. As Casebia is jointly controlled by the Company and Bayer, the Company accounts for its 50% interest using the equity method of accounting.

Under the agreement, Casebia will pay the Company up to $35.0 million in exchange for a worldwide, exclusive license to commercialize the Company's CRISPR/Cas9 technology specifically for the indications designated by Casebia. In March 2016, the Company received a non-refundable up-front payment of $20.0 million as a technology access fee. The remaining $15.0 million will be paid upon the delivery of the consent necessary from the patent holders of the Company's intellectual property. There are no milestone, royalties or other payments due to the Company under this aspect of the agreement. The Company determined that the contribution of the CRISPR/Cas9 technology by license to Casebia did not meet the definition of a business under ASC 805.

The Company will also provide to Casebia compensated research and development services through a separate agreement. Revenue related to research and development services rendered by the Company was $0.5 million, $0, $0.5 million, and $0 during the three months ended September 30, 2016 and 2015, and the nine months ended September 30, 2016 and 2015, respectively.

Concurrent with the execution of the Bayer Joint Venture agreement, the Company also entered into the Bayer Convertible Loan for $35.0 million.

As the Bayer Joint Venture (including the CRISPR/Cas9 technology license and the research and development services) and the Bayer Convertible Loan were executed at the same time, the Company determined that they should be evaluated as one multiple-element arrangement. Additionally, the Company also determined that ASC 845, *Nonmonetary Transactions* ("ASC 845") did not apply to this arrangement given the Company's significant continuing involvement with Casebia and the amount of cash involved in the arrangement. As a result, the Company analogized to ASC 605-25 in allocating the relative fair value of the consideration received to the different elements of the arrangement.

The Company allocated the fair value of the consideration received using a relative fair value allocation. The allocable arrangement consideration included (i) the total cash payment by Casebia for the technology access fee, net of the Company's $0.1 million contribution, of $34.9 million, (ii) the fair value of the equity interest in the Joint Venture of $36.4 million, (iii) the $35.0 million received from the issuance of the Convertible Debt, and (iv) $6.3 million of estimated cash consideration to be received under the research and development service arrangement, accumulating to $112.6 million.

The Company identified the following elements under the transaction:

(i) Combined element of an exclusive, worldwide, royalty free, license to the CRISPR/Cas9 technology specifically for the indications designated by Casebia, and delivery of the consents of the assignors of the underlying patents to the technology to develop, manufacture, and commercialize licensed products under that license,

(ii) Research and development services, and

(iii) The issuance of the Bayer Convertible Loan.

The Company determined the fair value of the license was $71.4 million based on the consideration paid and the fair value of the 50% interest in Casebia, which was determined utilizing discounted cash flows based on reasonable estimates and assumptions of cash flows expected from Casebia. The fair value of the separate research and development services was determined to be $6.3 million. The fair value of the Bayer Convertible Loan was determined to be $24.5 million, based on the fair value of the underlying preferred shares that were exchanged as part of the immediate conversion. Using a relative fair value allocation, the Company allocated the aggregate arrangement consideration paid as follows:

(i) $63.6 million was allocated to the license and patent holder consent combined element,

(ii) $0.6 million was allocated to the future research and development services, and

(iii) $27.0 million was allocated to the Bayer Convertible Loan.

The difference between combined above amounts of $91.2 million and the total allocable arrangement consideration of $112.6 million is due to allocable arrangement consideration which is not yet due associated with the $6.3 million of estimated cash consideration to be received under the research and development service arrangement and the remaining $15.0 million of the license fee which will be paid upon the delivery of the consent necessary from the patent holders of the Company's intellectual property.

Upon the delivery of the patent holders' consent, the combined amount attributed to the license element will be recognized as other income. Until such time, it will be reflected as a Deferred Gain on the consolidated balance sheet. The Company determined that this amount did not meet the definition of revenue because the licensing of its technology in connection with the formation of a joint venture is not part of the Company's major ongoing or central operations.

The amount attributed to future research and development services is recorded as deferred revenue as of September 30, 2016, net of the $35,000 recognized for services performed to date, and will be recognized in future periods as the research and development services are provided.

As the amount allocated to the Bayer Convertible Loan represents a $8.0 million discount to its $35 million face value, the Company recognized interest expense during the nine months ended September 30, 2016 equal to the discount. The Convertible Loan automatically converted into Series B preferred shares on its January 29, 2016 maturity date.

As of September 30, 2016, the Company has recorded an equity method investment of $35.7 million equal to the fair value of the Company's interest in Casebia of $36.4 million (which was included in the allocable arrangement consideration described above) less equity method losses of $0.7 million for the nine months ended September 30, 2016.

Total operating expenses, and net loss of Casebia for the three and nine months ended September 30, 2016 was $3.0 million and $77.1 million, which included research and development expenses equal to $71.4 million for the fair value of the CRISPR license acquired. During the three and nine months ended September 30, 2016, the Company recorded equity method losses of $0 and $0.7 million. The Company has not recorded unrealized losses of $35.7 million from its accounting of the equity in the losses of Casebia until such time that the deferred gain allocated to the license and patent holder consent combined element is realized.

Subscription Agreement with Bayer Global Investments B.V.

On December 19, 2015, the Company entered into a subscription agreement, ("Subscription Agreement"), with Bayer Global Investments B.V., ("Bayer BV"). Pursuant to the Subscription Agreement, Bayer BV was given the option, at its election, to purchase $35.0 million of the Company's Common Shares in a private placement concurrent with the Company's IPO at a per share price equal to the public offering price. In October 2016, concurrent with the IPO, the Company issued and sold 2,500,000 Common Shares to Bayer BV, at the IPO price of $14.00 per share (the "Concurrent Private Placement") resulting in aggregate net proceeds of $35.0 million in accordance with the terms of the Company's subscription agreement with Bayer BV.

9. Redeemable Convertible Preferred Shares

The Company's redeemable convertible preferred shares (collectively, the "Preferred Shares") have been classified as temporary or mezzanine equity on the accompanying consolidated balance sheets in accordance with authoritative guidance for the classification and measurement of redeemable securities as the Preferred Shares were contingently redeemable at the option of the holders.

The redemption terms, conversion terms, rights, preferences, and privileges of the Preferred Shares are included in the Prospectus. There were no changes to the redemption terms, conversion terms, rights, preferences, and privileges of the Preferred Shares during the nine months ended September 30, 2016.

In October 2013, the Company issued 440,001 Series A-1 Preferred Shares for CHF 1.14 ($1.28) per share, resulting in gross proceeds of CHF 0.5 million ($0.6 million).

In April 2014, the Company issued 3,120,001 Series A-2 Preferred Shares in exchange for CHF 3.05 ($3.47) per share of such amount CHF 1.45 ($1.65) per share was received upon issuance resulting in gross proceeds of CHF 4.5 million ($5.1 million) and the balance of CHF 1.60 ($1.82) per share was called in February 2015 by the Board of Directors of the Company resulting in additional gross proceeds of CHF 5.0 million ($5.3 million).

In April 2015, the Company issued 10,758,006 Series A-3 Preferred Shares in exchange for $4.24 per share whereby $2.12 per share was received upon issuance, resulting in gross proceeds of $22.8 million and the balance of $2.12 per share was due upon meeting certain milestones. As of December 31, 2015, none of the milestones had occurred and the Company had an outstanding subscription receivable of $22.8 million related to the Series A-3 Preferred Shares. The balance of the Series A-3 Preferred Share subscription receivable of $2.12 per share was called on May 5, 2016 by the Board of Directors and gross proceeds of $22.8 million were received by May 27, 2016.

In May 2015, the Company issued 4,519,016 Series B Preferred Shares in exchange for CHF 6.20 ($6.74) per share resulting in gross proceeds of CHF 28.0 million ($30.5 million).

In January 2016, the Company issued 5,464,608 Series B Preferred Shares upon conversion of $38.4 million of Vertex Convertible Loans plus accrued interest and $35.0 million of Bayer Convertible Loans at a conversion price of $13.43 per share.

In June 2016, the Company issued 2,834,252 Series B Preferred Shares in exchange for $13.43 per share resulting in gross proceeds of $38.1 million.

In October 2016, upon the closing of the IPO, all 27,135,884 of the Company's outstanding Preferred Shares converted into Common Shares on a one-for-one basis.

10. Share Capital

As of December 31, 2015 and September 30, 2016, the Company had 5,528,079 and 5,662,126 registered Common Shares, respectively, and 18,837,024 and 27,135,884 registered Preferred Shares, respectively, outstanding with a par value of CHF 0.03 per share in share capital. Of the 5,662,126 Common Shares registered at September 30, 2016, 97,744 of these relate to an unvested restricted share award, and are not considered outstanding. Outstanding share capital also includes 8,747 vested restricted shares and 8,900 exercised stock options, which are authorized in conditional capital but not yet registered in the Swiss Commercial Register as issued share capital.

The voting, dividend and liquidation rights of the holders of Common Shares are subject to and qualified by the rights, powers and preferences of the holders of Preferred Shares and are included in the Prospectus. There were no changes to the voting, dividend and liquidation rights of the holders of Common Shares during the nine months ended September 30, 2016.

Conditional Capital

Since inception, the Company has created conditional capital for the establishment of its 2015 option and grant plan (the "2015 Plan"), shares issuable under the terms of the call option agreement with Dr. Charpentier, and Preferred Shares issuable under the terms of the convertible loan financings.

In July 2016, the Company created additional conditional capital which would enable an increase in its share capital of up to 34,329,942 Common Shares, with a par value of CHF 0.03 per share, to be used in the IPO, the concurrent private placement, bonds and similar debt instruments post-IPO, and employee benefit plans.

Conditional Capital Reserved for Future Issuance

The Company had the following conditional capital reserved for future issuance:

Type of Share Capital	Conditional Capital	As of September 30, 2016	As of December 31, 2015
Common Shares	Charpentier Call Option	328,017	328,017
Common Shares	Vested unissued restricted share awards under 2015 Plan	8,747	—
Common Shares	Unvested unissued restricted share awards under 2015 Plan	166,667	142,794
Common Shares	Exercised options under the 2015 Plan	8,900	—
Common Shares	Outstanding stock options awards under 2015 Plan	3,558,998	1,939,986
Common Shares	Reserved for future issuance under the 2015 Plan	52,322	33,567
Common Shares	Shares available for IPO	16,399,005	—
Common Shares	Shares available for concurrent private placement	2,605,330	—
Common Shares	Shares available for bonds and similar debt instruments	4,919,700	—
Common Shares	Shares available for employee benefit plans	10,405,907	—
	Total	38,453,593	2,444,364

11. Equity-based Compensation

2015 Option and Grant Plan

In April 2015, the shareholders approved the 2015 Plan. The 2015 Plan provides for the issuance of equity awards in the form of restricted shares, options to purchase Common Shares which may constitute incentive stock options ("ISOs") or non-statutory stock options ("NSOs"), unrestricted stock unit grants, and qualified performance-based awards to eligible employees, officers, directors, consultants, and other key personnel. Terms of the equity awards, including vesting requirements, are determined by the Board, subject to the provisions of the Plan. Options granted by the Company typically vest over four years and have a contractual life of ten years. As of December 31, 2015, no options were exercised and there were 1,939,986 options outstanding and 142,794 restricted shares granted under the 2015 Plan. As of September 30, 2016, options to purchase 8,900 Common Shares were exercised and there were 3,558,998 options outstanding and 142,794 restricted shares granted under the 2015 Plan. As of December 31, 2015 and September 30, 2016, the Company has 33,567 and 218,989 Common Shares, respectively, reserved for future grant under the 2015 Plan.

Prior to July 2016, the Company has historically denominated equity awards in Swiss Francs and converted such awards to U.S. dollars using the applicable exchange rate on the date of grant for financial reporting purposes. On July 27, 2016, the Company revised the 2015 plan documents to provide that all grants would be denominated in U.S. dollars in preparation for the Company's IPO. Accordingly, the Company converted all exercise prices denominated in Swiss Francs to U.S. dollars using the exchange rate on July 27, 2016. The modification did not result in incremental value to the option holders and thus no incremental stock based compensation expense was recorded during the nine months ended September 30, 2016 in connection with the modification.

Prior to the adoption of the 2015 Plan, certain employees and non-employees were granted restricted Common Shares directly from the Company and from a pool of unrestricted Common Shares held by the founders and Fay Corp. Such shares are treated as issued and outstanding Common Shares by the Company in all periods presented.

In August 2016, the Company granted 206,929 options to purchase Common Shares from Treasury Shares held by the Company. Terms of the equity awards, including vesting requirements, are determined by the Board. Options granted by the Company vest over four years and have a contractual life of ten years.

Equity-based Compensation Expense

Total equity-based compensation expense is recognized for stock options and restricted shares granted to employees and non-employees and has been reported in the Company's consolidated statements of operations as follows (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2016	2015	2016	2015
Research and development	$ 1,343	$ 439	$2,834	$ 1,118
General and administrative	950	590	3,982	1,390
Total	$ 2,293	$ 1,029	$6,816	$ 2,508

The following table summarizes stock option activity under the 2015 Plan and from Treasury Shares for employees and non-employees (intrinsic value in thousands):

	Stock Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (years)	Aggregate Intrinsic Value
Outstanding at December 31, 2015	1,939,986	$ 2.31	9.7	$ 6,688
Granted	1,847,506	$ 10.95		
Exercised	(8,900)	$ 1.97		
Cancelled or forfeited	(12,665)	$ 4.96		
Outstanding at September 30, 2016	3,765,927	$ 6.53	9.2	$ 22,764
Exercisable at September 30, 2016	695,053	$ 2.13	9.0	$ 7,255
Vested or expected to vest at September 30, 2016 (1)	3,112,563	$ 5.74	9.2	$ 21,288

(1) Represents the number of vested options at September 30, 2016 plus the number of unvested options expected to vest based on the unvested options outstanding at September 30, 2016.

During the nine months ended September 30, 2016 and 2015, the Company granted stock options to purchase 1,847,506 and 1,703,403 Common Shares with a weighted-average grant date fair value of $7.68 and $3.01 per share, respectively. As of December 31, 2015 and September 30, 2016, the total unrecognized compensation cost related to employee, non-vested stock options granted was $4.2 million and $11.7 million, respectively. As of December 31, 2015 and September 30, 2016, the total unrecognized compensation cost related to non-employee, non-vested stock options granted was $0.1 million and $0.3 million, respectively. As of December 31, 2015 and September 30, 2016, the Company expects to recognize total unrecognized compensation cost over a remaining weighted-average period of 3.3 years and 3.3 years, respectively.

During the nine months ended September 30, 2016 and 2015, the Company granted options to purchase 429,998 and 261,389 Common Shares, respectively, subject to service and performance-based vesting conditions. The Company is recognizing compensation expense ratably over the required service period based on its estimate of the number of shares that will vest. If there is a change in the estimate of the number of shares that are probable of vesting, the Company will cumulatively adjust compensation expense in the period that the change in estimate is made.

The Company estimates the fair value of each employee and non-employee stock award on the grant date using the Black-Scholes option-pricing model based on the following range of assumptions regarding the fair value of the underlying Common Shares on each measurement date:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2016	2015	2016	2015
Employees:				
Weighted average expected volatility	84.6%	76.0%	81.8%	76.1%
Expected term (in years)	6.0	6.0	6.0	6.0
Risk free interest rate	1.1 - 1.3%	1.7%	1.1 - 1.5%	1.7%
Expected dividend yield	0.0%	0.0%	0.0%	0.0%
Non employees:				
Weighted average expected volatility	93.6%	84.0%	93.6%	84.0%
Expected term (in years)	10.0	10.0	10.0	10.0
Risk free interest rate	1.6%	2.2%	1.6%	2.2%
Expected dividend yield	0.0%	0.0%	0.0%	0.0%

The Company also grants share based payment awards in the form of founder shares transferred to employees (Founder Shares) and restricted shares subject to service based vesting requirements. The Company granted 790,078 restricted shares and Founder shares during the nine months ended September 30, 2015 with weighted-average grant date fair value of $2.12 per share. The Company did not grant any restricted shares or Founder Shares during the nine months ended September 30, 2016. As of September 30, 2016, there were 407,092 million unvested shares (Founder Shares and restricted shares) outstanding with a weighted-average grant date fair value of $1.89 per share.

During the nine months ended September 30, 2015, pursuant to the share exchange transaction between the Company and TRACR, holders of TRACR ordinary shares, restricted ordinary shares and certain subscription rights to ordinary shares were granted replacement awards of Common Shares, restricted share awards and subscription rights to Common Shares in exchange for TRACR ordinary shares held and subscription rights for TRACR shares. Pursuant to the share exchange transaction, the Company issued 852,846 Common Shares to the founders of TRACR, 656,031 restricted shares to employee and non-employee advisors, and 459,217 Common Shares to Fay Corp.

As of September 30, 2016, there was $2.0 million and $1.3 million of unrecognized compensation expense related to restricted shares and Founder Shares, respectively, to be recognized over a weighted-average period of 1.6 years and 1.5 years, respectively.

Fay Corp. Awards

A summary of the status of and changes in Common Shares held by Fay Corp. as of 2015, and September 30, 2016 is as follows:

	Shares
Common Shares outstanding held by Fay Corp as of December 31, 2015	892,598
Common Shares issued to Fay Corp	—
Common Shares transferred from Fay Corp	(618,414)
Common Shares repurchased by the Company from Fay Corp	(274,184)
Common Shares outstanding held by Fay Corp as of September 30, 2016	—

During the nine months ended September 30, 2016, Fay Corp. transferred a total of 618,414 Common Shares to two non-employee directors, one employee and a nonemployee advisor and the Company repurchased 274,184 Common Shares. Also during the nine months ended September 30, 2016, Fay Corp. transferred 328,014 shares of fully vested Common Shares to two nonemployee directors pursuant to the share exchange transaction with TRACR in March 2015.

In addition, during the nine months ended September 30, 2016, the Company and Fay Corp. transferred 290,400 Common shares to a Founder, 268,093 of which are subject to vesting terms with a weighted average grant date fair value of $12.65. The unvested Common Shares are subject to repurchase by the Company upon termination of the holder’s service relationship with the Company as well as upon certain triggering events such as termination for cause, material breach of agreement and insolvency of the holder. The expense related to the Common Shares transferred to the Founder was $2.4 million for the nine months ended September 30, 2016. As of September 30, 2016, the Company had unrecognized equity-based compensation expense of $1.3 million related to this award which is expected to be recognized over a remaining weighted-average service period of 1.5 years.

During the nine months ended September 30, 2015, Fay Corp. transferred 759,204 Common Shares, of which 131,203 Common Shares were transferred pursuant to the TRACR share exchange transaction, to two employees of the Company. The Common Shares are subject to service-based vesting conditions and unvested Common Shares may be repurchased in certain circumstances from the holder upon termination of the holder's service relationship with the Company. Both vested and unvested shares are subject to repurchase at the original purchase price upon certain triggering events such as termination for cause, material breach of agreement and insolvency of the holder.

As of December 31, 2015 and September 30, 2016, the Company had unrecognized equity-based compensation expense related to the Common Shares transferred from Fay Corp. to employees and non-employees with vesting restrictions of $1.8 million and $2.0 million, respectively. As of December 31, 2015 and September 30, 2016, the Company expects to recognize total unrecognized compensation cost over a remaining weighted-average period of 3.0 years and 2.0 years, respectively.

12. Net loss Per Share Attributable to Common Shareholders

As described in Note 2 the Company computes basic and diluted earnings (loss) per share using a methodology that gives effect to the impact of outstanding participating securities (the "two-class method"). For the three months and nine months ended September 30, 2016 and 2015, resulted in net losses, there is no income allocation required under the two-class method or dilution attributed to weighted average shares outstanding in the calculation of diluted loss per share. The 4,429,311 shares issued in the IPO on October 19, 2016, and related conversion of 27,135,884 preferred shares and exercise of the call option for 328,017 shares are not included in the calculation as of September 30, 2016.

Basic and diluted net loss per common share are calculated as follows (in thousands, except share and per share data):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2016	2015	2016	2015
Numerator:				
Net loss	$ (14,694)	$ (6,354)	$ (40,300)	$ (13,542)
Loss attributable to noncontrolling interest	14	1	24	309
Net loss attributable to common stockholders – basic and diluted	$ (14,680)	$ (6,353)	$ (40,276)	$ (13,233)
Denominator:				
Weighted-average common shares used in net loss per share attributable to common stockholders - basic and diluted	5,292,348	5,528,079	5,422,617	4,872,048
Net loss per share attributable to common stockholders - basic and diluted	$ (2.77)	$ (1.15)	$ (7.43)	$ (2.72)

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 thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2016	2015	2016	2015
Convertible preferred shares	27,135,884	18,837,024	27,135,884	18,837,024
Dr. Emmanuelle Charpentier call option	328,017	328,017	328,017	328,017
Outstanding options	3,765,927	1,703,403	3,765,927	1,703,403
Unvested unissued restricted shares	—	134,047	—	134,047
Unvested issued restricted shares	97,744	—	97,744	—
	31,327,572	21,002,491	31,327,572	21,002,491

13. Related Party Transactions

In connection with the Series A-3 Preferred Share financing, the Company paid $0.2 million on behalf of investors for legal and consulting costs incurred for the preparation and completion of the transaction.

The Company is a party to intellectual property license agreements with Dr. Charpentier. In addition, Dr. Charpentier is a consultant to the Company and holds a 17.9% noncontrolling interest in TRACR. During the three months ended September 30, 2016 and 2015, and during the nine months ended September 30, 2016 and 2015, the Company paid Dr. Charpentier a total of $17,000, $8,000, $1.0 million, and $25,000, respectively, in consulting, licensing and other fees. As of December 31, 2015 and September 30, 2016, the Company owed Dr. Charpentier approximately $1.0 million, and $0.3 million, respectively of additional fees primarily related to the Vertex Collaboration Agreement and Bayer Joint Venture Agreement.

During the nine months ended September 30, 2016, the Company formed a joint venture with Bayer. As a part of the agreement to form the joint venture, the Company also issued a convertible loan to Bayer, which then immediately converted in Series B Preferred Shares, see Note 6. During the three months ended September 30, 2016 and 2015, the Company recognized $0.4 million, $0, respectively, related to the performance of R&D services, and for the nine months ended September 30, 2016 and 2015, $0.4 million, and $0, respectively.

14. Income Taxes

During the nine months ended September 30, 2016 and September 30, 2015, the Company recorded an income tax provision of $0.1 million and an income tax benefit of $0.1 million, respectively, representing an effective tax rate of -0.2% and 0.5%, respectively. The income tax provision (benefit) is primarily attributable to the year-to-date pre-tax income (losses) earned by the Company's U.S. and U.K. subsidiaries. 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 partial valuation allowance against certain deferred tax assets for its subsidiaries in the UK and a full valuation allowance against its Swiss net deferred tax assets that are not more-likely-than-not realizable. As a results, the Company has not recognized a tax benefit related to the Swiss losses generated in the current periods.

15. Subsequent Events

For the purposes of the interim financial statements as of September 30, 2016 and the period then ended, the Company has evaluated the subsequent events through November 21, 2016, the date the unaudited interim financial statements were issued.

In September 2016, the Company formally offered an aggregate settlement up to $2.0 million to certain U.S common shareholders in order to release the Company from any and all obligations or claims concerning and/or arising out of the Company's status as a PFIC or CFC for any taxable year from 2013 through 2015, including for potential lack of timely notification of the Company's PFIC status for the year ended December 31, 2015, as described in Note 7.

Following the formal settlement offer in September 2016, this settlement has been accepted by substantially all of the U.S. common shareholders representing $1.8 million of the aggregate settlement of $2.0 million. To date, the Company has made payments of $1.8 million under the terms of the accepted settlements.

In October 2016, the Company completed its IPO, whereby the Company sold 4,429,311 Common Shares, inclusive of 429,311 Common Shares sold by the Company pursuant to the partial exercise of an overallotment option granted to the underwriters in connection with the offering, at a price to the public of $14.00 per share. The shares began trading on the NASDAQ Global Market on October 19, 2016. The aggregate net proceeds received by the Company from the offering were $54.1 million, after deducting underwriting discounts and commissions and other offering expenses payable by the Company. Concurrent with the IPO, the Company issued and sold 2,500,000 Common Shares to Bayer Global Investments B.V., in a private placement, at the IPO price of $14.00 per share, for aggregate net proceeds of $35.0 million.

Upon the closing of the IPO, all 27,135,884 of the Company's outstanding preferred shares converted into Common Shares on a one-for-one basis and the Company issued 328,017 Common Shares to Dr. Charpentier in exchange for the remaining non-controlling equity interest in TRACR pursuant to a call option agreement. Accordingly, in October 2016, TRACR became a wholly-owned subsidiary.

On July 19, 2016, the Company's shareholders approved the Company's 2016 Stock Option and Incentive Plan, or 2016 Stock Option Plan, which became effective upon completing of the IPO in October 2016. The Company has reserved 7,271,779 Common Shares for the issuance of awards under the 2016 Stock Option Plan.

On July 19, 2016, the Company's shareholders approved the Company's 2016 Employee Stock Purchase Plan, or 2016 ESPP, which became effective upon completing of the IPO in October 2016. The Company has reserved 413,226 Common Shares for the issuance of awards under the 2016 ESPP.

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

You should read this section in conjunction with our unaudited interim consolidated financial statements and related notes included in Part I. Item 1 of this report and our audited consolidated financial statements and related notes thereto and management's discussion and analysis of financial condition and results of operations for the years ended December 31, 2015 and 2014 included in our prospectus dated October 18, 2016, filed with the Securities and Exchange Commission, or SEC, pursuant to Rule 424(b)(4)) under the Securities Act of 1933, as amended, or the Securities Act, on October 19, 2016.

Forward-Looking Statements

This discussion contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended and Section 21E of the Securities Act of 1934, as amended. Forward-looking statements are identified by words such as "believe," "may," "could," "will," "estimate," "continue," "anticipate," "intend," "seek," "plan," "expect," "should," "would," 'potentially" or the negative of these terms or similar expressions in this report. You should read these statements carefully because they discuss future expectations, contain projections of future results of operations or financial condition, or state other "forward-looking" information. These statements relate to our future plans, objectives, expectations, intentions and financial performance and the assumptions that underlie these statements. These forward-looking statements are subject to certain risks and uncertainties that could cause such a difference include, but are not limited to, those discussed under the caption "Risk Factors" in this report. Forward-looking statements are based on our management's current beliefs and assumptions and based on information currently available to our management. These statements, like all statements in this report, speak only as of their date, and we undertake no obligation to update or revise these statements in light of future developments.

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 treatments for patients for whom current biopharmaceutical approaches have had limited success.

We are pursuing a two-pronged strategy using both *ex vivo* and *in vivo* approaches in our product development programs. Our most advanced programs in hemoglobinopathies use an *ex vivo* approach, whereby cells are harvested from a patient, treated with a CRISPR/Cas9-based therapeutic and reintroduced into the patient. Beyond these lead programs, we are pursuing a number of additional *ex vivo* applications, as well as select *in vivo* applications whereby the CRISPR/Cas9 therapeutic is delivered directly to target cells within the human body. Our initial *in vivo* applications will leverage well-established delivery technologies for gene based therapeutics.

Since our inception in October 2013, we have devoted substantially all of our resources to initiating the conduct of our research and development efforts, identifying potential product candidates, undertaking drug discovery and preclinical development activities, building and protecting our intellectual property portfolio, 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, convertible loans and collaboration agreements with strategic partners. From our inception through September 30, 2016, we raised an aggregate of $293.4 million, of which $125.2 million consisted of gross proceeds from private placements of our preferred shares, $73.2 million from the issuance of convertible loans, $75.0 million from an upfront payment under our collaboration with Vertex Pharmaceuticals, Incorporated, or Vertex, and $20.0 million from a technology access fee related to our license of technology to Casebia Therapeutics, LLP, our joint venture with Bayer HealthCare LLC, or Bayer HealthCare. In October 2016, we issued and sold 4,429,311 of our common shares, including 429,311 common shares sold pursuant to the underwriters' partial exercise of their option to purchase additional common shares, in our initial public offering, or the IPO, at a public offering price of $14.00 per share, for aggregate gross proceeds of approximately $62 million. Concurrent with the IPO, we issued and sold an aggregate of 2,500,000 to Bayer Global Investments BV. or Bayer BV, in a private placement, at the IPO price of $14.00 a share, for aggregate net proceeds of $35 million.

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 September 30, 2016, we had $228.6 million in cash and an accumulated deficit of $74.2 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; initiate preclinical testing and clinical trials for any product candidates we identify and develop, maintain, expand and protect our intellectual property portfolio, including in the ongoing interference proceeding with respect to certain of our in-licensed intellectual property; 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 and Joint Venture Agreement

In October 2015, we entered into a strategic research 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 2015, we entered into an agreement, the JV Agreement, with Bayer HealthCare to create a joint venture, Casebia Therapeutics LLP, the JV, to discover, develop and commercialize new breakthrough therapeutics to cure blood disorders, blindness and heart disease. We and Bayer HealthCare each have a 50% interest in the JV. Under the JV Agreement, Bayer HealthCare will make available its protein engineering expertise and relevant disease know-how and we will contribute our proprietary CRISPR/Cas9 gene editing technology and intellectual property. Bayer HealthCare 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 is required to pay us an aggregate amount of $35 million technology access fee, consisting of an upfront payment of $20 million, which was paid at the closing of the JV Agreement in March 2016, and another payment of $15 million when we obtain specified intellectual property rights relating to our CRISPR/Cas9 technology outside of the United States. In January 2016, we also issued a convertible loan to Bayer BV (the “Bayer Convertible Loan”) 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 the IPO in October 2016, the Company issued and sold 2,500,000 Common Shares to Bayer BV, at the IPO price of $14.00 per share resulting in aggregate net proceeds of $35.0 million.

In November 2016, the JV appointed Dr. James Burns as its President and Chief Executive Officer taking over from Dr. Axel Bouchon, Head of the Bayer Life Science Center, who served as general manager on an interim basis upon formation, and will continue to serve as a director on the management board. Dr. Rodger Novak, our Chief Executive Officer, continues to serve as the interim chairman of the management board of the JV.

Financial Overview

Revenue

To date, we have not generated any revenue from product sales and do not expect to do so in the near future. During the three months and nine months ended September 30, 2016, we recognized $1.2 million and $2.4 million, respectively, of revenue related to our collaboration agreement with Vertex, and $0.4 million and $0.4 million, respectively, of revenue related to our joint venture with Bayer Healthcare. As of September 30, 2016, we had not received any milestone or royalty payments under the Vertex collaboration agreement. For additional information about our revenue recognition policy, see the “Critical Accounting Policies and Estimates—Revenue.”

For the foreseeable future, we expect substantially all of our revenue to be generated from our collaboration with Vertex, our joint venture with Bayer HealthCare and any other collaboration agreements we may enter into.

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 we may 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 collaboration with Vertex, we do not track research and development costs on a program-by-program basis. We plan to track research and development costs for individual development programs when we identify a product candidate from the program that we believe we can advance into clinical trials.

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. These increases will likely include increased costs related to 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 the ongoing interference proceeding with respect to certain of our in-licensed intellectual property. Additionally, 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.

Results of Operations

Comparison of the Three Months Ended September 30, 2016 and 2015

The following table summarizes our results of operations for the three months ended September 30, 2016 and 2015, together with the dollar change in those items:

	Three Months Ended September 30,		Period-to-Period Change
	2016	2015	
	(in thousands of dollars)		
Collaboration revenue	$ 1,549	$ —	$ 1,549
Operating expenses:			
Research and development	12,052	3,749	8,303
General and administrative	4,107	2,453	1,654
Total operating expenses	16,159	6,202	9,957
Loss from operations	(14,610)	(6,202)	(8,408)
Other expense, net	(76)	1	(77)
Net loss before benefit from income taxes	(14,686)	(6,201)	(8,485)
Benefit from (provision for) income taxes	(8)	(153)	145
Net loss	$ (14,694)	$ (6,354)	$ (8,340)

Collaboration Revenue

We recognized collaboration revenue during the three months ended September 30, 2016 of $1.2 million related to our collaboration agreement with Vertex and $0.4 million related to our joint venture with Bayer. We did not record any revenue during the three months ended September 30, 2015.

Research and Development Expenses

Research and development expenses increased by $8.3 million to $12.1 million for the three months ended September 30, 2016, from $3.8 million for three months ended September 30, 2015. The increase in research and development expenses was primarily attributable to an increase in employee costs of $2.8 million associated with salaries, benefits and equity-based compensation expenses from hiring additional personnel, an increase in variable R&D program costs of $2.8 million, and an increase in facilities expense of $2.7 million, principally associated with the establishment in February 2015 of our research and development center in Cambridge, Massachusetts.

General and Administrative Expenses

General and administrative expenses increased by $1.7 million to $4.1 million for the three months ended September 30, 2016, from $2.5 million for three months ended September 30, 2015 The increase in general and administrative expenses was primarily attributable to increase in employee costs of $0.9 million associated with salaries, benefits and equity-based compensation expenses from hiring additional senior personnel, and increased intellectual property costs of $0.7 million, including third-party costs to procure the issuance of patents in jurisdictions outside the United States and costs related to the ongoing interference proceedings with respect to our in-licensed intellectual property.

Other Expense, Net

Other expense, net decreased by $0.1 million for the three months ended September 30, 2016 due to a increase in the loss on foreign currency remeasurement of $0.1 million.

Comparison of the Nine Months Ended September 30, 2016 and 2015

The following table summarizes our results of operations for the nine months ended September 30, 2016 and 2015, together with the dollar change in those items:

	Nine Months Ended September 30,		Period-to-Period Change
	2016	2015	
	(in thousands of dollars)		
Collaboration revenue	$ 2,820	$ —	$ 2,820
Operating expenses:			
Research and development	26,666	6,399	20,267
General and administrative	18,974	7,164	11,810
Total operating expenses	45,640	13,563	32,077
Loss from operations	(42,820)	(13,563)	(29,257)
Other (expense) income, net	2,604	(42)	2,646
Net loss before benefit from income taxes	(40,216)	(13,605)	(26,611)
Benefit from (provision for) income taxes	(84)	63	(147)
Net loss	$(40,300)	$(13,542)	$ (27,758)

Collaboration Revenue

We recognized collaboration revenue during the nine months ended September 30, 2016 of $2.4 million, related to our collaboration agreement with Vertex, and $0.4 million related to our joint venture with Bayer Healthcare. We did not record any revenue during the nine months ended September 30, 2015.

Research and Development Expenses

Research and development expenses increased by $20.3 million to $26.7 million for the nine months ended September 30, 2016, from $6.4 million for the nine months ended September 30, 2015. The increase in research and development expenses was primarily attributable to an increase in employee costs of $7.4 million associated with salaries, benefits and equity-based compensation expenses from hiring additional personnel, an increase in variable R&D program costs of $5.4 million, and increase in depreciation expense of $0.4 million, and an increase in facilities expense of $6.7 million, principally associated with the establishment in February 2015 of our research and development center in Cambridge, Massachusetts.

General and Administrative Expenses

General and administrative expenses increased by $11.8 million to $19.0 million for the nine months ended September 30, 2016, from $7.2 million for the nine months ended September 30, 2015. The increase in general and administrative expenses was primarily attributable to increased employee costs of $4.5 million, associated with salaries, benefits and equity-based compensation expenses from hiring additional personnel, increased consulting and professional fees of $2.3 million, and increased intellectual property costs of $2.7 million, including third-party costs to procure the issuance of patents in jurisdictions outside the United States and costs related to the ongoing interference proceedings with respect to certain of our in-licensed intellectual property, and an increase in other general and administrative expenses of $2.3 million, of which $2.0 million related to the Company's advanced pay settlement liability related to the Company's determination that it was a passive foreign investment company, as further discussed in Note 10 in the accompanying notes to the consolidated statements hereto.

Other (Expense) Income, Net

Other (expense) income, net increased by $2.6 million for the nine months ended September 30, 2016 due to a gain on extinguishment of convertible loans of $11.5 million, offset by an increase in the loss from equity method investment of $0.7 million, and an increase in interest expense on the convertible loans of $8.0 million.

Liquidity and Capital Resources

Overview

From our inception through September 30, 2016, we raised an aggregate of $293.4 million, of which $125.2 million consisted of gross proceeds from private placements of preferred shares, $73.2 million from the issuance of convertible loans, an up-front payment under our collaboration agreement with Vertex of $75.0 million and a technology access fee from our joint venture with Bayer HealthCare of $20.0 million.

On October 19, 2016, we completed our IPO whereby we sold 4,429,311 common shares, inclusive of 429,311 common shares sold by us pursuant to the partial exercise of an overallotment option granted to the underwriters in connection with the offering, at a price to the public of $14.00 per share. The aggregate net proceeds received by us from the offering were $54.1 million, after deducting underwriting discounts and commissions and other offering expenses payable by us. Concurrent with the IPO, we issued and sold 2,500,000 common shares to Bayer BV, at the IPO price $14.00 per share (the "Concurrent Private Placement"), resulting in aggregate net proceeds of $35.0 million in accordance with the terms of our subscription agreement with Bayer BV.

As of September 30, 2016, we had $228.6 million in cash, of which approximately $226.0 million was held outside of the United States.

Funding Requirements

Our primary uses of capital are, and we expect will continue to be, research and development services, 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 as we begin in 2017 to occupy our new office and laboratory facility. In addition, following the closing of our IPO, we expect to incur additional costs associated with operating as a public company.

Because our research programs are still in preclinical 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 future product candidates 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 or debt financings and collaboration arrangements. We are entitled to technology access fees and research payments under our collaboration with Vertex and the JV. Additionally, we are eligible to earn payments, in each case, on a per-product basis under the JV Agreement and our collaboration with Vertex. Except for these sources of funding, we will not have any committed external source of liquidity. To the extent that we raise additional capital through the future sale of equity or debt securities, the ownership interest 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 that the net proceeds from our IPO, including the proceeds from the Concurrent Private Placement with Bayer BV, together with 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 with Vertex and the JV. We have based this estimate on assumptions that may prove to be wrong, and we could use our capital resources sooner than we expect.

Our ability to generate revenue and achieve profitability depends significantly on our success in many areas, including: developing our delivery technologies and our CRISPR/Cas9 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; 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 portfolio of intellectual property rights, including patents, trade secrets and know-how; and attracting, hiring and retaining qualified personnel.

Cash Flows

Comparison of the Nine Months Ended September 30, 2016 and 2015

The following table provides information regarding our cash flows for the nine months ended September 30, 2016 and 2015:

	Nine Months Ended September 30,	
	2016	2015
	(in thousands)	
Net cash used in operating activities	$(35,894)	$ (9,576)
Net cash provided by (used in) investing activities	17,112	(651)
Net cash provided by financing activities	91,454	58,251
Effect of exchange rate changes on cash	(20)	80
Net increase in cash and cash equivalents	$ 72,652	$48,104

Net Cash Used in Operating Activities

Net cash used in operating activities was $35.9 million for the nine months ended September 30, 2016 and consisted primarily of net loss of $40.3 million adjusted for non-cash items (including equity-based compensation expense of $6.8 million, non-cash interest expense of $8.1 million and depreciation and amortization expense of $0.5 million, a gain on extinguishment of the Vertex convertible loan of $11.5 million, and loss from equity method investment of $0.7 million), an increase in prepaid expenses and other current assets of $0.7 million, and an increase in accounts receivable of $1.8 million, partially offset by an increase in accounts payable and accrued expenses of $3.3 million, deferred revenue of $1.2 million, and deferred rent of $0.2 million.

Net cash used in operating activities was $9.6 million for the nine months ended September 30, 2015 and consisted primarily of a net loss of $13.6 million adjusted for non-cash items (including equity-based compensation expense of $2.5 million), along with an increase in prepaid expenses and other assets of $0.5 million and an increase of restricted cash of $0.6 million, offset by an increase in accounts payable and accrued expenses of $2.5 million.

Net Cash Provided by (Used in) Investing Activities

Net cash provided by investing activities was $17.1 million during the nine months ended September 30, 2016, compared to $0.7 million used in the nine months ended September 30, 2015. Net cash provided by investing activities during the nine months ended September 30, 2016 consisted of proceeds of $20.0 million from the contribution of intellectual property to the JV, offset by contributions to the JV of $0.1 million, and the purchase of property and equipment of $2.8 million primarily associated with the commencement of internal research and development. We expect purchases of property and equipment to continue to increase in each of 2016 and 2017 as we build-out and outfit the office and laboratory space we expect to occupy beginning in 2017.

Net Cash Provided by Financing Activities

Net cash provided by financing activities was $91.5 million for the nine months ended September 30, 2016, compared to $58.3 million for the nine months ended September 30, 2015. The cash provided by financing activities for the nine months ended September 30, 2016 consisted of net proceeds of $35.0 million from the Bayer Convertible Loan, which was immediately converted into 2,605,330 Series B Preferred Shares, $22.8 million upon receipt of the Series A-3 subscription receivable, $38.1 million of gross proceeds from the issuance of Series B Preferred Shares in June 2016, offset by $1.8 million in Series B issuance costs and $2.7 million in IPO-related costs. The cash provided by financing activities for the nine months ended September 30, 2015 primarily consisted of net proceeds of $58.3 million from the receipt of the subscription receivable for the Series A-2 Preferred Shares, proceeds from Series A-3 Preferred Shares, and proceeds from Series B Preferred Shares.

Contractual Obligations

We enter into agreements in the normal course of business with vendors for preclinical research studies and other services and products for operating purposes.

In May 2016, we entered into an agreement to sublease office and laboratory space in Cambridge, Massachusetts, for an initial term of ten years with an option to extend the lease for an additional five years. Our contractual obligation related to lease payments over the term of the sublease is approximately $56.2 million commencing in February 2017.

We have engaged several research institutions to identify new delivery strategies and applications of the CRISPR/Cas9 technology. As a result of these efforts, we have agreed to sponsor three research programs during 2016, with one of these continuing through 2018.

Off-Balance Sheet Arrangements

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements, as defined under applicable SEC rules.

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. generally accepted accounting principles. 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. 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 significant changes to our accounting policies discussed in our Prospectus.

Recent Accounting Pronouncements

Refer to Note 2, “Summary of Significant Accounting Policies,” in the accompanying notes to the consolidated financial statements for a discussion of recent accounting pronouncements. There were no new accounting pronouncements adopted during 2015 or 2016 that had a material effect on our financial statements.

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. We do not engage in any foreign exchange rate hedging activities and therefore we are subject to foreign currency impacts.

Taxation

We are subject to corporate taxation in Switzerland.

We are also entitled under Swiss laws to carry forward any losses incurred for a period of seven years and can offset our losses carried forward against future profits. As of December 31, 2015, we reported tax loss carry forwards from inception through 2015 for purposes of Swiss federal direct taxes in the aggregate amount of CHF 22.0 million. Due to the expected mixed company status (in case the advance tax ruling with respect to the mixed company status will be accepted) the tax losses at cantonal level amount to CHF 4.1 million. These tax losses could be available to offset future taxable income. If not used, these tax losses will expire seven years after the year in which they were incurred. Due to our limited income, there is a high risk that the tax loss carry forwards will expire partly or entirely.

The corporate profit tax rate in the Canton of Basel-Stadt where we are domiciled amounts (federal and cantonal) currently to a maximum of 27% before tax (taxes are deductible). We applied for a tax privilege as a mixed company for the years 2014 and 2015, and this application is pending. The Cantonal corporate profit tax rate for mixed companies is between 8% and 14% (federal and cantonal). The Canton does from time to time amend the level of taxation levied on corporations and there is no certainty that the tax rate currently in effect will not change in the future. For example, the government of the Canton Basel-Stadt is currently proposing to lower the cantonal corporate tax rate to 6.5% if the proposed corporate tax reform III is enacted. Corporate tax reform III would also abolish the mixed company privilege within a period of two years and corporate tax rates will be adapted. This proposal, if enacted, would result in a corporate tax rate of around 13% (federal and cantonal).

Item 4. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

The Company has established disclosure controls and procedures designed to ensure that information required to be disclosed in the reports that the Company files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and is accumulated and communicated to management, including the principal executive officer (our Chief Executive Officer) and principal financial officer (our Chief Financial Officer), to allow timely decisions regarding required disclosure.

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of September 30, 2016. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934 (the "Exchange Act"), means controls and other procedures of a company that are designed to ensure that information required to be disclosed by the company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Securities and Exchange Commission's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and our management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of September 30, 2016, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15(d)-15(f) under the Exchange Act) that occurred during the period covered by this Quarterly Report on Form 10-Q that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II - OTHER INFORMATION

Item 1. Legal Proceedings.

From time to time, we may become involved in litigation or other legal proceedings relating to claims arising from the ordinary course of business. There are currently no claims or actions pending against us that, in the opinion of our management, are likely to have a material adverse effect on our business. In January 2016, the United States Patent and Trademark Office, or USPTO, declared an interference between one of the pending U.S. patent applications we have in-licensed from Dr. Charpentier and twelve issued U.S. patents and one U.S. patent application owned jointly by The Broad Institute, Massachusetts Institute of Technology, President and Fellows of Harvard College, or Broad. The interference was redeclared in March 2016 to add a U.S. patent application owned by Broad. An interference is a proceeding conducted at the USPTO by the Patent Trial and Appeal Board, or PTAB, to determine which party was first to invent subject matter by at least two parties. There are currently two parties to this interference. Our in-licensed patent application is co-owned among Dr. Charpentier, the Regents of the University of California, and the University of Vienna, whom the USPTO designated collectively as "Senior Party"; Broad was designated as "Junior Party." Following motions by the parties and other procedural matters, the PTAB could conclude that the contested subject matter is not patentable to the Senior Party, which in this case could preclude Senior Party's U.S. patent application from issuing a patent; that the contested subject matter is not patentable to the Junior Party, which in this case could result in the cancellation of some or all of the Junior Party's claims; that the contested subject matter is not patentable to either party; or that the interference should be dismissed. Either party can appeal an adverse decision to the U.S. Court of Appeals for the Federal Circuit. For further information regarding risks regarding the interference and patent rights held by third parties, please see "Risk Factors—Risks Related to Our Intellectual Property" contained in Item 1A of this report.

Item 1A. Risk Factors.

This report contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those discussed in this report. Factors that could cause or contribute to these differences include, but are not limited to, those discussed below and elsewhere in this report and in any documents incorporated in this report by reference.

You should carefully consider the following risk factors, together with all other information in this report, including our financial statements and notes thereto, and in our other filings with the Securities and Exchange Commission. If any of the following risks, or other risks not presently known to us or that we currently believe to not be significant, develop into actual events, then our business, financial condition, results of operations or prospects could be materially adversely affected. If that happens, the market price of our common shares could decline, and shareholders may lose all or part of their investment.

Risks Related to Our Financial Position and Need for Additional Capital

We Have Incurred Significant Operating Losses Since Our Inception And Anticipate That We Will Incur Continued Losses For The Foreseeable Future.

We have funded our operations to date through proceeds from sales of preferred shares, convertible securities and payments received in connection with our joint venture with Bayer HealthCare LLC, or Bayer Healthcare, and collaboration agreement with Vertex Pharmaceuticals, Incorporated, or Vertex. Since inception, we have incurred significant operating losses. Our net loss was $6.8 million and $25.8 million for the years ended December 31, 2014 and 2015, respectively, and $40.3 for the nine months ended September 30, 2016. As of September 30, 2016, we had an accumulated deficit of $74.2 million. We expect to continue to incur significant expenses and operating losses over the next several years and for the foreseeable future. Our prior losses, combined with expected future losses, have had and will continue to have an adverse effect on our shareholders' deficit and working capital. We anticipate that our expenses will increase substantially if and as we:

- continue our current research programs and our preclinical development of product candidates from our current research programs;
- seek to identify additional research programs and additional product candidates;
- initiate preclinical studies and clinical trials for any product candidates we identify and choose to develop;
- maintain, expand and protect our intellectual property portfolio;
- seek marketing approvals for any of our product candidates that successfully complete clinical trials;
- further develop our gene editing technology;
- hire additional clinical, quality control and scientific personnel;

- add operational, financial and management information systems and personnel, including personnel to support our product candidate development;
- acquire or in-license other technologies;
- ultimately establish a sales, marketing, and distribution infrastructure to commercialize any products for which we may obtain marketing approval; and
- operate as a public company.

As a result, we expect to continue to incur significant and increasing operating losses for the foreseeable future. Because of the numerous risks and uncertainties associated with developing gene editing product candidates, we are unable to predict the extent of any future losses or when we will become profitable, if at all. Even if we do become profitable, we may not be able to sustain or increase our profitability on a quarterly or annual basis.

We Will Need To Raise Substantial Additional Funding, Which Will Dilute Our Shareholders. If We Are Unable To Raise Capital When Needed, We Would Be Forced To Delay, Reduce Or Eliminate Some Of Our Product Development Programs Or Commercialization Efforts.

The development of gene editing product candidates is capital intensive. We expect our expenses to increase in connection with our ongoing activities, particularly as we continue the research and development of, initiate preclinical studies and clinical trials for and seek marketing approval for our product candidates. In addition, if we obtain marketing approval for any of our product candidates, we expect to incur significant commercialization expenses related to product sales, marketing, manufacturing and distribution to the extent that such sales, marketing, manufacturing and distribution are not the responsibility of Bayer Healthcare or Vertex, or other future collaborators. We may also need to raise additional funds sooner if we choose to pursue additional indications or geographies for our product candidates or otherwise expand more rapidly than we presently anticipate. Furthermore, we expect to incur additional costs associated with operating as a public company. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. If we are unable to raise capital when needed or on attractive terms, we would be forced to delay, reduce or eliminate certain of our research and development programs or future commercialization efforts.

As of September 30, 2016, we had cash of approximately $228.6 million. We expect that the net proceeds from our initial public offering, or the IPO, and the concurrent private placement, together with our existing cash and cash equivalents, and anticipated research support under our joint venture with Bayer Healthcare and collaboration agreement with Vertex, will enable us to fund our operating expenses and capital expenditure requirements for at least the next 24 months.

Our future capital requirements will depend on, and could increase significantly as a result of, many factors, including:

- the scope, progress, results and costs of drug discovery, preclinical development, laboratory testing and clinical trials for our product candidates;
- the scope, prioritization and number of our research and development programs;
- the costs, timing and outcome of regulatory review of our product candidates;
- the costs of establishing and maintaining a supply chain for the development and manufacture of our product candidates;
- the success of our current collaborations;
- our ability to establish and maintain additional collaborations on favorable terms, if at all;
- the achievement of milestones or occurrence of other developments that trigger payments under any additional collaboration agreements we obtain;
- the extent to which we are obligated to reimburse, or entitled to reimbursement of, clinical trial costs under future collaboration agreements, if any;
- the costs of preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property rights and defending intellectual property-related claims;
- the extent to which we acquire or in-license other product candidates and technologies;
- the costs of establishing or contracting for manufacturing capabilities if we obtain regulatory approvals to manufacture our product candidates;
- the costs of establishing or contracting for sales and marketing capabilities if we obtain regulatory approvals to market our product candidates; and
- our ability to establish and maintain healthcare coverage and adequate reimbursement.

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

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

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

We Have A Very Limited Operating History, Which May Make It Difficult To Evaluate Our Technology And Product Development Capabilities And Predict Our Future Performance.

We are very early in our development efforts and all of our lead programs are still in the discovery stage. We were formed in October 2013, have no products approved for commercial sale and have not generated any revenue from product sales. Our ability to generate product revenue or profits, which we do not expect will occur for many years, if ever, will depend heavily on the successful development and eventual commercialization of our product candidates, which may never occur. We may never be able to develop or commercialize a marketable product.

Each of our programs will require additional discovery research and then preclinical and clinical development, regulatory approval in multiple jurisdictions, obtaining manufacturing supply, capacity and expertise, building of a commercial organization, substantial investment and significant marketing efforts before we generate any revenue from product sales. In addition, our product candidates must be approved for marketing by the FDA or certain other foreign regulatory agencies, including the EMA, before we may commercialize any product.

Our limited operating history, particularly in light of the rapidly evolving gene editing field, may make it difficult to evaluate our technology and industry and predict our future performance. Our very short history as an operating company makes any assessment of our future success or viability subject to significant uncertainty. We will encounter risks and difficulties frequently experienced by very early stage companies in rapidly evolving fields. If we do not address these risks successfully, our business will suffer.

Our Ability To Use Tax Loss Carryforwards In Switzerland May Be Limited.

As of December 31, 2015, we reported tax loss carry forwards from inception through 2015 for purposes of Swiss federal direct taxes in the aggregate amount of CHF 22.0 million. Due to the expected mixed company status (in case the advance tax ruling with respect to the mixed company status will be accepted) the tax losses at cantonal level amount to CHF 4.1 million. These tax losses could be available to offset future taxable income. If not used, these tax losses will expire seven years after the year in which they were incurred. Due to our limited income, there is a high risk that the tax loss carry forwards will expire partly or entirely.

Risks Related to Our Business, Technology and Industry

We Are Very Early In Our Development Efforts. All Of Our Product Candidates Are Still In Preclinical Development And It Will Be Many Years Before We Or Our Collaborators Commercialize A Product Candidate, If Ever. If We Are Unable To Advance Our Product Candidates To Clinical Development, Obtain Regulatory Approval And Ultimately Commercialize Our Product Candidates, Or Experience Significant Delays In Doing So, Our Business Will Be Materially Harmed.

We are very early in our development efforts and have focused our research and development efforts to date on our Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) Associated protein-9 nuclease, or CRISPR/Cas9, gene editing technology, identifying our initial targeted disease indications and our initial product candidates. Our future success depends heavily on the successful development of our CRISPR/Cas9 gene editing product candidates. Currently, all of our product candidates are in preclinical development. We have also only recently begun development activities for a product candidate for the treatment of beta-thalassemia and sickle cell disease in connection with our collaboration with Vertex and have not yet identified a lead product candidate. We have invested substantially all of our efforts and financial resources in the identification and preclinical development of our current product candidates. Our ability to generate product revenue, which we do not expect will occur for many years, if ever, will depend heavily on the successful development and eventual commercialization of our product candidates, which may never occur. For example, our research programs, including those subject to our joint venture with Bayer Healthcare and collaboration agreement

with Vertex, may fail to identify potential product candidates for clinical development for a number of reasons. Our research methodology may be unsuccessful in identifying potential product candidates, or our potential product candidates may be shown to have harmful side effects or may have other characteristics that may make the products impractical to manufacture, unmarketable, or unlikely to receive marketing approval. We currently generate no revenue from sales of any product and we may never be able to develop or commercialize a marketable product.

We plan to file our clinical trial applications, or CTAs, to begin our first clinical trial for our hemoglobinopathy program targeting beta-thalassemia in late 2017 and for our hemoglobinopathy program targeting sickle cell disease in early 2018. In each case, the filing is subject to the identification and selection of guide RNA with acceptable efficiency. Commencing this clinical trial, and any other clinical trials we may initiate, is also subject to acceptance by the FDA of our Investigational New Drug application, or IND, and finalizing the trial design based on discussions with the FDA and other regulatory authorities, including the NIH. In the event that the FDA requires us to complete additional preclinical studies or we are required to satisfy other FDA requests, the start of our first clinical trial for our hemoglobinopathy programs or any of our other programs may be delayed. Even after we receive and incorporate guidance from these regulatory authorities, the FDA or other regulatory authorities could disagree that we have satisfied their requirements to commence our clinical trial or change their position on the acceptability of our trial design or the clinical endpoints selected, which may require us to complete additional preclinical studies or clinical trials or impose stricter approval conditions than we currently expect.

Our product candidates will require additional preclinical and clinical development, regulatory and marketing approval in multiple jurisdictions, obtaining manufacturing supply, capacity and expertise, building of a commercial organization, substantial investment and significant marketing efforts before we generate any revenue from product sales. In addition, our product development programs must be approved for marketing by the FDA, or certain other foreign regulatory agencies, including the EMA, before we may commercialize our product candidates.

The success of our product candidates will depend on several factors, including the following:

- successful information of product candidates in our development programs;
- successful completion of preclinical studies;
- sufficiency of our financial and other resources to complete the necessary preclinical studies and clinical trials;
- ability to develop safe and effective delivery mechanisms for our *in vivo* therapeutic programs;
- ability to identify optimal RNA sequences to guide genomic editing;
- entry into collaborations to further the development of our product candidates;
- a positive recommendation of the Recombinant DNA Advisory Committee of the U.S. National Institutes of Health, or NIH;
- approval of INDs for our product candidates to commence clinical trials;
- successful enrollment in, and completion of, preclinical studies and clinical trials;
- successful data from our clinical program that supports an acceptable risk-benefit profile of our product candidates in the intended populations;
- receipt of regulatory and marketing approvals from applicable regulatory authorities;
- establishment of arrangements with third-party manufacturers for clinical supply and commercial manufacturing and, where applicable, commercial manufacturing capabilities;
- successful development of our internal manufacturing processes and transfer to larger-scale facilities operated by either a contract manufacturing organization, or CMO, or by us;
- establishment and maintenance of patent and trade secret protection or regulatory exclusivity for our product candidates;
- commercial launch of our product candidates, if and when approved, whether alone or in collaboration with others;
- acceptance of the product candidates, if and when approved, by patients, the medical community and third-party payors;
- effective competition with other therapies and treatment options;
- establishment and maintenance of healthcare coverage and adequate reimbursement;
- enforcement and defense of intellectual property rights and claims;
- maintenance of a continued acceptable safety profile of the product candidates following approval; and
- achieving desirable medicinal properties for the intended indications.

Additionally, because our technology involves gene editing across multiple cell and tissue types, we are subject to many of the challenges and risks that gene therapies face, including:

- regulatory requirements governing gene and cell therapy products have changed frequently and may continue to change in the future; to date, no products that involve the genetic modification of patient cells have been approved in the United States and only one gene therapy product has been approved in the European Union;
- improper insertion of a gene sequence into a patient’s chromosome could lead to lymphoma, leukemia or other cancers, or other aberrantly functioning cells; and

- the FDA recommends a follow-up observation period of 15 years or longer for all patients who receive treatment using gene therapies, and we may need to adopt such an observation period for our product candidates.

If we do not succeed in one or more of these factors in a timely manner or at all, we could experience significant delays or an inability to successfully commercialize our product candidates, which would materially harm our business. If we do not receive regulatory approvals for our product candidates, we may not be able to continue our operations.

Our CRISPR/Cas9 Gene Editing Product Candidates Are Based On A New Gene Editing Technology, Which Makes It Difficult To Predict The Time And Cost Of Development And Of Subsequently Obtaining Regulatory Approval, If At All. There Have Only Been A Limited Number Of Clinical Trials Of Product Candidates Based On Gene Editing Technology And No Gene Editing Products Have Been Approved In The United States Or In The European Union.

CRISPR/Cas9 gene editing technology is relatively new and no products based on CRISPR/Cas9 or other similar gene editing technologies have been approved in the United States or the European Union and only a limited number of clinical trials of products based on gene editing technologies have been commenced, and none have been completed. As such it is difficult to accurately predict the developmental challenges we may incur for our product candidates as they proceed through product discovery or identification, preclinical studies and clinical trials. In addition, because our programs are all in the research or preclinical stage, we have not yet been able to assess safety in humans, and there may be long-term effects from treatment with any of our future product candidates that we cannot predict at this time. Any product candidates we may develop will act at the level of DNA, and, because animal DNA differs from human DNA, testing of our product candidates in animal models may not be predictive of the results we observe in human clinical trials of our product candidates for either safety or efficacy. Also, animal models may not exist for some of the diseases we choose to pursue in our programs. As a result of these factors, it is more difficult for us to predict the time and cost of product candidate development, and we cannot predict whether the application of our gene editing technology, or any similar or competitive gene editing technologies, will result in the identification, development, and regulatory approval of any products. There can be no assurance that any development problems we experience in the future related to our gene editing technology or any of our research programs will not cause significant delays or unanticipated costs, or that such development problems can be solved. Any of these factors may prevent us from completing our preclinical studies or any clinical trials that we may initiate or commercializing any product candidates we may develop on a timely or profitable basis, if at all.

The clinical trial requirements of the FDA, the EMA and other regulatory authorities and the criteria these regulators use to determine the safety and efficacy of a product candidate vary substantially according to the type, complexity, novelty and intended use and market of the product candidate. No products based on gene editing technologies have been approved by regulators. As a result, the regulatory approval process for product candidates such as ours is uncertain and may be more expensive and take longer than the approval process for product candidates based on other, better known or more extensively studied technologies. It is difficult to determine how long it will take or how much it will cost to obtain regulatory approvals for our product candidates in either the United States or the European Union or how long it will take to commercialize our product candidates. Delay or failure to obtain, or unexpected costs in obtaining, the regulatory approval necessary to bring a potential product candidate to market could decrease our ability to generate sufficient product revenue, and our business, financial condition, results of operations and prospects may be harmed.

The FDA, The NIH And The EMA Have Demonstrated Caution In Their Regulation Of Gene Therapy Treatments, And Ethical And Legal Concerns About Gene Therapy And Genetic Testing May Result In Additional Regulations Or Restrictions On The Development And Commercialization Of Our Product Candidates, Which May Be Difficult To Predict.

The FDA, NIH and the EMA have each expressed interest in further regulating biotechnology, including gene therapy and genetic testing. For example, the EMA advocates a risk-based approach to the development of a gene therapy product. Agencies at both the federal and state level in the United States, as well as U.S. congressional committees and foreign governments, have also expressed interest in further regulating the biotechnology industry. Such action may delay or prevent commercialization of some or all of our product candidates. Within the broader genome product field, only one gene therapy product, uniQure N.V.'s Glybera, has received marketing authorization from the European Commission, and no gene therapy products have received marketing approval in the United States.

Regulatory requirements in the United States and abroad governing gene therapy products have changed frequently and may continue to change in the future. The FDA established the Office of Cellular, Tissue and Gene Therapies within its Center for Biologics Evaluation and Research to consolidate the review of gene therapy and related products, and established the Cellular, Tissue and Gene Therapies Advisory Committee to advise this review. Prior to submitting an IND, our human clinical trials are subject to review by the NIH Office of Biotechnology Activities, or OBA, Recombinant DNA Advisory Committee, or the RAC. Following an initial review, RAC members make a recommendation as to whether the protocol raises important scientific, safety, medical, ethical or social issues

that warrant in-depth discussion at the RAC's quarterly meetings. Even though the FDA decides whether individual gene therapy protocols may proceed under an IND, the RAC's recommendations are shared with the FDA and the RAC public review process, if undertaken, can delay the initiation of a clinical trial, even if the FDA has reviewed the trial design and details and has not objected to its initiation or has notified the sponsor that the study may begin. Conversely, the FDA can put an IND on a clinical hold even if the RAC has provided a favorable review or has recommended against an in-depth, public review. Moreover, under guidelines published by the NIH, patient enrollment in our future gene editing clinical trials cannot begin until the investigator for such clinical trial has received a letter from the OBA indicating that the RAC review process has been completed; and Institutional Biosafety Committee, or IBC, approval as well as all other applicable regulatory authorizations have been obtained. In addition to the government regulators, the IBC and institutional review board, or IRB, of each institution at which we conduct clinical trials of our product candidates, or a central IRB if appropriate, would need to review the proposed clinical trial to assess the safety of the trial. In addition, adverse developments in clinical trials of gene therapy products conducted by others may cause the FDA or other oversight bodies to change the requirements for approval of any of our product candidates. Similarly, the EMA governs the development of gene therapies in the European Union and may issue new guidelines concerning the development and marketing authorization for gene therapy products and require that we comply with these new guidelines.

These regulatory review agencies and committees and the new requirements or guidelines they promulgate may lengthen the regulatory review process, require us to perform additional studies or trials, increase our development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of our product candidates or lead to significant post-approval limitations or restrictions. As we advance our product candidates, we will be required to consult with these regulatory agencies and committees and comply with applicable requirements and guidelines. If we fail to do so, we may be required to delay or discontinue development of such product candidates. These additional processes may result in a review and approval process that is longer than we otherwise would have expected. Delays as a result of an increased or lengthier regulatory approval process or further restrictions on the development of our product candidates can be costly and could negatively impact our or our collaborators' ability to complete clinical trials and commercialize our current and future product candidates in a timely manner, if at all.

If Any Of The Product Candidates We May Develop Or The Delivery Modes We Rely On Cause Undesirable Side Effects, It Could Delay Or Prevent Their Regulatory Approval, Limit The Commercial Potential Or Result In Significant Negative Consequences Following Any Potential Marketing Approval.

Product candidates we may develop may be associated with undesirable side effects, unexpected characteristics or other serious adverse events, including off-target cuts of DNA, or the introduction of cuts in DNA at locations other than the target sequence. These off-target cuts could lead to disruption of a gene or a genetic regulatory sequence at an unintended site in the DNA, or, in those instances where we also provide a segment of DNA to serve as a repair template, it is possible that following off-target cut events, DNA from such repair template could be integrated into the genome at an unintended site, potentially disrupting another important gene or genomic element. There also is the potential risk of delayed adverse events following exposure to gene editing therapy due to persistent biologic activity of the genetic material or other components of products used to carry the genetic material. Possible adverse side effects that could occur with treatment with gene editing products include an immunologic reaction after administration which could substantially limit the effectiveness of the treatment. If our CRISPR/Cas9 gene editing technology demonstrates a similar effect, we may decide or be required to halt or delay preclinical development or clinical development of our product candidates. In addition to serious adverse events or side effects caused by any product candidate we may develop, the administration process or related procedures also can cause undesirable side effects. If any such events occur, our clinical trials could be suspended or terminated.

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

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

- regulatory authorities may revoke licenses or suspend, vary or withdraw approvals of such product candidate;
- regulatory authorities may require additional warnings on the label;
- we may be required to change the way a product candidate is administered or conduct additional clinical trials;
- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

Any of these events could prevent us from achieving or maintaining market acceptance of our CRISPR/Cas9 technology and any product candidates we may identify and develop and could have a material adverse effect on our business, financial condition, results of operations and prospects.

If We Experience Delays Or Difficulties In The Enrollment Of Patients In Clinical Trials, Our Receipt Of Necessary Regulatory Approvals Could Be Delayed Or Prevented.

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

Patient enrollment is also affected by other factors, including:

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

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

Positive Results From Early Preclinical Studies Of Our Product Candidates Are Not Necessarily Predictive Of The Results Of Later Preclinical Studies And Any Future Clinical Trials Of Our Product Candidates. If We Cannot Replicate The Positive Results From Our Earlier Preclinical Studies Of Our Product Candidates In Our Later Preclinical Studies And Future Clinical Trials, We May Be Unable To Successfully Develop, Obtain Regulatory Approval For And Commercialize Our Product Candidates.

Any positive results from our preclinical studies of our product candidates may not necessarily be predictive of the results from required later preclinical studies and clinical trials. Similarly, even if we are able to complete our planned preclinical studies or any future clinical trials of our product candidates according to our current development timeline, the positive results from such preclinical studies and clinical trials of our product candidates may not be replicated in subsequent preclinical studies or clinical trial results.

Many companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in late-stage clinical trials after achieving positive results in early-stage development and we cannot be certain that we will not face similar setbacks. These setbacks have been caused by, among other things, preclinical findings made while clinical trials were underway or safety or efficacy observations made in preclinical studies and clinical trials, including previously unreported adverse events. Moreover, non-clinical and clinical data are often susceptible to varying interpretations and analyses and many companies that believed their product candidates performed satisfactorily in preclinical studies and clinical trials nonetheless failed to obtain FDA or EMA approval.

Even If We Complete The Necessary Preclinical Studies And Clinical Trials, The Marketing Approval Process Is Expensive, Time-Consuming, And Uncertain And May Prevent Us From Obtaining Approvals For The Commercialization Of Any Product Candidates We May Develop. If We Are Not Able To Obtain, Or If There Are Delays In Obtaining, Required Regulatory Approvals, We Will Not Be Able To Commercialize, Or Will Be Delayed In Commercializing, Product Candidates We May Develop, And Our Ability To Generate Revenue Will Be Materially Impaired.

Any product candidates we may develop and the activities associated with their development and commercialization, including their design, testing, manufacture, safety, efficacy, recordkeeping, labeling, storage, approval, advertising, promotion, sale, and distribution, are subject to comprehensive regulation by the FDA and other regulatory authorities in the United States and by comparable authorities in other countries. Failure to obtain marketing approval for a product candidate will prevent us from commercializing the product candidate in a given jurisdiction. We have not received approval or clearance to market any product candidates from regulatory authorities in any jurisdiction and it is possible that none of our product candidates or any product candidates we may seek to develop in the future will ever obtain regulatory approval or clearance. We have only limited experience in filing and supporting the applications necessary to gain marketing approvals and expect to rely on third-party contract research organizations, or CROs, or regulatory consultants to assist us in this process. Securing regulatory approval requires the submission of extensive preclinical and clinical data and supporting information to the various regulatory authorities for each therapeutic indication to establish the biologic product candidate's safety, purity, efficacy and potency. Securing regulatory approval also requires the submission of information about the product manufacturing process to, and inspection of manufacturing facilities by, the relevant regulatory authority. Any product candidates we develop may not be effective, may be only moderately effective, or may prove to have undesirable or unintended side effects, toxicities or other characteristics that may preclude our obtaining marketing approval or prevent or limit commercial use.

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

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

We May Never Obtain FDA Approval For Any Of Our Product Candidates In The United States, And Even If We Do, We May Never Obtain Approval For Or Commercialize Any Of Our Product Candidates In Any Other Jurisdiction, Which Would Limit Our Ability To Realize Their Full Market Potential.

In order to eventually market any of our product candidates in any particular foreign jurisdiction, we must establish and comply with numerous and varying regulatory requirements on a jurisdiction-by-jurisdiction basis regarding safety and efficacy. Approval by the FDA in the United States, if obtained, does not ensure approval by regulatory authorities in other countries or jurisdictions. In addition, clinical trials conducted in one country may not be accepted by regulatory authorities in other countries, and regulatory approval in one country does not guarantee regulatory approval in any other country. Approval processes vary among countries and can involve additional product testing and validation and additional administrative review periods. Seeking foreign regulatory approval could result in difficulties and costs for us and require additional preclinical studies or clinical trials which could be costly and time-consuming. Regulatory requirements can vary widely from country to country and could delay or prevent the introduction of our products in those countries. The foreign regulatory approval process involves all of the risks associated with FDA approval. We do not have any product candidates approved for sale in any jurisdiction, including international markets, and we do not have experience in obtaining regulatory approval in international markets. If we fail to comply with regulatory requirements in international markets or to obtain and maintain required approvals, or if regulatory approvals in international markets are delayed, our target market will be reduced and our ability to realize the full market potential of our products will be unrealized.

Gene editing Products Are Novel And May Be Complex And Difficult To Manufacture. We Could Experience Manufacturing Problems That Result In Delays In The Development Or Commercialization Of Our Product Candidates Or Otherwise Harm Our Business.

The manufacturing process used to produce CRISPR/Cas9-based product candidates may be complex, as they are novel and have not been validated for clinical and commercial production. Several factors could cause production interruptions, including equipment malfunctions, facility contamination, raw material shortages or contamination, natural disasters, disruption in utility services, human error or disruptions in the operations of our suppliers.

Our product candidates will require processing steps that are more complex than those required for most small molecule drugs. Moreover, unlike small molecules, the physical and chemical properties of biologics generally cannot be fully characterized. As a result, assays of the finished product may not be sufficient to ensure that the product will perform in the intended manner. Accordingly, we will employ multiple steps to control the manufacturing process to assure that the process works and the product candidate is made strictly and consistently in compliance with the process. Problems with the manufacturing process, even minor deviations from the normal process, could result in product defects or manufacturing failures that result in lot failures, product recalls, product liability claims or insufficient inventory. We may encounter problems achieving adequate quantities and quality of clinical grade materials that meet FDA, the EMA or other applicable standards or specifications with consistent and acceptable production yields and costs.

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

We also may encounter problems hiring and retaining the experienced scientific, quality-control and manufacturing personnel needed to operate our manufacturing processes, which could result in delays in production or difficulties in maintaining compliance with applicable regulatory requirements. Any problems in our manufacturing process or facilities could make us a less attractive collaborator for potential partners, including larger pharmaceutical companies and academic research institutions, which could limit our access to additional attractive development programs.

Adverse Public Perception Of Gene Editing And Cellular Therapy Products May Negatively Impact Demand For, Or Regulatory Approval Of, Our Product Candidates.

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

If, In The Future, We Are Unable To Establish Sales And Marketing Capabilities Or Enter Into Agreements With Third Parties To Sell And Market Products Based On Our Technologies, We May Not Be Successful In Commercializing Our Products If And When Any Products Candidates Are Approved And We May Not Be Able To Generate Any Revenue.

We do not currently have a sales or marketing infrastructure and, as a company, have no experience in the sale, marketing or distribution of therapeutic products. To achieve commercial success for any approved product candidate for which we retain sales and marketing responsibilities, we must build our sales, marketing, managerial and other non-technical capabilities or make arrangements with third parties to perform these services. In the future, we may choose to build a focused sales and marketing infrastructure to sell, or participate in sales activities with our collaborators for, some of our product candidates if and when they are approved.

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

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

- our inability to recruit, train and retain adequate numbers of effective sales and marketing personnel;
- the inability of sales personnel to obtain access to physicians or persuade adequate numbers of physicians to prescribe any future product that we may develop;
- the lack of complementary treatments to be offered by sales personnel, which may put us at a competitive disadvantage relative to companies with more extensive product lines; and
- unforeseen costs and expenses associated with creating an independent sales and marketing organization.

If we enter into arrangements with third parties to perform sales, marketing and distribution services, our product revenue or the profitability to us from these revenue streams is likely to be lower than if we were to market and sell any product candidates that we develop ourselves. In addition, we may not be successful in entering into arrangements with third parties to sell and market our product candidates or may be unable to do so on terms that are favorable to us. We likely will have little control over such third parties and any of them may fail to devote the necessary resources and attention to sell and market our product candidates effectively. If we do not establish sales and marketing capabilities successfully, either on our own or in collaboration with third parties, we may not be successful in commercializing our product candidates. Further, our business, results of operations, financial condition and prospects will be materially adversely affected.

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

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

Even If We, Or Any Collaborators We May Have, Obtain Marketing Approvals For Any Product Candidates We Develop, The Terms Of Approvals And Ongoing Regulation Of Our Products Could Require The Substantial Expenditure Of Resources And May Limit How We, Or They, Manufacture And Market Our Products, Which Could Materially Impair Our Ability To Generate Revenue.

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

safety or efficacy of the product. The FDA also may place other conditions on approvals including the requirement for a REMS to assure the safe use of the product. If the FDA concludes a REMS is needed, the sponsor of the Biologics License Application, or BLA, must submit a proposed REMS before it can obtain approval. A REMS could include medication guides, physician communication plans, or elements to assure safe use, such as restricted distribution methods, patient registries and other risk minimization tools.

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

Any Product Candidate For Which We Obtain Marketing Approval Could Be Subject To Restrictions Or Withdrawal From The Market, And We May Be Subject To Substantial Penalties If We Fail To Comply With Regulatory Requirements Or If We Experience Unanticipated Problems With Our Products, When And If Any Of Them Are Approved.

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

In addition, later discovery of previously unknown problems with a product candidate, including adverse events of unanticipated severity or frequency, or with our manufacturing processes, or failure to comply with regulatory requirements, may result in, among other things:

- restrictions on such products, manufacturers, or manufacturing processes;
- restrictions on the labeling or marketing of a product;
- restrictions on the distribution or use of a product;
- requirements to conduct post-marketing clinical trials;
- receipt of warning or untitled letters;
- restrictions on the marketing or manufacturing of the product, withdrawal of the product from the market, or voluntary or mandatory biologic recalls;
- refusal to approve pending applications or supplements to approved applications that we submit;
- fines, restitution, or disgorgement of profits or revenue;
- suspension or withdrawal of marketing approvals or revocation of biologics licenses;
- suspension of any ongoing clinical trials;
- refusal to permit the import or export of our products;
- product seizure or detention; and
- injunctions or the imposition of civil or criminal penalties.

The FDA's policies may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained, which would adversely affect our business, prospects and ability to achieve or sustain profitability.

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

The Commercial Success Of Any Of Our Product Candidates Will Depend Upon Its Degree Of Market Acceptance By Physicians, Patients, Third-party Payors And Others In The Medical Community.

Ethical, social and legal concerns about gene therapy could result in additional regulations restricting or prohibiting our products. Even with the requisite approvals from FDA in the United States, the EMA in the European Union and other regulatory authorities internationally, the commercial success of our product candidates will depend, in part, on the acceptance of physicians, patients and health care payors of gene therapy products in general, and our product candidates in particular, as medically necessary, cost-effective and safe. Any product that we commercialize may not gain acceptance by physicians, patients, health care payors and others in the medical community. The degree of market acceptance of gene therapy products and, in particular, our product candidates, if approved for commercial sale, will depend on several factors, including:

- the efficacy, durability and safety of such product candidates as demonstrated in any future clinical trials;
- the potential and perceived advantages of product candidates over alternative treatments;
- the cost of treatment relative to alternative treatments;
- the clinical indications for which the product candidate is approved by FDA or the EMA;
- patient awareness of, and willingness to seek, genotyping;
- the willingness of physicians to prescribe new therapies;
- the willingness of the target patient population to try new therapies;
- the prevalence and severity of any side effects;
- product labeling or product insert requirements of FDA, the EMA or other regulatory authorities, including any limitations or warnings contained in a product's approved labeling;
- relative convenience and ease of administration;
- the strength of marketing and distribution support;
- the timing of market introduction of competitive products;
- publicity concerning our products or competing products and treatments; and
- sufficient third-party payor coverage and reimbursement.

Even if a potential product displays a favorable efficacy and safety profile in preclinical studies and future clinical trials, market acceptance of the product will not be fully known until after it is launched. If our product candidates do not achieve an adequate level of acceptance following regulatory approval, if ever, we may not generate significant product revenue and may not become profitable.

We May Expend Our Limited Resources To Pursue A Particular Product Candidate Or Indication And Fail To Capitalize On Product Candidates Or Indications That May Be More Profitable Or For Which There Is A Greater Likelihood Of Success.

We have limited financial and managerial resources. As a result, we may forego or delay pursuit of opportunities with other product candidates or for other indications that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to timely capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs and product candidates for specific indications may not yield any commercially viable products. If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through collaboration, licensing or other royalty arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate.

We Face Significant Competition In An Environment Of Rapid Technological Change And The Possibility That Our Competitors May Achieve Regulatory Approval Before Us Or Develop Therapies That Are More Advanced Or Effective Than Ours, Which May Harm Our Business And Financial Condition, And Our Ability To Successfully Market Or Commercialize Our Product Candidates.

The biotechnology and pharmaceutical industries, including the gene therapy field, are characterized by rapidly changing technologies, significant competition and a strong emphasis on intellectual property. We face substantial competition from many different sources, including large and specialty pharmaceutical and biotechnology companies, academic research institutions, government agencies and public and private research institutions, some or all of which may have greater access to capital or resources than we do.

We are aware of several companies focused on developing gene editing in various indications using CRISPR/Cas9 gene editing technology, including Intellia Therapeutics, Inc. and Editas Medicine, Inc., or Editas. There can be no certainty that other gene editing technologies will not be considered better or more attractive than our technology for the development of products. For example, researchers, including Feng Zhang, Ph.D., one of the founders of Editas recently announced the discovery of a CRISPR system involving a different protein, Cpf1, which can also edit human DNA. These researchers have asserted that Cpf1 may work better than Cas9 in some cases. Cas9 may be determined to be less attractive than Cpf1 or other CRISPR proteins that have yet to be discovered.

There are additional companies developing therapies using additional gene editing technologies, including transcription activator-like effector nucleases (TALENs), meganucleases and zinc finger nucleases (ZFNs). These companies include bluebird bio, Cellectis, Poseida Therapeutics, Precision Biosciences, and Sangamo Biosciences. Additional companies developing gene therapy products include Abeona Therapeutics, Avalanche Biotechnologies, Dimension Therapeutics, REGENXBIO, Spark Therapeutics and uniQure.

In addition to competition from other gene editing therapies or gene therapies, any product we may develop may also face competition from other types of therapies, such as small molecule, antibody or protein therapies. In addition, new scientific discoveries may cause CRISPR/Cas9 technology, or gene editing as a whole, to be considered an inferior form of therapy.

Many of our current or potential competitors, either alone or with their collaboration partners, have significantly greater financial resources and expertise in research and development, manufacturing, preclinical studies, conducting clinical trials, obtaining regulatory approvals and marketing approved products than we do. Mergers and acquisitions in the pharmaceutical, biotechnology, and gene therapy industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These competitors also compete with us in recruiting and retaining qualified scientific and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs. Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient, or are less expensive than any products that we may develop or that would render any products that we may develop obsolete or non-competitive. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market. Additionally, technologies developed by our competitors may render our potential product candidates uneconomical or obsolete, and we may not be successful in marketing any product candidates we may develop against competitors.

In addition, as a result of the expiration or successful challenge of our patent rights, we could face more litigation with respect to the validity and/or scope of patents relating to our competitors' products and our patents may not be sufficient to prevent our competitors from commercializing competing products. The availability of our competitors' products could limit the demand, and the price we are able to charge, for any products that we may develop and commercialize.

To become and remain profitable, we must develop and eventually commercialize product candidates with significant market potential, which will require us to be successful in a range of challenging activities. These activities can include completing preclinical studies and clinical trials of our product candidates, obtaining marketing approval for these product candidates, manufacturing, marketing and selling those products that are approved and satisfying any post marketing requirements. We may never succeed in any or all of these activities and, even if we do, we may never generate revenues that are significant or large enough to achieve profitability. If we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would decrease the value of our Company and could impair our ability to raise capital, maintain our research and development efforts, expand our business or continue our operations. A decline in the value of our Company also could cause shareholders to lose all or part of their investment.

Even If We Are Able To Commercialize Any Product Candidates, Such Products May Become Subject To Unfavorable Pricing Regulations, Third-party Reimbursement Practices, Or Healthcare Reform Initiatives, Which Would Harm Our Business.

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

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

There may be significant delays in obtaining reimbursement for newly approved products, and coverage may be more limited than the purposes for which the product is approved by the FDA or similar regulatory authorities outside the United States. Moreover, eligibility for reimbursement does not imply that any product will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale, and distribution. Interim reimbursement levels for new products, if applicable, may also not be sufficient to cover our costs and may not be made permanent. Reimbursement rates may vary according to the use of the product and the clinical setting in which it is used, may be based on reimbursement levels already set for lower cost products and may be incorporated into existing payments for other services. Net prices for products may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future relaxation of laws that presently restrict imports of products from countries where they may be sold at lower prices than in the United States. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement policies. Our inability to promptly obtain coverage and profitable payment rates from both government-funded and private payors for any approved products we may develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize products, and our overall financial condition.

Risks Related to Our Relationships with Third Parties

If Conflicts Arise Between Us And Our Collaborators Or Strategic Partners, These Parties May Act In A Manner Adverse To Us And Could Limit Our Ability To Implement Our Strategies.

If conflicts arise between our corporate or academic collaborators or strategic partners and us, the other party may act in a manner adverse to us and could limit our ability to implement our strategies. Some of our academic collaborators and strategic partners are conducting multiple product development efforts within each area that is the subject of the collaboration with us. Our collaborators or strategic partners, however, may develop, either alone or with others, products in related fields that are competitive with the products or potential products that are the subject of these collaborations. Competing products, either developed by the collaborators or strategic partners or to which the collaborators or strategic partners have rights, may result in the withdrawal of partner support for our product candidates.

Some of our collaborators or strategic partners could also become our competitors in the future. Our collaborators or strategic partners could develop competing products, preclude us from entering into collaborations with their competitors, fail to obtain timely regulatory approvals, terminate their agreements with us prematurely, or fail to devote sufficient resources to the development and commercialization of products. Any of these developments could harm our product development efforts.

Our Collaborators And Strategic Partners May Control Aspects Of Our Clinical Trials, Which Could Result In Delays And Other Obstacles In The Commercialization Of Our Proposed Products And Materially Harm Our Results Of Operations.

For some programs, we will depend on third party collaborators and strategic partners to design and conduct our clinical trials. As a result, we may not be able to conduct these programs in the manner or on the time schedule we currently contemplate, which may negatively impact our business operations. In addition, if any of these collaborators or strategic partners withdraw support for our programs or proposed products or otherwise impair their development, our business could be negatively affected. In October 2015, we entered into a four-year collaboration agreement with Vertex to research, develop and commercialize new treatments aimed at the underlying genetic causes of human diseases, including beta-thalassemia and sickle cell. In addition, in December 2015, we entered into an agreement with Bayer Healthcare to create a joint venture to discover and commercialize therapeutics for the treatment of blood disorders, blindness and heart disease in addition to select indications related to other sensory organs, metabolic diseases and autoimmune diseases based on our CRISPR/Cas9 gene editing technology.

We and Bayer Healthcare each hold a 50% interest in the joint venture and each have two designees on the management board. As such, we cannot control all aspects of the clinical development and commercialization of any product candidate developed by the joint venture. Similarly, under our collaboration agreement with Vertex, Vertex has sole authority to select genetic targets to pursue and we will not have control over the development of any product candidates. Our lack of control over the clinical development in our agreements with Bayer Healthcare and Vertex could cause delays or other difficulties in the development and commercialization of product candidates, which may prevent completion of intended IND filings in a timely fashion, if at all.

In addition, the termination of our agreement with Vertex would prevent us from receiving any milestone, royalty payments and other benefits under that agreement. The termination of our joint venture with Bayer Healthcare would prevent us from participating in the profits of the joint venture. Either development would have a materially adverse effect on our results of operations.

Our Collaborators Or Strategic Partners May Decide To Adopt Alternative Technologies Or May Be Unable To Develop Commercially Viable Products With Our Technology, Which Would Negatively Impact Our Revenues And Our Strategy To Develop These Products.

Our collaborators or strategic partners may adopt alternative technologies, which could decrease the marketability of our CRISPR/Cas9 gene editing technology. Additionally, because our current or future collaborators or strategic partners are likely to be working on more than one development project, they could choose to shift their resources to projects other than those they are working on with us. If they do so, this would delay our ability to test our technology and would delay or terminate the development of potential products based on our CRISPR/Cas9 gene editing technology. Further, our collaborators and strategic partners may elect not to develop products arising out of our collaborative and strategic partnering arrangements or to devote sufficient resources to the development, manufacturing, marketing or sale of these products. The failure to develop and commercialize a product candidate pursuant to our agreements with our current or future collaborators would prevent us from receiving future milestone and royalty payments which would negatively impact our revenues.

We May Seek To Establish Additional Collaborations And, If We Are Not Able To Establish Them On Commercially Reasonable Terms, We May Have To Alter Our Development And Commercialization Plans.

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

We face significant competition in seeking appropriate collaborators. Whether we reach a definitive agreement for any additional collaborations will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration and the proposed collaborator's evaluation of a number of factors. Those factors may include the design or results of clinical trials, the likelihood of approval by FDA or similar regulatory authorities outside the United States, the potential market for the subject product candidate, the costs and complexities of manufacturing and delivering such product candidate to patients, the potential of competing drugs, the existence of uncertainty with respect to our ownership of technology, which can exist if there is a challenge to such ownership without regard to the merits of the challenge and industry and market conditions generally. The collaborator may also consider alternative product candidates or technologies for similar indications that may be available to collaborate on and whether such a collaboration could be more attractive than the one with us for our product candidate. The terms of any additional collaborations or other arrangements that we may establish may not be favorable to us.

We may also be restricted under existing collaboration agreements from entering into future agreements on certain terms with potential collaborators. For example, we have granted exclusive rights to Vertex for certain genetic targets, and during the term of the collaboration agreement, we will be restricted from granting rights to other parties to use our CRISPR/Cas9 technology to pursue therapies that address these genetic targets. Similarly, pursuant to our joint venture agreement with Bayer Healthcare, during the term of the joint venture, and for a specified period after the termination of the joint venture, we will be prohibited from developing products that use our CRISPR/Cas9 technology in specified fields that would compete with the joint venture and Bayer, respectively. The non-competition provisions in each of these agreements could limit our ability to enter into strategic collaborations with future collaborators.

We may not be able to negotiate additional collaborations on a timely basis, on acceptable terms, or at all. Collaborations are complex and time-consuming to negotiate and document. In addition, there have been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future collaborators. If we are unable to negotiate and enter into new collaborations, we may have to curtail the development of the product candidate for which we are seeking to collaborate, reduce or delay its development program or one or more of our other development programs, delay its potential commercialization or reduce the scope of any sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund development or commercialization activities on our own, we may need to obtain additional capital, which may not be available to us on acceptable terms or at all. If we do not have sufficient funds, we may not be able to further develop our product candidates or bring them to market and generate product revenue.

We May Rely On Third Parties To Conduct Our Preclinical Studies And Any Future Clinical Trials For Our Product Candidates. If These Third Parties Do Not Successfully Carry Out Their Contractual Duties, Comply With Regulatory Requirements Or Meet Expected Deadlines, We May Not Be Able To Obtain Regulatory Approval For Or Commercialize Our Product Candidates And Our Business Could Be Substantially Harmed.

We may rely on medical institutions, clinical investigators, contract laboratories and other third parties, such as CROs, to conduct preclinical studies and future clinical trials for our product candidates. Nevertheless, we will be responsible for ensuring that each of our preclinical studies and clinical trials is conducted in accordance with the applicable protocol, legal and regulatory requirements and scientific standards and our reliance on CROs will not relieve us of our regulatory responsibilities. For example, we will remain responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan and protocols

for the trial. Moreover, the FDA requires us to comply with regulations, commonly referred to as Good Clinical Practices, or GCPs, for conducting, recording, and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity, and confidentiality of trial participants are protected. We also are required to register ongoing clinical trials and post the results of completed clinical trials on a government-sponsored database, ClinicalTrials.gov, within certain timeframes. Failure to do so can result in fines, adverse publicity, and civil and criminal sanctions. For any violations of laws and regulations during the conduct of our preclinical studies and clinical trials, we could be subject to warning letters or enforcement action that may include civil penalties up to and including criminal prosecution.

We and our CROs will be required to comply with regulations, including GCPs, for conducting, monitoring, recording and reporting the results of preclinical studies and clinical trials to ensure that the data and results are scientifically credible and accurate and that the trial patients are adequately informed, among other things, of the potential risks of participating in clinical trials and their rights are protected. These regulations are enforced by FDA, the Competent Authorities of the Member States of the European Economic Area and comparable foreign regulatory authorities for any drugs in clinical development. The FDA enforces GCP regulations through periodic inspections of clinical trial sponsors, principal investigators and trial sites. If we or our CROs fail to comply with applicable GCPs, the clinical data generated in our clinical trials may be deemed unreliable and FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We cannot assure you that, upon inspection, the FDA will determine that any of our future clinical trials will comply with GCPs. In addition, our future clinical trials must be conducted with product candidates produced in accordance with the requirements in cGMP regulations. Our failure or the failure of our CROs to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process and could also subject us to enforcement action.

Although we intend to design the clinical trials for our product candidates, CROs will conduct all of the clinical trials. As a result, many important aspects of our development programs, including their conduct and timing, will be outside of our direct control. Our reliance on third parties to conduct future preclinical studies and clinical trials will also result in less direct control over the management of data developed through preclinical studies and clinical trials than would be the case if we were relying entirely upon our own staff. Communicating with outside parties can also be challenging, potentially leading to mistakes as well as difficulties in coordinating activities. Outside parties may:

- have staffing difficulties;
- fail to comply with contractual obligations;
- experience regulatory compliance issues;
- undergo changes in priorities or become financially distressed; or
- form relationships with other entities, some of which may be our competitors.

These factors may materially adversely affect the willingness or ability of third parties to conduct our preclinical studies and clinical trials and may subject us to unexpected cost increases that are beyond our control. If the CROs do not perform preclinical studies and future clinical trials in a satisfactory manner, breach their obligations to us or fail to comply with regulatory requirements, the development, regulatory approval and commercialization of our product candidates may be delayed, we may not be able to obtain regulatory approval and commercialize our product candidates, or our development programs may be materially and irreversibly harmed. If we are unable to rely on preclinical and clinical data collected by our CROs, we could be required to repeat, extend the duration of, or increase the size of any clinical trials we conduct and this could significantly delay commercialization and require significantly greater expenditures.

We Expect To Rely On Third Parties To Manufacture Our Clinical Product Supplies, And We Intend To Rely On Third Parties For At Least A Portion Of The Manufacturing Process Of Our Product Candidates, If Approved. Our Business Could Be Harmed If The Third Parties Fail To Provide Us With Sufficient Quantities Of Product Inputs Or Fail To Do So At Acceptable Quality Levels Or Prices.

We do not currently own any facility that may be used as our clinical-scale manufacturing and processing facility and must eventually rely on outside vendors to manufacture supplies and process our product candidates. We have not yet caused any product candidates to be manufactured or processed on a commercial scale and may not be able to do so for any of our product candidates. We will make changes as we work to optimize the manufacturing process, and we cannot be sure that even minor changes in the process will result in therapies that are safe and effective.

The facilities used by our contract manufacturers to manufacture our product candidates must be approved by the FDA or other foreign regulatory agencies pursuant to inspections that will be conducted after we submit an application to the FDA or other foreign regulatory agencies. We will not control the manufacturing process of, and will be completely dependent on, our contract manufacturing partners for compliance with regulatory requirements, known as cGMP requirements, for manufacture of our product candidates. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict

regulatory requirements of the FDA or other regulatory authorities, they will not be able to secure and/or maintain regulatory approval for their manufacturing facilities. In addition, we have no control over the ability of our contract manufacturers to maintain adequate quality control, quality assurance and qualified personnel. If the FDA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of our product candidates or if it withdraws any such approval in the future, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain regulatory approval for or market our product candidates, if approved.

Our Relationships With Healthcare Providers, Physicians, And Third-party Payors Will Be Subject To Applicable Anti-kickback, Fraud And Abuse And Other Healthcare Laws And Regulations, Which Could Expose Us To Criminal Sanctions, Civil Penalties, Exclusion From Government Healthcare Programs, Contractual Damages, Reputational Harm And Diminished Profits And Future Earnings.

Although we do not currently have any drugs on the market, once we begin commercializing our product candidates, if ever, we will be subject to additional healthcare statutory and regulatory requirements and enforcement by the federal government and the states and foreign governments in which we conduct our business.

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

- the federal Anti-Kickback Statute prohibits, among other things, persons from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase, order, or recommendation of, any good or service, for which payment may be made under a state or Federal healthcare program, such as Medicare and Medicaid. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. Violation of the statute may give rise to criminal and/or civil penalties;
- the federal civil and criminal false claims laws, including the civil False Claims Act, impose criminal and civil penalties, including through civil whistleblower or qui tam actions, against individuals or entities for, among other things, knowingly presenting, or causing to be presented, to the federal government, claims for payment or approval from Medicare, Medicaid, or other government payors that are false, fictitious or fraudulent or knowingly making, using or causing to be made or used a false record or statement to avoid, decrease or conceal an obligation to pay money to the federal government, with potential liability including mandatory treble damages and significant per-claim penalties, currently set at $5,500 to $11,000 per false claim. In addition, the government may assert that a claim including items and services resulting from a violation of the federal Anti-Kickback Statute constitutes a false of fraudulent claim for purposes of the False Claims Act;
- the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, as further amended by the Health Information Technology for Economic and Clinical Health Act, or HITECH, and their implementing regulations which impose certain requirements on covered entities, including healthcare providers, health plans and healthcare clearing houses, as well as their business associates that perform certain services with respect to safeguarding the privacy, security and transmission of individually identifiable health information that constitutes protected health information, including mandatory contractual terms and restrictions on the use and/or disclosure of such information without appropriate authorization;
- the federal false statements statute prohibits knowingly and willfully falsifying, concealing, or covering up a material fact or making any materially false statement in connection with the delivery of or payment for healthcare benefits, items, or services; similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- the federal physician payment transparency requirements, sometimes referred to as the “Sunshine Act” under the Affordable Care Act, require manufacturers of drugs, devices, biologics and medical supplies that are reimbursable under Medicare, Medicaid, or the Children’s Health Insurance Program to report to the Department of Health and Human Services information related to physician payments and other transfers of value to physicians and teaching hospitals, and ownership and investment interests held by physicians and other healthcare providers and their immediate family members and applicable group purchasing organizations; and
- analogous state and foreign laws and regulations, such as state anti-kickback and false claims laws, which may apply to healthcare items or services that are reimbursed by non-governmental third-party payors, including private insurers.

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

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

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

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

Risks Related to Employee Matters, Managing Growth and Other Risks Related to Our Business

Our Future Success Depends On Our Ability To Retain Key Executives And To Attract, Retain And Motivate Qualified Personnel.

We are highly dependent on the research and development, clinical, commercial and business development expertise of Dr. Rodger Novak, our President and Chief Executive Officer, Dr. Sven Ante (Bill) Lundberg, our Chief Scientific Officer, Dr. Samarth Kulkarni, our Chief Business Officer, as well as the other principal members of our management, scientific and clinical team. Although we have entered into employment letter agreements with our executive officers, each of them may terminate their employment with us at any time. We do not maintain "key person" insurance for any of our executives or other employees. In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategy. Our consultants and advisors may be employed by employers other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability to us. The loss of the services of our executive officers or other key employees or consultants could impede the achievement of our research, development and commercialization objectives and seriously harm our ability to successfully implement our business strategy. If we are unable to retain high quality personnel, our ability to pursue our growth strategy will be limited.

We will also need to recruit and retain qualified scientific and clinical personnel as we advance the development of our product candidates and product pipeline. We may be unable to hire, train, retain or motivate these key personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. Failure to succeed in clinical trials may make it more challenging to recruit and retain qualified scientific personnel.

In addition, being organized in Switzerland may restrict our ability to attract, motivate and retain the required level of qualified personnel. In Switzerland, new legislation affecting public companies has been passed that, among other things, (i) imposes an annual binding shareholders' "say on pay" vote with respect to the compensation of executive management, including executive officers and the board of directors; (ii) prohibits severance, advances, transaction premiums and similar payments to executive officers and directors; and (iii) requires companies to specify various compensation-related matters in their articles of association, thus requiring them to be approved by a shareholders' vote.

We Will Need To Develop And Expand Our Company, And We May Encounter Difficulties In Managing This Development And Expansion, Which Could Disrupt Our Operations.

As of September 30, 2016, we had 84 full-time employees and, in connection with becoming a public company, we expect to increase our number of employees and the scope of our operations. To manage our anticipated development and expansion, we must continue to implement and improve our managerial, operational and financial systems, expand our facilities and continue to recruit and train additional qualified personnel. Also, our management may need to divert a disproportionate amount of its attention away from its day-to-day activities and devote a substantial amount of time to managing these development activities. Due to our limited resources, we may not be able to effectively manage the expansion of our operations or recruit and train additional qualified personnel. This may result in weaknesses in our infrastructure, give rise to operational mistakes, loss of business opportunities, loss of employees and reduced productivity among remaining employees. The physical expansion of our operations may lead to significant costs and may divert financial resources from other projects, such as the development of our product candidates. If our management is unable to effectively manage our expected development and expansion, our expenses may increase more than expected, our ability to generate or increase our revenue could be reduced and we may not be able to implement our business strategy. Our future financial performance and our ability to commercialize our product candidates, if approved, and compete effectively will depend, in part, on our ability to effectively manage the future development and expansion of our Company.

Our Employees, Principal Investigators, Consultants And Commercial Partners May Engage In Misconduct Or Other Improper Activities, Including Non-compliance With Regulatory Standards And Requirements And Insider Trading.

We are exposed to the risk of fraud or other misconduct by our employees, consultants, and commercial partners, and, if we commence clinical trials, our principal investigators. Misconduct by these parties could include intentional failures to comply with FDA regulations or the regulations applicable in the European Union and other jurisdictions, provide accurate information to the FDA, the European Commission, and other regulatory authorities, comply with healthcare fraud and abuse laws and regulations in the United States and abroad, report financial information or data accurately or disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. These laws and regulations restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs, and other business arrangements. Such misconduct also could involve the improper use of information obtained in the course of clinical trials or interactions with the FDA or other regulatory authorities, which could result in regulatory sanctions and cause serious harm to our reputation. We have adopted a code of conduct applicable to all of our employees, but it is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from government investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. Additionally, we are subject to the risk that a person could allege such fraud or other misconduct, even if none occurred. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, financial condition, results of operations, and prospects, including the imposition of civil, criminal and administrative penalties, damages, monetary fines, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, contractual damages, reputational harm, diminished profits and future earnings and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

If We Fail To Comply With Environmental, Health And Safety Laws And Regulations, We Could Become Subject To Fines Or Penalties Or Incur Costs That Could Harm Our Business.

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

Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of biological or hazardous materials.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may impair our research, development or production efforts. Our failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

Product Liability Lawsuits Against Us Could Cause Us To Incur Substantial Liabilities And Could Limit Commercialization Of Any Product Candidates That We May Develop.

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

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

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

If We Fail To Establish And Maintain Proper And Effective Internal Control Over Financial Reporting, Our Operating Results And Our Ability To Operate Our Business Could Be Harmed.

Ensuring that we have adequate internal financial and accounting controls and procedures in place so that we can produce accurate financial statements on a timely basis is a costly and time-consuming effort that needs to be re-evaluated frequently. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements in accordance with generally accepted accounting principles. We have begun the process of documenting, reviewing and improving our internal controls and procedures for compliance with Section 404 of the Sarbanes-Oxley Act of 2002, or SOX, which will require annual management assessment of the effectiveness of our internal control over financial reporting.

Implementing any appropriate changes to our internal controls may distract our officers and employees, entail substantial costs to modify our existing processes and take significant time to complete. These changes may not, however, be effective in maintaining the adequacy of our internal controls, and any failure to maintain that adequacy, or consequent inability to produce accurate financial statements on a timely basis, could increase our operating costs and harm our business. In addition, investors' perceptions that our internal controls are inadequate or that we are unable to produce accurate financial statements on a timely basis may harm our common share price and make it more difficult for us to effectively market and sell our service to new and existing customers.

Our Internal Computer Systems, Or Those Of Our Collaborators Or Other Contractors Or Consultants, May Fail Or Suffer Security Breaches, Which Could Result In A Material Disruption Of Our Product Development Programs.

Our internal computer systems and those of our current and any future collaborators and other contractors or consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. While we have not experienced any such material system failure, accident or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a disruption of our development programs and our business operations, whether due to a loss of our trade secrets or other proprietary information or other similar disruptions. For example, the loss of clinical trial data from future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability, our competitive position could be harmed and the further development and commercialization of our product candidates could be delayed.

Our Business Is Subject To Economic, Political, Regulatory And Other Risks Associated With International Operations.

Our business is subject to risks associated with conducting business internationally. We and a number of our suppliers and collaborative and clinical study relationships are located outside the United States. Accordingly, our future results could be harmed by a variety of factors, including:

- economic weakness, including inflation, or political instability in particular non-U.S. economies and markets;

- differing regulatory requirements for drug approvals in non-U.S. countries;
- potentially reduced protection for intellectual property rights;
- difficulties in compliance with non-U.S. laws and regulations;
- changes in non-U.S. regulations and customs, tariffs and trade barriers;
- changes in non-U.S. currency exchange rates and currency controls;
- changes in a specific country's or region's political or economic environment;
- trade protection measures, import or export licensing requirements or other restrictive actions by U.S. or non-U.S. governments;
- negative consequences from changes in tax laws;
- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;
- workforce uncertainty in countries where labor unrest is more common than in the United States;
- difficulties associated with staffing and managing international operations, including differing labor relations;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad; and
- business interruptions resulting from geo-political actions, including war and terrorism, or natural disasters including floods and fires.

Risks Related to Intellectual Property

If We Are Unable To Adequately Protect Our Proprietary Technology Or Obtain And Maintain Patent Protection For The Products We Develop And For Our Technology And Product Candidates, Or If The Scope Of The Patent Protection Obtained Is Not Sufficiently Broad, Our Competitors Could Develop And Commercialize Products And Technology Similar Or Identical To Ours, And Our Ability To Successfully Commercialize Any Product Candidates We May Develop, And Our Technology May Be Adversely Affected.

Our success depends in large part on our ability to obtain and maintain proprietary or intellectual property protection in the United States and other countries with respect to our CRISPR/Cas9 platform technology and any proprietary product candidates and technology we develop. Currently, no patents covering our CRISPR/Cas9 platform or product candidates have been issued to us in the United States and one of the patent applications we have licensed that may cover our platform is the subject of an interference proceeding at the United States Patent and Trademark Office, or USPTO, which is discussed below. We seek to protect our proprietary position by in-licensing intellectual property to cover our platform technology and filing patent applications in the United States and abroad related to our technologies and product candidates that are important to our business. We also rely on trade secrets, know-how and continuing technological innovation to develop and maintain our proprietary and intellectual property position. If we or our licensors are unable to obtain or maintain patent protection with respect to our CRISPR/Cas9 platform technology and any proprietary products and technology we develop, our business, financial condition, results of operations and prospects could be materially harmed.

The scope of patent protection that will be available to us in the United States and in other countries is uncertain. Changes in either the patent laws or their interpretation in the United States and other countries may diminish our ability to protect our inventions, obtain, maintain and enforce our intellectual property rights and, more generally, could affect the value of our intellectual property or narrow the scope of our owned and licensed patents. With respect to both in-licensed and owned intellectual property, we cannot predict whether the patent applications we and our licensors are currently pursuing will issue as patents in any particular jurisdiction or whether the claims of any issued patents will provide sufficient protection from competitors, or if any such patents will be found invalid, unenforceable or not infringed if challenged by our competitors.

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

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

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

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability and our patents may be challenged in the courts or patent offices in the United States and abroad. We may be subject to a third party preissuance submission of prior art to the USPTO or other patent office abroad or become involved in opposition, derivation, revocation, reexamination, post-grant review and inter partes review, or interference proceedings, or litigation challenging our patent rights or the patent rights of others. Indeed, certain of our fundamental intellectual property has been subject to third party observations outside the United States and interference proceedings within the United States. Competitors may claim that they invented the inventions claimed in such issued patents or patent applications prior to our inventors, or may have filed patent applications before our inventors did. A competitor may also claim that our products and services infringe its patents and that we therefore cannot practice our technology as claimed under our patent applications, if issued. An adverse determination in any such claim may result in our inability to manufacture or commercialize products without infringing third-party patent rights. Competitors may also contest our patents, if issued, by showing that the invention was not patent-eligible, was not novel, was obvious or that the patent claims failed any other requirement for patentability. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate, our patent rights or allow third parties to commercialize our technology or products and compete directly with us, without payment to us. Moreover, we, or one of our licensors, may have to participate in additional interference proceedings declared by the USPTO to determine priority of invention or in post-grant challenge proceedings, such as oppositions in a foreign patent office, that challenge priority of invention or other features of patentability. Such challenges may result in loss of patent rights, loss of exclusivity or freedom to operate, or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and product candidates. Such proceedings also may result in substantial cost and require significant time from our scientists and management, even if the eventual outcome is favorable to us. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates.

We Are Required To Pay Royalties Under Our License Agreements With Third-party Licensors, And We Must Use Commercially Reasonable Diligence Efforts And Meet Milestones To Maintain Our License Rights.

Under our in-license agreements, including our in-license agreements with Dr. Emmanuelle Charpentier, we will be required to pay royalties based on our revenues from sales of our products utilizing the licensed technologies and these royalty payments could adversely affect the overall profitability for us of any products that we may seek to commercialize. Under each of our in-license agreements with, Dr. Charpentier, we have an obligation to use commercially reasonable efforts to develop and obtain regulatory approval to market a licensed therapeutic product. Our in-license agreements with Dr. Charpentier also include an obligation to file a U.S. Investigational New Drug application (or its equivalent in a major market country) by April 2021 and an obligation to file a U.S. Investigational New Drug application (or its equivalent in a major market country) by April 2024. We may not be successful in meeting these obligations in the future on a timely basis or at all. Our failure to meet these obligations may give Dr. Charpentier the right to terminate our license rights. We will need to outsource and rely on third parties for many aspects of the clinical development of the products covered under our license agreements. Delay or failure by these third parties could adversely affect our ability to meet our diligence obligations and the continuation of our license agreements with third-party licensors.

Some Of Our In-licensed Patent Applications Are Subject To Priority Disputes And Inventorship Disputes, Including An Active Interference Proceeding With The Broad Institute, Massachusetts Institute of Technology, President And Fellows of Harvard College, In Front Of The United States Patent And Trademark Office. In Addition, Our Owned And In-Licensed Patents And Other Intellectual Property May Be Subject To Further Priority Disputes Or To Inventorship Disputes And Similar Proceedings. If We Or Our Licensors Are Unsuccessful In Any Of These Proceedings, We May Be Required To Obtain Licenses From Third Parties, Which May Not Be Available On Commercially Reasonable Terms Or At All, Or To Cease The Development, Manufacture, And Commercialization Of One Or More Of The Product Candidates We May Develop, Which Could Have A Material Adverse Impact On Our Business.

In January 2016, at our request, the USPTO declared an interference between one of the pending U.S. patent applications we licensed from Dr. Charpentier and twelve issued U.S. patents, and subsequently added one U.S. patent application, owned jointly by the Broad Institute and Massachusetts Institute of Technology and, in some instances, the President and Fellows of Harvard College, collectively referred to as the Broad. An interference is a proceeding conducted at the USPTO by the Patent Trial and Appeal Board, or PTAB, to determine which party was the first to invent subject matter claimed by both of these parties. There are currently two parties to this interference. Because our application was filed first, the USPTO designated Dr. Charpentier, the Regents of the University of California, or California, and the University of Vienna, or Vienna, collectively as "Senior Party" and designated Broad as "Junior Party." Following motions by the parties and, potentially, a determination regarding which of the two parties was the first to invent, the PTAB might conclude that the contested subject matter is not patentable to the Senior Party and is patentable to the Junior Party, which in this case could preclude our U.S. patent applications from issuing as patents, in which case the proceedings would result in our losing the right to protect core innovations and our freedom to practice our core gene editing technology. If that happens, it would materially harm our business. Other outcomes could be more favorable to us. They include a determination that the contested subject matter is patentable to the Senior Party and not patentable to the Junior Party, which in this case could result in the cancellation of some or all of Broad's claims. Intermediate outcomes could also occur, including a determination that the contested subject matter is not patentable to either party, or that the interference should be dismissed. Either party can appeal an adverse decision to the U.S. Court of Appeals for the Federal Circuit. In any case, it may be years before there is a final determination on priority. Pursuant to the terms of the license agreement with Dr. Charpentier, we are responsible for covering or reimbursing Dr. Charpentier's patent prosecution defense and related costs associated with our in-licensed technology.

Furthermore, we may be involved in further interference proceedings or other disputes in the future. For example, ToolGen Inc., or ToolGen, filed Suggestions of Interference in the USPTO on April 13, 2015, and December 3, 2015, suggesting that they believe some of the claims in pending U.S. applications owned by ToolGen (U.S. Serial No. 14/685,568 and U.S. Serial No. 14/685,510, respectively) interfere with certain claims in five of the Broad patents currently involved in the interference with Dr. Charpentier, California and Vienna. The USPTO may, in the future, declare an interference between our patent application and one or more ToolGen patent applications. We are also aware of additional third parties that have pending patent applications relating to CRISPR technologies, which similarly may or may not lead to further interference proceedings. For example, Rockefeller University has filed a continuation application (U.S. Serial No. 14/324,960) of an application filed by the Broad, but which names Rockefeller's employee Luciano Marraffini as co-inventor of CRISPR/Cas9 technology; Vilnius University has filed applications in the United States and abroad (published internationally as WO2013/141680 and WO2013/142578), Harvard University has filed applications in the United States and abroad (published internationally as WO2014/099744), and Sigma-Aldrich has filed applications in the United States and abroad (published internationally as WO2014/089290), each claiming aspects of CRISPR/Cas9 technology based on applications claiming priority to provisional filings in 2012. Numerous other filings are based on provisional applications filed after 2012.

Both Broad and Toolgen have filed international counterparts of their U.S. applications, some of which were granted in Europe and/or other foreign jurisdictions. We and third parties have initiated opposition proceedings against some of these grants, and we may in the future oppose other grants to these or other applicants. Similarly, our intellectual property may in the future become involved in opposition proceedings in Europe or other foreign jurisdictions.

If we or our licensors are unsuccessful in any interference proceedings or other priority or validity disputes (including any patent oppositions) to which we or they are subject or become subject to, we may lose valuable intellectual property rights through the loss or narrowing of one or more of our patent applications. If we or our licensors are unsuccessful in any interference proceeding or other dispute, we may be required to seek to obtain and maintain licenses from third parties, including parties involved in any such interference proceedings or other disputes. These third parties would be under no obligation to grant to us any such license and such licenses may not be available on commercially reasonable terms or at all, or may be non-exclusive. If we are unable to obtain and maintain such licenses, we and our partners may need to cease the practice of our core gene editing, and the development, manufacture, and commercialization of one or more of the product candidates we may develop. The loss of exclusivity or the narrowing of our patent claims could limit our ability to stop others from using or commercializing similar or identical technology and products. Any of the foregoing could result in a material adverse effect on our business, financial condition, results of operations, or prospects. If we are unsuccessful in the interference proceedings with Broad, we and our partners may be blocked from commercializing any products based on our core gene editing technology. Even if we are successful in an interference proceeding or other similar disputes, it could result in substantial costs and be a distraction to management and other employees.

The Intellectual Property That Protects Our Core Gene editing Technology Is Jointly Owned, And Our License Is From Only One Of The Joint Owners, Materially Limiting Our Rights In The United States And Abroad.

The family of patent applications we have in-licensed from Dr. Charpentier is the foundational patent protection for our core gene editing technology. However, that family includes other named inventors who assigned their rights either to California or to Vienna. As such, the intellectual property is currently co-owned by Dr. Charpentier, California, and Vienna. Although we have in-licensed Dr. Charpentier's rights to the intellectual property, we do not have a license to California or Vienna's rights to the intellectual property. As explained more fully below, that leaves us in a position of holding only non-exclusive rights to the patent rights that protect our core gene editing technology.

In the absence of an agreement among co-owners, jointly owned patent rights are subject to default rules pertaining to the rights and obligations of joint owners, which vary by jurisdiction, and in some countries we may not even have valid non-exclusive rights to that technology. For example, some countries, in particular European countries, require the consent of all joint owners to exploit, license or assign jointly owned patents. We did not receive consents from California or Vienna before entering into our license agreements with Dr. Charpentier. Accordingly, unless and until we receive such consents, our license agreements may not be recognized in those countries requiring co-owner consent to a license. In countries where our license is not recognized, we may be subject to claims of patent infringement by California and/or Vienna to the extent that we are doing business in those countries or choose to do business there in the future. Even in countries that do not require co-owner consent to a license, we may be prohibited from exploiting the intellectual property, or we may be required to pay certain monies to California or Vienna to account for our exploitation of the intellectual property in those countries. As a result, in the absence of an agreement with California and Vienna, there may be countries in which we are unable to do business, or unable to do business on commercially reasonable terms, which could impact our commercialization plans and the willingness of strategic partners and other third parties to do business with us.

In the United States, each co-owner has the freedom to license and exploit the technology. As a result, we do not have exclusive access to any intellectual property rights that Dr. Charpentier co-owns with another entity, such as California and Vienna. Our license with Dr. Charpentier is therefore non-exclusive with respect to such co-owned rights. Furthermore, in the United States each co-owner is required to be joined as a party to any claim or action we may wish to bring to enforce those patent rights. Moreover, in the United States, non-exclusive licenses have no standing to bring a patent infringement action before a court. Therefore, for the patents owned with California and Vienna we have no ability to pursue third party infringement claims without cooperation of California and Vienna and potentially their licensees. If we are unable to enforce our core patent rights licensed from Dr. Charpentier, we may be unable to prevent third parties from competing with us and may be unable to persuade companies to sublicense our technology, either of which could have a material adverse effect on our business.

If We Experience Disputes With The Third Parties That We In-license Intellectual Property Rights From, We Could Lose License Rights That Are Important To Our Business.

We license our foundational intellectual property from a third party, and we expect to continue to in-license additional third-party intellectual property rights as we expand our CRISPR/Cas9 gene-editing technology. Disputes may arise with the third parties from whom we license our intellectual property rights from for a variety of reasons, including:

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

In addition, the agreements under which we currently license intellectual property or technology from third parties are complex, and certain provisions in such agreements may be susceptible to multiple interpretations, or may conflict in such a way that puts us in breach of one or more agreements, which would make us suspectible to lengthy and expensive disputes with one or more of our licensing partners. The resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology, or increase what we believe to be our financial or other obligations under the relevant agreement, either of which could have a material adverse effect on our business, financial condition, results of operations, and prospects. Moreover, if disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on commercially acceptable terms, we may be unable to successfully develop and commercialize the affected product candidates, which could have a material adverse effect on our business, financial conditions, results of operations, and prospects.

We May Not Be Successful In Obtaining Necessary Rights To Any Product Candidates We May Develop Through Acquisitions And In-licenses.

We currently have rights to intellectual property, through in-licenses from third parties, to identify and develop product candidates. Many pharmaceutical companies, biotechnology companies, and academic institutions are competing with us in the field of gene-editing technology and filing patent applications potentially relevant to our business. For example, we are aware of several third party patent applications that, if issued, may be construed to cover our CRISPR/Cas9 technology and product candidates. In order to avoid infringing these third party patents, we may find it necessary or prudent to obtain licenses from such third party intellectual property holders. We may also require licenses from third parties for certain modified or improved components of CRISPR/Cas9 technology, such as modified nucleic acids, as well as non-CRISPR/Cas9 technologies such as delivery methods that we are evaluating for use with product candidates we may develop. In addition, with respect to any patents we co-own with third parties, we may require licenses to such co-owners' interest to such patents. However, we may be unable to secure such licenses or otherwise acquire or in-license any compositions, methods of use, processes, or other intellectual property rights from third parties that we identify as necessary for product candidates we may develop and CRISPR/Cas9 technology. The licensing or acquisition of third party intellectual property rights is a competitive area, and several more established companies may pursue strategies to license or acquire third party intellectual property rights that we may consider attractive or necessary. These established companies may have a competitive advantage over us due to their size, capital resources and greater clinical development and commercialization capabilities. In addition, companies that perceive us to be a competitor may be unwilling to assign or license rights to us. We also may be unable to license or acquire third party intellectual property rights on terms that would allow us to make an appropriate return on our investment or at all. If we are unable to successfully obtain rights to required third party intellectual property rights or maintain the existing intellectual property rights we have, we may have to abandon development of the relevant program or product candidate, or discontinue the practice of our core CRISPR/Cas9 gene-editing technology, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

Issued Patents Covering Our Technology And Product Candidates Could Be Found Invalid Or Unenforceable If Challenged In Court.

If we or one of our licensors initiated legal proceedings against a third party to enforce a patent covering a product candidate we may develop or our technology, including CRISPR/Cas9, the defendant could counterclaim that such patent is invalid or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness, or non-enablement.

Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant information from the USPTO, or made a misleading statement, during prosecution. Third parties have raised challenges to the validity of certain of our in-licensed patent applications, such as our in-licensed CRISPR/Cas9 patent applications in the context of third party observations filed in Europe, and may in the future raise similar claims before administrative bodies in the United States or abroad, even outside the context of litigation. Mechanisms for challenging the validity of patents in patent offices include re-examination, post-grant review, *inter partes* review, interference proceedings, derivation proceedings, and equivalent proceedings in foreign jurisdictions (e.g., opposition proceedings). Such proceedings could result in the loss of our patent applications or patents, or their narrowing in such a way that they no longer cover our technology or platform, or any product candidates that we may develop. The outcome following legal assertions of invalidity and unenforceability is unpredictable. With respect to the validity question, for example, we cannot be certain that there is no invalidating prior art. If a third party were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of the patent protection on our technology or platform, or any product candidates that we may develop. Such a loss of patent protection would have a material adverse impact on our business, financial condition, results of operations, and prospects.

The Intellectual Property Landscape Around Gene-Editing Technology, Including CRISPR/Cas9, Is Highly Dynamic, And Third Parties May Initiate And Prevail In Legal Proceedings Alleging That The Patents That We In-License Or Own Are Invalid Or That We Are Infringing, Misappropriating, Or Otherwise Violating Their Intellectual Property Rights, The Outcome Of Which Would Be Uncertain And Could Have A Material Adverse Effect On The Success Of Our Business.

The field of gene editing, especially in the area of CRISPR/Cas9 technology, is still in its infancy, and no such products have reached the market. Due to the intense research and development that is taking place by several companies, including us and our competitors, in this field, the intellectual property landscape is in flux, and it may remain uncertain for the coming years. There may be significant intellectual property related litigation and proceedings, in addition to the ongoing interference proceedings, relating to our owned and in-licensed, and other third party, intellectual property and proprietary rights in the future.

Our commercial success depends upon our ability and the ability of our collaborators to develop, manufacture, market, and sell any product candidates that we may develop and use our proprietary technologies without infringing, misappropriating, or otherwise violating the intellectual property and proprietary rights of third parties. The biotechnology and pharmaceutical industries are characterized by extensive litigation regarding patents and other intellectual property rights. We are subject to and may in the future become party to, or threatened with, adversarial proceedings or litigation regarding intellectual property rights with respect to our technology and any product candidates we may develop, including re-examination interference proceedings, post-grant review, *inter partes* review, and derivation proceedings before the USPTO and similar proceedings in foreign jurisdictions such as oppositions before the European Patent Office. Third parties, including parties involved in ongoing interference proceedings, may assert infringement claims against us based on existing patents or patents that may be granted in the future, regardless of their merit. We are aware of certain third party patents and patent applications including, for example, the Broad patents involved in the current interference proceeding described above that may be asserted to encompass our CRISPR/Cas9 technology. If we are unable to prove that these patents are invalid and we are not able to obtain or maintain a license on commercially reasonable terms, such third parties could potentially assert infringement claims against us, which could have a material adverse effect on the conduct of our business. If we are found to infringe such third party patents, we and our partners may be required to pay damages, cease commercialization of the infringing technology, including our core CRISPR/Cas9 gene-editing technology, or obtain a license from such third parties, which may not be available on commercially reasonable terms or at all. Additionally we have not performed any freedom-to-operate analysis on specific product candidates at this stage to identify potential infringement risks. A proper analysis of that type will not be feasible until specific product candidates are designed.

Even if we believe third-party intellectual property claims are without merit, there is no assurance that a court would find in our favor on questions of infringement, validity, enforceability, ownership, or priority. A court of competent jurisdiction could hold that these third party patents are valid, enforceable, and infringed, which could materially and adversely affect our ability to commercialize any product candidates we may develop and any other product candidates or technologies covered by the asserted third party patents. In order to successfully challenge the validity of any such U.S. patent in federal court, we would need to overcome a presumption of validity. As this burden is a high one requiring us to present clear and convincing evidence as to the invalidity of any such U.S. patent claim, there is no assurance that a court of competent jurisdiction would invalidate the claims of any such U.S. patent. If we are found to infringe a third party's intellectual property rights, and we are unsuccessful in demonstrating that such patents are invalid or unenforceable, we could be required to obtain a license from such third party to continue developing, manufacturing, and marketing any product candidates we may develop and our technology. However, we may not be able to obtain any required license on commercially reasonable terms or at all. Even if we were able to obtain a license, it could be non-exclusive, thereby giving our competitors and other third parties access to the same technologies licensed to us, and it could require us to make substantial licensing and royalty payments. We also could be forced, including by court order, to cease developing, manufacturing, and commercializing the infringing technology or product candidates. In addition, we could be found liable for significant monetary damages, including treble damages and attorneys' fees, if we are found to have willfully infringed a patent or other intellectual property right. Claims that we have misappropriated the confidential information or trade secrets of third parties could have a similar material adverse effect on our business, financial condition, results of operations, and prospects.

Intellectual Property Litigation Could Cause Us To Spend Substantial Resources And Distract Our Personnel From Their Normal Responsibilities.

Litigation or other legal proceedings relating to intellectual property claims, with or without merit, is unpredictable and generally expensive and time-consuming and is likely to divert significant resources from our core business, including distracting our technical and management personnel from their normal responsibilities and generally harm our business. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation in certain countries, including the United States, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common shares. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for development activities or any future sales, marketing or distribution activities.

We may not have sufficient financial or other resources to adequately conduct such litigation or proceedings. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources. Accordingly, despite our efforts, we may not be able to prevent third parties from infringing or misappropriating or successfully challenging our intellectual property rights. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace.

Obtaining And Maintaining Our Patent Protection Depends On Compliance With Various Procedural, Document Submission, Fee Payment, And Other Requirements Imposed By Government Patent Agencies And Our Patent Protection Could Be Reduced Or Eliminated For Non-compliance With These Requirements.

Periodic maintenance fees, renewal fees, annuity fees and various other government fees on patents and applications will be due to be paid to the USPTO and various government patent agencies outside of the United States over the lifetime of our owned or licensed patents and applications. In certain circumstances, we rely on our licensing partners to pay these fees due to U.S. and non-U.S. patent agencies. The USPTO and various non-U.S. government agencies require compliance with several procedural, documentary, fee payment, and other similar provisions during the patent application process. In addition, periodic maintenance fees on issued patents often must be paid to the USPTO and foreign patent agencies over the lifetime of the patent. We are also dependent on our licensors to take the necessary action to comply with these requirements with respect to our licensed intellectual property. In some cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with the applicable rules. There are situations, however, in which non-compliance can result in abandonment or lapse of the patent or patent application, resulting in a partial or complete loss of patent rights in the relevant jurisdiction. Non-compliance events that could result in abandonment or lapse of a patent or patent application include, but are not limited to, failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. If we or our licensors fail to maintain the patents and patent applications covering our product candidates, we may not be able to stop a competitor from marketing drugs that are the same as or similar to our product candidates, which would have a material adverse effect on our business.

Some Intellectual Property Which We Have In-licensed May Have Been Discovered Through Government Funded Programs And Thus May Be Subject To Federal Regulations Such As "march-in" Rights, Certain Reporting Requirements And A Preference For U.S.-based Manufacturers. Compliance With Such Regulations May Limit Our Exclusive Rights, And Limit Our Ability To Contract With Non-U.S. Manufacturers.

The intellectual property rights to which we have in-licensed under Dr. Charpentier's joint interest are co-owned by California, which has indicated that the invention was made under Grant No. GM081879 awarded by the National Institute of Health. These rights are therefore subject to certain federal regulations. The U.S. government has certain rights pursuant to the Bayh-Dole Act of 1980, or Bayh-Dole Act, to patents covering government rights in certain inventions developed under a government-funded program. These rights include a non-exclusive, non-transferable, irrevocable worldwide license to use inventions for any governmental purpose. In addition, the U.S. government has the right to require us to grant exclusive, partially exclusive, or non-exclusive licenses to any of these inventions to a third party if it determines that: (i) adequate steps have not been taken to commercialize the invention; (ii) government action is necessary to meet public health or safety needs; or (iii) government action is necessary to meet requirements for public use under federal regulations, also referred to as "march-in rights." The U.S. government also has the right to take title to these inventions if we, or the applicable contractor, fail to disclose the invention to the government and fail to file an application to register the intellectual property within specified time limits. Intellectual property generated under a government funded program is also subject to certain reporting requirements, compliance with which may require us or the applicable contractor to expend substantial resources. In addition, the U.S. government requires that any products embodying the subject invention or produced through the use of the subject invention be manufactured substantially in the United States. The manufacturing preference requirement can be waived if the owner of the intellectual property can show that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible. This preference for U.S. manufacturers may limit our ability to contract with non-U.S. product manufacturers for products covered by such intellectual property. To the extent any of our current or future patents covering inventions is generated through the use of U.S. government funding, the provisions of the Bayh-Dole Act may similarly apply.

We May Not Be Able To Protect Our Intellectual Property And Proprietary Rights Throughout The World.

Filing, prosecuting and defending patents on our product candidates in all countries throughout the world would be prohibitively expensive. The requirements for patentability may differ in certain countries, particularly in developing countries. Moreover, our ability to protect and enforce our intellectual property rights may be adversely affected by unforeseen changes in foreign intellectual property laws. Additionally, the patent laws of some foreign countries do not afford intellectual property protection to the same extent as the laws of the United States. For example, unlike patent law in the United States, the patent law in Europe and many other jurisdictions precludes the patentability of methods of treatment of the human body and imposes substantial restrictions on the scope of claims it will grant if broader than specifically disclosed embodiments.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not pursued and obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we have patent protection but enforcement is not as strong as that in the United States. These products may compete with our product candidates, and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents, trade secrets, and other intellectual property protection, particularly those relating to biotechnology products, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our intellectual property and proprietary rights generally. Proceedings to enforce our

intellectual property and proprietary rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly, could put our patent applications at risk of not issuing, and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate, and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property and proprietary rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

Many countries have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. In addition, many countries limit the enforceability of patents against third parties, including government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of such patent. If we or any of our licensors is forced to grant a license to third parties with respect to any patents relevant to our business, our competitive position may be impaired, and our business, financial condition, results of operations, and prospects may be adversely affected. Patent protection must ultimately be sought on a country-by-country basis, which is an expensive and time-consuming process with uncertain outcomes. Accordingly, we may choose not to seek patent protection in certain countries, and we will not have the benefit of patent protection in such countries.

Changes To The Patent Law In The United States And Other Jurisdictions Could Diminish The Value Of Patents In General, Thereby Impairing Our Ability To Protect Our Product Candidates.

As is the case with other biopharmaceutical companies, our success is heavily dependent on intellectual property, particularly patents. Obtaining and enforcing patents in the biopharmaceutical industry involves both technological and legal complexity and is therefore costly, time consuming and inherently uncertain. Recent patent reform legislation in the United States and other countries, including the Leahy-Smith America Invents Act, or Leahy-Smith Act, signed into law on September 16, 2011, could increase those uncertainties and costs. The Leahy-Smith Act includes a number of significant changes to U.S. patent law. These include provisions that affect the way patent applications are prosecuted, redefine prior art and provide more efficient and cost-effective avenues for competitors to challenge the validity of patents. In addition, the Leahy-Smith Act has transformed the U.S. patent system into a “first to file” system. The first-to-file provisions, however, only became effective on March 16, 2013. Accordingly, it is not yet clear what, if any, impact the Leahy-Smith Act will have on the operation of our business. However, the Leahy-Smith Act and its implementation could make it more difficult to obtain patent protection for our inventions and increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could harm our business, results of operations and financial condition.

The U.S. Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. For example, in *Association for Molecular Pathology v. Myriad Genetics, Inc.*, the Supreme Court ruled that a “naturally occurring DNA segment is a product of nature and not patent eligible merely because it has been isolated,” and invalidated Myriad Genetics’s claims on the isolated BRCA1 and BRCA2 genes. Certain claims of our patents relate to CRISPR/Cas9 gene-editing technology as well as guide components that are directed to naturally occurring DNA sequences. To the extent that such claims are deemed to be directed to natural products, or to lack an inventive concept above and beyond an isolated natural product, a court may decide the claims are invalid under *Myriad*. Additionally, there have been recent proposals for additional changes to the patent laws of the United States and other countries that, if adopted, could impact our ability to obtain patent protection for our proprietary technology or our ability to enforce our proprietary technology. Depending on future actions by the U.S. Congress, the U.S. courts, the USPTO and the relevant law-making bodies in other countries, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future. Europe’s planned Unified Patent Court, scheduled to begin in 2017, may particularly present uncertainties for our ability to protect and enforce our patent rights against competitors in Europe. While that new court is being implemented to provide more certainty and efficiency to patent enforcement throughout Europe, it will also provide our competitors with a new forum to use to centrally revoke our European patents. It will be several years before we will understand the scope of patent rights that will be recognized and the strength of patent remedies that will be provided by that court. We will have the right to opt our patents out of that system over the first seven years of the court, but doing so may preclude us from realizing the benefits of the new unified court.

If We Are Unable To Protect The Confidentiality Of Our Trade Secrets, Our Business And Competitive Position Would Be Harmed.

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

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

If We Do Not Obtain Patent Term Extension And Data Exclusivity For Any Product Candidates We May Develop, Our Business May Be Materially Harmed.

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

Intellectual Property Rights Do Not Necessarily Address All Potential Threats.

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

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

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

We May Be Subject To Claims That Our Employees, Consultants, Or Advisors Have Wrongfully Used Or Disclosed Alleged Trade Secrets Of Their Current Or Former Employers Or Claims Asserting Ownership Of What We Regard As Our Own Intellectual Property.

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

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

Risks Related to The Ownership of Our Common Shares

We Will Incur Increased Costs As A Result Of Operating As A Public Company And Our Management Will Be Required To Devote Substantial Time To New Compliance Initiatives And Corporate Governance Practices.

As a public company, and particularly after we are no longer an "emerging growth company," we will incur significant legal, accounting and other expenses that we did not incur as a private company. SOX, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the listing requirements of The NASDAQ Global Market, and other applicable securities rules and regulations impose various requirements on public companies, including establishment and maintenance of effective disclosure and financial controls and corporate governance practices. Our management and other personnel will need to devote a substantial amount of time towards maintaining compliance with these requirements. Moreover, these requirements will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. For example, the rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance, which could make it more difficult for us to attract and retain qualified members of our board of directors. We are currently evaluating these rules and regulations and cannot predict or estimate the amount of additional costs we may incur or the timing of such costs. These rules and regulations are often subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices.

Pursuant to SOX Section 404, we are required to furnish a report by our management on our internal control over financial reporting, including an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. However, while we remain an emerging growth company, we will not be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. To achieve compliance with SOX Section 404 within the prescribed period, we will be engaged in a process to document and evaluate our internal control over financial reporting, which is both costly and challenging. In this regard, we will need to continue to dedicate internal resources, potentially engage outside consultants, adopt a detailed work plan to assess and document the adequacy of internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing that controls are functioning as documented, and implement a continuous reporting and improvement process for internal control over financial reporting. Despite our efforts, there is a risk that we will not be able to conclude, within the prescribed timeframe or at all, that our internal control over financial reporting is effective as required by SOX Section 404. If we identify one or more material weaknesses, it could result in an adverse reaction in the financial markets due to a loss of confidence in the reliability of our financial statements.

The Market Price Of Our Common Shares May Be Volatile And Fluctuate Substantially, Which Could Result In Substantial Losses For Shareholders.

Some of the factors that may cause the market price of our common shares to fluctuate include:

- the success of existing or new competitive products or technologies;
- the timing and results of any product candidates that we may develop;
- commencement or termination of collaborations for our product development and research programs;

- failure or discontinuation of any of our product development and research programs;
- results of preclinical studies, clinical trials, or regulatory approvals of product candidates of our competitors, or announcements about new research programs or product candidates of our competitors;
- developments or changing views regarding the use of genomic products, including those that involve gene editing;
- regulatory or legal developments in the United States and other countries;
- developments or disputes concerning patent applications, issued patents, or other proprietary rights;
- the recruitment or departure of key personnel;
- the level of expenses related to any of our research programs, clinical development programs, or product candidates that we may develop;
- the results of our efforts to discover, develop, acquire or in-license additional product candidates or products;
- actual or anticipated changes in estimates as to financial results, development timelines, or recommendations by securities analysts;
- announcement or expectation of additional financing efforts;
- sales of our common shares by us, our insiders, or other shareholders;
- expiration of market stand-off or lock-up agreement;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in estimates or recommendations by securities analysts, if any, that cover our common shares;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors;
- general economic, industry and market conditions; and
- the other factors described in this “Risk Factors” section.

In recent years, the stock market in general, and the market for pharmaceutical and biotechnology companies in particular, has experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to changes in the operating performance of the companies whose stock is experiencing those price and volume fluctuations. Broad market and industry factors may seriously affect the market price of our common shares, regardless of our actual operating performance. Following periods of such volatility in the market price of a company’s securities, securities class action litigation has often been brought against that company. Because of the potential volatility of our common share price, we may become the target of securities litigation in the future. Securities litigation could result in substantial costs and divert management’s attention and resources from our business.

If Securities Analysts Do Not Publish Research Or Reports About Our Business Or If They Publish Negative Evaluations Of Our Common Shares, The Price Of Our Common Shares Could Decline.

The trading market for our common shares will rely in part on the research and reports that industry or financial analysts publish about us or our business. We may never obtain research coverage by industry or financial analysts. If no or few analysts commence coverage of us, the trading price of our common shares would likely decrease. Even if we do obtain analyst coverage, if one or more of the analysts covering our business downgrade their evaluations of our common shares, the price of our common shares could decline. If one or more of these analysts cease to cover our common shares, we could lose visibility in the market for our common shares, which in turn could cause our common share price to decline.

We Are An “Emerging Growth Company,” And The Reduced Disclosure Requirements Applicable To Emerging Growth Companies May Make Our Common Shares Less Attractive To Investors.

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. We will remain an emerging growth company until the earlier of (i) the last day of the fiscal year in which we have total annual gross revenue of $1 billion or more; (ii) the last day of the fiscal year following the fifth anniversary of the date of the completion of the IPO; (iii) the date on which we have issued more than $1 billion in nonconvertible debt during the previous three years; or (iv) the date on which we are deemed to be a large accelerated filer under the rules of the Securities and Exchange Commission, which means the market value of our common shares that is held by non-affiliates exceeds $700 million as of the prior June 30th. For so long as we remain an emerging growth company, we are permitted and intend to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not emerging growth companies. These exemptions include:

- not being required to comply with the auditor attestation requirements of Section 404 of SOX;
- not being required to comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor’s report providing additional information about the audit and the financial statements;
- being permitted to present only two years of audited financial statements in addition to any required unaudited interim financial statements with correspondingly reduced “Management’s Discussion and Analysis of Financial Condition and Results of Operations” disclosure in this prospectus;

- reduced disclosure obligations regarding executive compensation; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved.

We may choose to take advantage of some, but not all, of the available exemptions. We cannot predict whether investors will find our common shares less attractive if we rely on these exemptions. If some investors find our common shares less attractive as a result, there may be a less active trading market for our common shares and our common share price may be more volatile.

In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This allows an emerging growth company to delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards and, therefore, we will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

We Do Not Expect To Pay Dividends In The Foreseeable Future.

We have not paid any dividends since our incorporation. Even if future operations lead to significant levels of distributable profits, we currently intend that any earnings will be reinvested in our business and that dividends will not be paid until we have an established revenue stream to support continuing dividends. The proposal to pay future dividends to shareholders will in addition effectively be at the discretion of our board of directors and shareholders after taking into account various factors including our business prospects, cash requirements, financial performance and new product development. In addition, payment of future dividends is subject to certain limitations pursuant to Swiss law or by our articles of association. Accordingly, investors cannot rely on dividend income from our common shares and any returns on an investment in our common shares will likely depend entirely upon any future appreciation in the price of our common shares. Dividends paid on our common shares are subject to Swiss federal withholding tax, except if paid out of reserves from capital contributions ("*Kapitaleinlagen*").

We Are A Swiss Corporation. The Rights Of Our Shareholders May Be Different From The Rights Of Shareholders In Companies Governed By The Laws Of U.S. Jurisdictions.

We are a Swiss corporation. Our corporate affairs are governed by our articles of association and by Swiss law. The rights of our shareholders and the responsibilities of members of our board of directors may be different from the rights and obligations of shareholders and directors of companies governed by the laws of U.S. jurisdictions. In the performance of its duties, our board of directors is required by Swiss law to consider the interests of our Company, our shareholders and our employees with due observation of the principles of reasonableness and fairness. It is possible that the board of directors will consider interests that are different from, or in addition to, your interests as a shareholder. Swiss corporate law limits the ability of our shareholders to challenge resolutions made or other actions taken by our board of directors in court. Our shareholders generally are not permitted to file a suit to reverse a decision or an action taken by our board of directors but are instead only permitted to seek damages for breaches of the duty of care and loyalty. As a matter of Swiss law, shareholder claims against a member of our board of directors for breach of the duty of care and loyalty would have to be brought in Basel, Switzerland, or where the relevant member of our board of directors is domiciled. In addition, under Swiss law, any claims by our shareholders against us must be brought exclusively in Basel, Switzerland.

Our Common Shares Are Issued Under The Laws Of Switzerland, Which May Not Protect Investors In A Similar Fashion Afforded By Incorporation In A U.S. State.

We are organized under the laws of Switzerland. There can be no assurance that Swiss law will not change in the future or that it will serve to protect investors in a similar fashion afforded under corporate law principles in the U.S., which could adversely affect the rights of investors.

Our Status As A Swiss Corporation May Limit Our Flexibility With Respect To Certain Aspects Of Capital Management And May Cause Us To Be Unable To Make Distributions Without Subjecting Our Shareholders To Swiss Withholding Tax.

Swiss law allows our shareholders to authorize share capital that can be issued by the board of directors without additional shareholder approval. This authorization is limited to 50% of the existing registered share capital and must be renewed by the shareholders every two years. Additionally, subject to specified exceptions, Swiss law grants preemptive rights to existing shareholders to subscribe to any new issuance of shares. Swiss law also does not provide as much flexibility in the various terms that can attach to different classes of shares as the laws of some other jurisdictions. Swiss law also reserves for approval by shareholders certain corporate actions over which a board of directors would have authority in some other jurisdictions. For example, dividends must be approved by shareholders. These Swiss law requirements relating to our capital management may limit our flexibility, and situations may arise where greater flexibility would have provided substantial benefits to our shareholders.

Under Swiss law, a Swiss corporation may pay dividends only if the corporation has sufficient distributable profits from previous fiscal years, or if the corporation has distributable reserves, each as evidenced by its audited statutory balance sheet, and after allocations to reserves required by Swiss law and our articles of association have been deducted. Freely distributable reserves are generally booked either as "free reserves" or as "capital contributions" (*Kapitaleinlagen*, contributions received from shareholders) in the "reserve from capital contributions." Distributions may be made out of registered share capital—the aggregate par value of a company's registered shares—only by way of a capital reduction. We will not be able to pay dividends or make other distributions to shareholders on a Swiss withholding tax-free basis in excess of our aggregate qualifying contributions and registered share capital unless we increase our share capital or our reserves from capital contributions. We would also be able to pay dividends out of distributable profits or freely distributable reserves, but such dividends would be subject to Swiss withholding taxes. There can be no assurance that we will have sufficient distributable profits, free reserves, reserves from capital contributions or registered share capital to pay a dividend or effect a capital reduction, that our shareholders will approve dividends or capital reductions proposed by us or that we will be able to meet the other legal requirements for dividend payments or distributions as a result of capital reductions.

Generally, Swiss withholding tax of 35% is due on dividends and similar distributions to our shareholders, regardless of the place of residency of the shareholder, unless the distribution is made to shareholders out of (i) a reduction of registered share capital or (ii) assuming certain conditions are met, qualifying capital contribution reserves. A U.S. holder that qualifies for benefits under the Convention between the United States of America and Switzerland for the Avoidance of Double Taxation with Respect to Taxes on Income, or the U.S.-Swiss Treaty, may apply for a refund of the tax withheld in excess of the 15% treaty rate (or in excess of the 5% reduced treaty rate for qualifying corporate shareholders with at least 10% participation in our voting shares, or for a full refund in the case of qualified pension funds). There can be no assurance that we will have sufficient qualifying capital contribution reserves to pay dividends free from Swiss withholding tax, or that Swiss withholding rules will not be changed in the future. In addition, we cannot provide assurance that the current Swiss law with respect to distributions out of qualifying capital contribution reserves will not be changed or that a change in Swiss law will not adversely affect us or our shareholders, in particular as a result of distributions out of qualifying capital contribution reserves becoming subject to additional corporate law or other restrictions. There are currently motions pending in the Swiss Parliament that may limit the distribution of qualifying capital contributions. In addition, over the long term, the amount of registered share capital available to us for registered share capital reductions or qualifying capital contributions available to us to pay out as distributions is limited. If we are unable to make a distribution through a reduction in par value or out of qualifying capital contributions, we may not be able to make distributions without subjecting our shareholders to Swiss withholding taxes.

Under present Swiss tax laws, repurchases of shares for the purposes of cancellation are treated as a partial liquidation subject to 35% Swiss withholding tax on the difference between the repurchase price and the par value except, since January 1, 2011, to the extent attributable to qualifying capital contributions (*Kapitaleinlagen*) if any, and to the extent that, the repurchase of shares is out of retained earnings or other taxable reserves, the Swiss withholding becomes due. No partial liquidation treatment applies and no withholding tax is triggered if the shares are not repurchased for cancellation but held by the Company as treasury shares. However, should the Company not resell such treasury shares within six years, the withholding tax becomes due at the end of the six year period.

You May Be Subject To Adverse U.S. Federal Income Tax Consequences If We Are Classified As A Controlled Foreign Corporation.

Each "Ten Percent Shareholder" (as defined below) in a non-U.S. corporation that is classified as a "controlled foreign corporation," or a CFC, for United States federal income tax purposes generally is required to include in income for U.S. federal tax purposes such Ten Percent Shareholder's pro rata share of the CFC's "Subpart F income" and investment of earnings in U.S. property, even if the CFC has made no distributions to its shareholders. Subpart F income generally includes dividends, interest, rents and royalties, gains from the sale of securities and income from certain transactions with related parties. In addition, a Ten Percent Shareholder that realizes gain from the sale or exchange of shares in a CFC may be required to classify a portion of such gain as dividend income rather than capital gain. A non-U.S. corporation generally will be classified as a CFC for United States federal income tax purposes if Ten Percent Shareholders own, directly or indirectly, more than 50% of either the total combined voting power of all classes of stock of such corporation entitled to vote or of the total value of the stock of such corporation. A "Ten Percent Shareholder" is a United States person (as defined by the U.S. Internal Revenue Code of 1986, as amended (the "Code")) who owns or is considered to own 10% or more of the total combined voting power of all classes of stock entitled to vote of such corporation. The determination of CFC status is complex and includes attribution rules, the application of which is not entirely certain.

We believe that we were a CFC for the taxable year ended December 31, 2015; however, our CFC status for the current taxable year is uncertain and we may be a CFC for the current taxable year or a following year. It is possible that a shareholder treated as a U.S. person for U.S. federal income tax purposes will acquire, directly or indirectly, enough shares to be treated as a Ten Percent Shareholder. We also believe that we may have certain shareholders that will be Ten Percent Shareholders for United States federal income tax purposes. U.S. holders should consult their own tax advisors with respect to the potential adverse U.S. tax consequences of becoming a Ten Percent Shareholder in a CFC. If we are classified as both a CFC and a PFIC, we generally will not be treated as a PFIC with respect to those U.S. holders that meet the definition of a Ten Percent Shareholder during the period in which we are a CFC.

Our U.S. Shareholders May Suffer Adverse Tax Consequences If We Are Characterized As A Passive Foreign Investment Company.

Generally, if, for any taxable year, at least 75% of our gross income is passive income, or at least 50% of the value of our assets is attributable to assets that produce passive income or are held for the production of passive income, including cash, we would be characterized as a passive foreign investment company, or PFIC, for U.S. federal income tax purposes. For purposes of these tests, passive income includes dividends, interest, and gains from the sale or exchange of investment property and rents and royalties other than rents and royalties which are received from unrelated parties in connection with the active conduct of a trade or business. If we are characterized as a PFIC, U.S. holders of our common shares may suffer adverse tax consequences, including having gains realized on the sale of the common shares treated as ordinary income, rather than capital gain, the loss of the preferential rate applicable to dividends received on the common shares by individuals who are U.S. holders, and having interest charges apply to distributions by us and the proceeds of sales of the common shares.

Our status as a PFIC will depend on the composition of our income and the composition and value of our assets (which, assuming we were a non-publicly traded CFC for the year being tested for purposes of the PFIC rules, must be measured by the adjusted tax basis of our assets or, if we were a publicly traded CFC or not a CFC for such year, the total value of our assets may be determined in part by reference to the quarterly market value of our common shares, which may be volatile) from time to time. Our status may also depend, in part, on how, and how quickly, we utilize the cash proceeds from the IPO in our business. Based on our belief that we were a CFC for the 2015 taxable year (and thus are required to determine our PFIC status for 2015 under the asset test by reference to the adjusted tax basis of our assets), we believe we were a PFIC for the 2015 taxable year and we may be a PFIC with respect to the 2016 taxable year. However, our status as a PFIC is a fact-intensive determination made on an annual basis and we cannot provide any assurances regarding our PFIC status for any past, current or future taxable years.

We intend to determine our PFIC status at the end of each taxable year and to satisfy any applicable recordkeeping and reporting requirements that apply to a qualified electing fund, or QEF, and will endeavor to provide to you, for each taxable year that we determine we are a PFIC, the information that is necessary for you to make a QEF election with respect to us (and any of our subsidiaries which are lower-tier PFICs). We may elect to provide such information on our website. However, there can be no assurances that we will make the necessary information available to you with respect to any lower-tier PFICs. You are urged to consult your own tax advisors regarding the availability, and advisability, of, and procedure for making, a QEF election, including, with respect to any lower-tier PFICs.

U.S. Shareholders May Not Be Able To Obtain Judgments Or Enforce Civil Liabilities Against Us Or Our Executive Officers Or Members Of Our Board Of Directors.

We are organized under the laws of Switzerland and our registered office and domicile is located in Basel, Switzerland. Moreover, certain of our directors and executive officers and a number of directors of each of our subsidiaries are not residents of the United States, and all or a substantial portion of the assets of such persons are located outside the United States. As a result, it may not be possible for investors to effect service of process within the United States upon us or upon such persons or to enforce against them judgments obtained in U.S. courts, including judgments in actions predicated upon the civil liability provisions of the federal securities laws of the United States. We have been advised by our Swiss counsel that there is doubt as to the enforceability in Switzerland of original actions, or in actions for enforcement of judgments of U.S. courts, of civil liabilities to the extent solely predicated upon the federal and state securities laws of the United States. Original actions against persons in Switzerland based solely upon the U.S. federal or state securities laws are governed, among other things, by the principles set forth in the Swiss Federal Act on Private International Law. This statute provides that the application of provisions of non-Swiss law by the courts in Switzerland shall be precluded if the result is incompatible with Swiss public policy. Also, mandatory provisions of Swiss law may be applicable regardless of any other law that would otherwise apply.

Switzerland and the United States do not have a treaty providing for reciprocal recognition and enforcement of judgments in civil and commercial matters. The recognition and enforcement of a judgment of the courts of the United States in Switzerland is governed by the principles set forth in the Swiss Federal Act on Private International Law. This statute provides in principle that a judgment rendered by a non-Swiss court may be enforced in Switzerland only if:

- the non-Swiss court had jurisdiction pursuant to the Swiss Federal Act on Private International Law;
- the judgment of such non-Swiss court has become final and non-appealable;
- the judgment does not contravene Swiss public policy;

- the court procedures and the service of documents leading to the judgment were in accordance with the due process of law; and
- no proceeding involving the same position and the same subject matter was first brought in Switzerland, or adjudicated in Switzerland, or was earlier adjudicated in a third state and this decision is recognizable in Switzerland.

Our Status As A Swiss Corporation Means That Our Shareholders Enjoy Certain Rights That May Limit Our Flexibility To Raise Capital, Issue Dividends And Otherwise Manage Ongoing Capital Needs.

Swiss law reserves for approval by shareholders certain corporate actions over which a board of directors would have authority in some other jurisdictions. For example, the payment of dividends and cancellation of treasury shares must be approved by shareholders. Swiss law also requires that our shareholders themselves resolve to, or authorize our board of directors to, increase our share capital. While our shareholders may authorize share capital that can be issued by our board of directors without additional shareholder approval, Swiss law limits this authorization to 50% of the issued share capital at the time of the authorization. The authorization, furthermore, has a limited duration of up to two years and must be renewed by the shareholders from time to time thereafter in order to be available for raising capital. Additionally, subject to specified exceptions, including exceptions explicitly described in our articles of association, Swiss law grants pre-emptive rights to existing shareholders to subscribe for new issuances of shares. Swiss law also does not provide as much flexibility in the various rights and regulations that can attach to different categories of shares as do the laws of some other jurisdictions, such as in the United States. These Swiss law requirements relating to our capital management may limit our flexibility, and situations may arise where greater flexibility would have provided benefits to our shareholders.

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

During the period between July 1, 2016 and September 30, 2016, we issued to certain of our employees options to purchase an aggregate of 1,075,254 common shares at a weighted-average exercise price of $12.57 per share. We deemed these issuances to be exempt from registration under the Securities Act either in reliance on Rule 701 of the Securities Act as sales and offers under compensatory benefit plans and contracts relating to compensation in compliance with Rule 701, or in reliance on Section 4(a)(2), as transactions by an issuer not involving a public offering. All recipients either received adequate information about our company or had access, through employment or other relationships, to such information. No underwriters were involved in the foregoing issuances of securities.

In October 2016, upon the closing of our initial public offering, or IPO, all 27,135,884 shares of our then-outstanding convertible preferred shares were automatically converted into 27,135,884 common shares. The issuance of such common shares was exempt from the registration requirements of the Securities Act, pursuant to Section 3(a)(9) of the Securities Act, involving an exchange of securities exchanged by the issuer with its existing security holders exclusively where no commission or other remuneration is paid or given directly or indirectly for soliciting such exchange. No underwriters were involved in this issuance of shares.

In October 2016, we issued an aggregate of 2,500,000 common shares, or the Private Placement Shares, to Bayer Global Investments B.V., which occurred concurrently with the IPO. The aggregate cash purchase price of the Private Placement Shares was $35.0 million, representing a price per share of $14.00, which was the same price at which shares were sold to the public in the IPO. The sale and issuance of the Private Placement Shares were not registered under the Securities Act or any state securities laws. We have relied on the exemption from the registration requirements of the Securities Act by virtue of Section 4(a)(2) thereof and the rules and regulations promulgated thereunder relating to a transaction not involving any public offering to a single accredited investor and Rule 506(c) of Regulation D thereof. No underwriters were involved in this issuance of shares.

In October 2016, we issued 328,017 common shares to Dr. Emmanuelle Charpentier immediately prior to the closing of the IPO. The issuance of such common shares was exempt from the registration requirements of the Securities Act pursuant to Section 4(a)(2) of the Securities Act relating to a transaction that did not involve a public offering. No underwriters were involved in this issuance of shares.

Use of Proceeds

In October 2016, we issued and sold 4,429,311 common shares, including 429,311 common shares sold pursuant to the underwriters' partial exercise of their option to purchase additional common shares, in the IPO at a public offering price of $14.00 per share, for aggregate gross proceeds of approximately $62 million. All of the common shares issued and sold in the IPO were registered under the Securities Act pursuant to a Registration Statement on Form S-1 (File No. 333-213577), which was declared effective by the SEC on October 18, 2016. Citigroup Global Markets Inc., Piper Jaffray & Co. and Barclays Capital Inc. acted as joint book-running managers of the offering and as representatives of the underwriters. Guggenheim Securities, LLC acted as co-manager for the offering. The offering commenced on October 18, 2016 and did not terminate until the sale of all of the common shares offered.

The estimated net proceeds to us, after deducting underwriting discounts and commissions of $4.3 million and estimated offering expenses of $3.6 million, were approximately $54.1 million. No offering expenses were paid directly or indirectly to any of our directors or officers, or their associates, or persons owning 10.0% or more of any class of our equity securities or to any other affiliates.

As of September 30, 2016, no net offering proceeds had been used.

Issuer Purchases of Equity Securities

Period	(a) Total number of shares (or units) purchased	(b) Average price paid per share (or unit)($)	(c) Total number of shares (or units) purchased as part of publicly announced plans or programs	(d) Maximum number (or approximate dollar value) of shares (or units) that may yet be purchased under the plans or programs
July 1 - 31, 2016	44(1)	0	N/A	N/A

(1) On July 13, 2016, Fay Corp. transferred 44 of our common shares held by it to us, which we now hold in treasury. Fay Corp. was originally formed to hold our common shares for future issuances to certain of our employees and non-employees. The transfer was done in connection with the planned dissolution of Fay Corp. and not done pursuant to any plan or program.

Item 3. Defaults upon Senior Securities.

None.

Item 4. Mine Safety Disclosures.

Not applicable.

Item 5. Other Information.

Not applicable.

Item 6. Exhibits

The exhibits listed on the Exhibit Index immediately preceding such exhibits, which is incorporated herein by reference, are filed or furnished as part of this Form 10-Q.

SIGNATURES

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

CRISPR THERAPEUTICS AG

Date: November 22, 2016

By: /s/ Rodger Novak
Rodger Novak
Chief Executive Officer
(Principal Executive Officer)

Date: November 22, 2016

By: /s/ Marc A. Becker
Marc A. Becker
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit Number	Description of Document
3.1	Articles of Association of CRISPR Therapeutics AG, dated October 20, 2016 (filed as Exhibit 3.1 to CRISPR Therapeutics AG's Current Report on Form 8-K filed on November 8, 2016).
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.

EXHIBIT 31.1

CERTIFICATION

I, Rodger Novak, 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 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. (Paragraph omitted pursuant to SEC Release Nos. 33-8238/34-47986 and 33-8392/34-49313);

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

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

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 22, 2016

By: /s/ Rodger Novak
Rodger Novak
Chief Executive Officer
(Principal Executive Officer)

EXHIBIT 31.2

CERTIFICATION

I, Marc A. Becker, 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 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. (Paragraph omitted pursuant to SEC Release Nos. 33-8238/34-47986 and 33-8392/34-49313);

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

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

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 22, 2016

By: /s/ Marc A. Becker
Marc A. Becker
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 September 30, 2016 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/ Rodger Novak
Rodger Novak
Chief Executive Officer

November 22, 2016

/s/ Marc A. Becker
Marc A. Becker
Chief Financial Officer

November 22, 2016