SANGAMO THERAPEUTICS, INC
Form 10-Q
August 08, 2018
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

(Mark One)

QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the quarterly period ended June 30, 2018

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 000-30171

SANGAMO THERAPEUTICS, INC.

(exact name of registrant as specified in its charter)

Delaware	68-0359556
(State or other jurisdiction of incorporation or organization)	(IRS Employer Identification No.)

501 Canal Blvd

Richmond, California 94804

(Address of principal executive offices)

(510) 970-6000

(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 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, a smaller reporting company, or an emerging growth company. See definitions of "large accelerated filer," "accelerated filer", "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company) Smaller reporting company

Emerging growth company

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

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

As of August 1, 2018, 101,673,757 shares of the issuer's common stock, par value $0.01 per share, were outstanding.

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SANGAMO THERAPEUTICS, INC.

Unless the context suggests otherwise, references in this Quarterly Report on Form 10-Q, or Quarterly Report, to "Sangamo," the "Company," "we," "us," and "our" refer to Sangamo Therapeutics, Inc. and, where appropriate, our wholly owned subsidiaries.

ZFP Therapeutic®, Engineering Genetic Cures®, and Pioneering Genetic Cures® are registered trademarks of Sangamo Therapeutics, Inc. Any third-party trade names, trademarks and service marks appearing in this Quarterly Report are the property of their respective holders.

Convenience translations between Euros (€) and U.S. dollars provided herein are based on the noon buying rate in New York City for cable transfers in foreign currencies as certified for customs purposes by the Federal Reserve Bank of New York on July 27, 2018, or €1.00 = $1.166. We do not represent that Euros were, could have been, or could be, converted into U.S. dollars at such rate or at any other rate.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

Some statements contained in this report are forward-looking with respect to our operations, research, development and commercialization activities, clinical trials, operating results and financial condition. These statements involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. Forward-looking statements include, but are not limited to, statements about:

- our strategy;
- product development and commercialization of our products;
- clinical trials;
- the proposed acquisition of TxCell S.A., including the expected timing, term and anticipated benefits thereof;
- partnering, other acquisition and other strategic transactions;
- revenues from existing and new collaborations;
- our research and development and other expenses;
- sufficiency of our cash resources;
- our operational and legal risks; and
- our plans, objectives, expectations and intentions and any other statements that are not historical facts.

In some cases, you can identify forward-looking statements by terms such as: “anticipates,” “believes,” “continues,” “could,” “estimates,” “expects,” “intends,” “may,” “plans,” “seeks,” “should” and “will.” These statements reflect our current views wit to future events and are based on assumptions and subject to risks and uncertainties. Given these risks and uncertainties, you should not place undue reliance on these forward-looking statements. We discuss many of these risks in greater detail under the headings “Risk Factors” and “Management’s Discussion and Analysis of Financial Conditions and Results of Operations” in this Quarterly Report. Except as required by law, we undertake no obligation to update any forward-looking statements to reflect events or circumstances arising after the date of such statements. Readers are cautioned not to place undue reliance on the forward-looking statements, which speak only as of the date of this Quarterly Report.

PART I. FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS
SANGAMO THERAPEUTICS, INC.

CONDENSED CONSOLIDATED BALANCE SHEETS

(Unaudited; in thousands, except share and per share amounts)

	June 30, 2018	December 31, 2017
ASSETS		
Current assets:		
Cash and cash equivalents	$59,406	$49,826
Marketable securities	480,040	193,482
Interest receivable	562	240
Accounts receivable	4,977	3,343
Prepaid expenses and other current assets	5,064	1,506
Total current assets	550,049	248,397
Marketable securities, non-current	34,182	1,012
Property and equipment, net	37,223	31,066
Goodwill	1,585	1,585
Restricted cash and other non-current assets	4,688	4,681
Total assets	$627,727	$286,741
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued liabilities	$14,388	$11,035
Accrued compensation and employee benefits	4,346	5,479
Deferred revenues	57,215	28,345
Total current liabilities	75,949	44,859
Deferred revenues, non-current	137,731	29,244
Build-to-suit lease obligation	26,180	24,738
Total liabilities	239,860	98,841
Commitments and contingencies		
Stockholders' equity:		
Common stock, $0.01 par value; 160,000,000 shares authorized, 101,623,521 and 85,598,534 shares issued and outstanding at June 30, 2018 and December 31, 2017, respectively	1,016	856
Additional paid-in capital	918,197	682,809
Accumulated deficit	(531,189)	(495,479)
Accumulated other comprehensive loss	(157)	(286)

Total stockholders' equity	387,867	187,900
Total liabilities and stockholders' equity	$627,727	$286,741

See accompanying notes.

SANGAMO THERAPEUTICS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

(Unaudited; in thousands, except per share amounts)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Revenues:				
Collaboration agreements	$21,289	$7,977	$33,840	$11,283
Research grants	127	276	213	395
Total revenues	21,416	8,253	34,053	11,678
Operating expenses:				
Research and development	29,255	14,984	52,802	27,926
General and administrative	11,301	6,037	21,388	13,312
Total operating expenses	40,556	21,021	74,190	41,238
Loss from operations	(19,140)	(12,768)	(40,137)	(29,560)
Interest and other income, net	2,500	277	3,310	437
Net loss	$(16,640)	$(12,491)	$(36,827)	$(29,123)
Basic and diluted net loss per share	$(0.17)	$(0.17)	$(0.40)	$(0.41)
Shares used in computing basic and diluted net loss per share	97,267	72,527	91,831	71,780

See accompanying notes.

SANGAMO THERAPEUTICS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS

(Unaudited; in thousands)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Net loss	$(16,640)	$(12,491)	$(36,827)	$(29,123)
Change in unrealized gain (loss) on available-for-sale securities	230	(51)	131	(163)
Comprehensive loss	$(16,410)	$(12,542)	$(36,696)	$(29,286)

See accompanying notes.

SANGAMO THERAPEUTICS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS

(Unaudited; in thousands)

	Six Months Ended June 30,	
	2018	2017
Operating Activities:		
Net loss	$(36,827)	$(29,123)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	1,207	618
Amortization of (discount) premium on marketable securities	(1,656)	32
Stock-based compensation	6,564	4,751
Other	465	—
Net changes in operating assets and liabilities:		
Interest receivable	(322)	(32)
Accounts receivable	(1,634)	1,477
Prepaid expenses and other assets	(3,564)	(1,039)
Accounts payable and accrued liabilities	2,733	2,654
Accrued compensation and employee benefits	(1,133)	24
Deferred revenues	138,474	64,346
Net cash provided by operating activities	104,307	43,708
Investing Activities:		
Purchases of marketable securities	(451,240)	(159,166)
Maturities of marketable securities	133,297	83,029
Purchases of property and equipment	(5,768)	(2,175)
Net cash used in investing activities	(323,711)	(78,312)
Financing Activities:		
Proceeds from public offering of common stock, net of issuance costs	215,756	81,562
Taxes paid related to net share settlement of equity awards	(57)	(7)
Proceeds from issuance of common stock	13,285	825
Net cash provided by financing activities	228,984	82,380
Net increase in cash, cash equivalents, and restricted cash	9,580	47,776
Cash, cash equivalents, and restricted cash, beginning of period	53,326	22,061
Cash, cash equivalents, and restricted cash, end of period	$62,906	$69,837
Supplemental disclosure of noncash investing activities:		
Property and equipment included in accrued liabilities	$1,836	$226

See accompanying notes.

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SANGAMO THERAPEUTICS, INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

June 30, 2018

(Unaudited)

NOTE 1—ORGANIZATION, BASIS OF PRESENTATION AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Overview

Sangamo Therapeutics, Inc. was incorporated in the state of Delaware in 1995 and changed its name from Sangamo Biosciences, Inc. in January 2017 ("Sangamo" or the "Company"). Sangamo is focused on the research, development and commercialization of novel genomic therapies for unmet medical needs. Sangamo's genome editing and gene regulation technology platform is enabled by the engineering of a class of transcription factors known as zinc finger DNA-binding proteins ("ZFPs").

Sangamo is currently working on a number of long-term development projects that involve experimental technology. The projects may require several years and substantial expenditures to complete and ultimately may be unsuccessful. The Company plans to finance operations with available cash resources, collaborations and strategic partnerships, research grants and from the issuance of equity or debt securities. Sangamo believes that its available cash, cash equivalents, marketable securities and interest receivable as of June 30, 2018, along with expected revenues from collaborations, strategic partnerships and research grants, will be adequate to fund its operations at least through the next twelve months. Sangamo will need to raise substantial additional capital to fund the development, manufacturing and potential commercialization of its product candidates. Additional capital may not be available on terms acceptable to the Company, if at all. If adequate funds are not available, or if the terms of potential funding sources are unfavorable, the Company's business and ability to develop its technology and product candidates could be harmed. Furthermore, any sales of additional equity securities may result in dilution to the Company's stockholders, and any debt financing may include covenants that restrict the Company's business.

Basis of Presentation

The accompanying unaudited condensed consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles for interim financial information and pursuant to the rules and regulations of the Securities and Exchange Commission ("SEC"). Accordingly, they do not include all of the information and footnotes required by generally accepted accounting principles for complete financial statements. In the opinion of management, all adjustments (consisting of normal recurring adjustments) considered necessary for a fair presentation have been included. Operating results for the three and six months ended June 30, 2018 are not necessarily indicative of the results that may be expected for the year ending December 31, 2018. The condensed consolidated balance sheet data at December 31, 2017 were derived from the audited consolidated financial statements included in Sangamo's Annual Report on Form 10-K for the year ended December 31, 2017, (the "2017 Annual Report"), as filed with the SEC. The accompanying condensed consolidated financial statements and related financial information should be read in conjunction with the audited financial statements and footnotes thereto for the year ended December 31, 2017, included in the 2017 Annual Report.

Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the amounts reported in the financial statements and the accompanying notes. On an ongoing basis, management evaluates its estimates, including critical accounting policies or estimates related to revenue recognition, clinical trial accruals, and stock-based compensation. Estimates are based on historical experience and on various other market specific and other relevant assumptions that the Company believes to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results could differ from those estimates.

Cash and Cash Equivalents

Sangamo considers all highly-liquid investments purchased with original maturities of three months or less at the purchase date to be cash equivalents. Cash and cash equivalents consist of cash and deposits in money market investment accounts.

Marketable Securities

Sangamo classifies its marketable securities as available-for-sale which are recorded at estimated fair value based on quoted market prices or observable market inputs of almost identical assets. Unrealized holding gains and losses are included in accumulated other comprehensive income.

The Company’s investments are subject to a periodic impairment review. The Company recognizes an impairment charge when a decline in the fair value of its investments below the cost basis is judged to be other-than-temporary. The Company considers various factors in determining whether to recognize an impairment charge, including the length of time and extent to which the fair

value has been less than the Company's cost basis, the financial condition and near-term prospects of the investee, and the Company's intent and ability to hold the investment for a period of time sufficient to allow for any anticipated recovery in the market value. Realized gains and losses on available-for-sale securities are included in other income, which is determined using the specific identification method.

Fair Value Measurements

The carrying amounts for financial instruments consisting of cash and cash equivalents, accounts receivable, accounts payable and accrued liabilities approximate fair value due to their short maturities. Marketable securities and liabilities are stated at their estimated fair values. The counterparties to the agreements relating to the Company's investment securities consist of the US Treasury, governmental agencies and various major corporations and financial institutions with investment-grade high credit ratings.

Revenue Recognition

Effective January 1, 2018, the Company adopted the provisions of Accounting Standards Codification ("ASC"), Topic 606, Revenue from Contracts with Customers ("Topic 606") resulting in a change to its accounting policy for revenue recognition. Topic 606 establishes a unified model to determine how revenue is recognized.

The Company's contract revenues consist of strategic partnering collaboration agreements and research activity grants and licensing. Research and licensing agreements typically include upfront signing or license fees, cost reimbursements, research services, minimum sublicense fees, milestone payments and royalties on future licensee's product sales. The Company has both fixed and variable consideration. Non-refundable upfront fees and funding of research and development activities are considered fixed, while milestone payments are identified as variable consideration. Sangamo's research grants are typically multi-year agreements and provide for the reimbursement of qualified expenses for research and development as defined under the terms of the grant agreement. Revenues under grant agreements are recognized when the related qualified research expenses are incurred. Deferred revenue represents the portion of research or license payments received but not earned.

In determining the appropriate amount of revenue to be recognized as it fulfills its obligations under its agreements, the Company performs the following steps: (i) identification of the promised goods or services in the contract; (ii) determination of whether the promised goods or services are performance obligations including whether they are distinct in the context of the contract; (iii) measurement of the transaction price, including the constraint on variable consideration; (iv) allocation of the transaction price to the performance obligations based on estimated selling prices; and (v) recognition of revenue when (or as) the Company satisfies each performance obligation.

A performance obligation is a promise in a contract to transfer a distinct good or service to the customer and is the unit of account in Topic 606. The Company's performance obligations include license rights, development services, and services associated with regulatory submission and approval processes. Significant management judgment is required to determine the level of effort required under an arrangement and the period over which the Company expects to complete its performance obligations under the arrangement. If the Company cannot reasonably estimate when its performance obligations either are completed or become inconsequential, then revenue recognition is deferred until the Company can reasonably make such estimates. The Company includes the unconstrained amount of estimated variable consideration in the transaction price. The amount included in the transaction price is constrained to the amount for which it is probable that a significant reversal of cumulative revenue recognized will not occur. At the end of each subsequent reporting period, the Company re-evaluates the estimated variable consideration included in the transaction price and any related constraint, and if necessary, adjusts its estimate of the overall transaction price. Revenue is then recognized over the remaining estimated period of performance using the cumulative catch-up method. The estimated period of performance and project costs are reviewed quarterly and adjusted, as needed, to

reflect the Company's current assumptions regarding the timing of its deliverables.

As part of the accounting for these arrangements, the Company must develop assumptions that require judgment to determine the stand-alone selling price of each performance obligation identified in the contract. The Company uses key assumptions to determine the stand-alone selling price, which may include forecasted revenues, development timelines, reimbursement rates for personnel costs, discount rates and probabilities of technical and regulatory success.

During the six months ended June 30, 2018, revenues related to the hemophilia A collaboration agreement with Pfizer Inc. ("Pfizer") and the hemoglobinopathies agreement with Bioverativ, a Sanofi company ("Bioverativ") represented 47% and 26%, respectively, of the Company's total revenue. During the six months ended June 30, 2017, revenues related to the Company's agreements with Bioverativ and Shire International GmbH ("Shire") represented 48% and 11%, respectively, of total revenue. Receivables from collaborations are typically unsecured and are concentrated in the biopharmaceutical industry. Accordingly, the Company may be exposed to credit risk generally associated with biopharmaceutical companies or specific to its collaboration agreements. To date, the Company has not experienced any losses related to these receivables.

Funds received from third parties under contract or grant arrangements are recorded as revenue if the Company is deemed to be the principal participant in the arrangements because the activities under the contracts or grants are part of the Company's development programs. Contract funds received are not refundable and are recognized when the related qualified research and

development costs are incurred and there is reasonable assurance that the funds will be received. Funds received in advance are recorded as deferred revenue. Management has determined that the Company is the principal participant under the Company's non-profit grant agreement, and accordingly, the Company records amounts earned under these arrangements as revenue.

Recent Accounting Pronouncements

Recently Adopted

In May 2014, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Updated ("ASU") 2014-09, Revenue from Contracts with Customers ("Topic 606"). This standard outlines a single comprehensive model for entities to use in accounting for revenue arising from contracts with customers and supersedes most current revenue recognition guidance, including industry-specific guidance. The main principle of Topic 606 is to recognize revenues when promised goods or services are transferred to customers in an amount that reflects the consideration that is expected to be received for those goods or services. Topic 606 provides companies with two implementation methods: (i) apply the standard retrospectively to each prior reporting period presented (full retrospective application); or (ii) apply the standard retrospectively with the cumulative effect of initially applying the standard as an adjustment to the opening balance of retained earnings of the annual reporting period that includes the date of initial application (modified retrospective application). The Company implemented this standard under the modified retrospective method. This guidance is effective for annual reporting periods beginning after December 15, 2017, including interim periods within that reporting period. Under Topic 606, an entity recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration which the entity expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements that an entity determines are within the scope of Topic 606, the entity performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation. Topic 606 also impacts certain other areas, such as the accounting for costs to obtain or fulfill a contract.

The Company adopted Topic 606 effective January 1, 2018, using the modified retrospective method with a cumulative effect adjustment of $1.1 million reflected as a decrease to the opening balance of accumulated deficit and a decrease to deferred revenues, respectively. The new guidance has been applied with a cumulative effect adjustment of $5.2 million reflected as a decrease to the opening balance of accumulated deficit and a decrease to deferred revenues, respectively. The Company's contracts and agreements that were within the scope of the guidance upon adoption were Bioverativ and the hemophilia A Pfizer agreements. The impact on the Bioverativ agreement was to reduce the amount of the recognition of up-front payment by approximately $0.7 million and $1.5 million for the three and six months ended June 30, 2018, respectively, and the development and commercialization milestones are deemed constrained at June 30, 2018, as defined under Topic 606. The impact on the hemophilia A Pfizer agreement was to increase the amount of the recognition of the up-front payment by approximately $1.6 million and $2.6 million for the three and six months ended June 30, 2018, respectively, and the development and commercialization milestones are deemed constrained at June 30, 2018, as defined under Topic 606. The net impact under the modified retrospective transition approach was a decrease of $5.2 million to accumulated deficit as of June 30, 2018. With regards to Shire, Dow AgroSciences, LLC ("Dow") and Sigma-Aldrich Corporation ("Sigma"), the Company's performance obligations under those arrangements were substantially complete at December 31, 2017. Comparative information has not been adjusted and continues to be reported under previous accounting standards. All future receipts under these agreements are contingent upon the counterparties achieving specified development, commercial, and/or sales targets which would be in the form of milestones or royalties, all of which management concluded are constrained at June 30, 2018,

as defined under Topic 606. See Revenue Recognition above.

Refer below for a summary of the amount by which each financial statement line item was affected by the impact of the cumulative adjustment and as compared with the guidance that was in effect prior to the adoption:

	Impact of Topic 606 Adoption on Condensed Consolidated Balance Sheet as of January 1, 2018		
(in thousands)	As reported under Topic 606	Adjustments	Balances without adoption of Topic 606
Deferred revenue, current portion	$29,626	$ 1,281	$28,345
Deferred revenue, noncurrent portion	$26,846	$ (2,398)	$29,244
Accumulated deficit	$(494,362)	$ 1,117	$(495,479)

	Impact of Topic 606 Adoption on Condensed Consolidated Balance Sheet as of June 30, 2018		
(in thousands)	As reported under Topic 606	Adjustments	Balances without adoption of Topic 606
Deferred revenue, current portion	$57,215	$ 8,744	$65,959
Deferred revenue, noncurrent portion	$137,731	$ (3,581)	$134,151
Accumulated deficit	$(531,189)	$ (5,163)	$(536,352)

	Impact of Topic 606 Adoption on Condensed Consolidated Statement of Operations and Comprehensive Loss for the Three Months Ended June 30, 2018			Impact of Topic 606 Adoption on Condensed Consolidated Statement of Operations and Comprehensive Loss for the Six Months Ended June 30, 2018		
(in thousands)	As reported under Topic 606	Adjustments	Balances without adoption of Topic 606	As reported under Topic 606	Adjustments	Balances without adoption of Topic 606
Collaboration revenue	$21,289	$ (2,271)	$19,018	$33,840	$ (4,047)	$29,793
Net loss	$(16,640)	$ (2,271)	$(18,911)	$(36,827)	$ (4,047)	$(40,874)
Net loss per share - basic and diluted:	$(0.17)	$ (0.02)	$(0.19)	$(0.40)	$ (0.04)	$(0.44)

	Impact of Topic 606 Adoption on Condensed Consolidated Statement of Cash Flows for the Six Months Ended June 30, 2018		
(in thousands)	As reported under Topic 606	Adjustments	Balances without adoption of Topic 606
Net loss	$(36,827)	$ (4,047)	$(40,874)
Changes in deferred revenue	$138,474	$ 4,047	$142,521

In November 2016, the FASB issued ASU 2016-18, Statement of Cash Flows (“Topic 230”). The Company adopted Topic 230 in the beginning of fiscal 2018, which requires the statement of cash flows to explain the change during the period relating to total cash, cash equivalents, and restricted cash. The Company adopted this standard using the retrospective transition method by restating its condensed consolidated statements of cash flows to include restricted cash of $3.5 million in the beginning and ending cash, cash equivalents, and restricted cash balances. Net cash flows

for the six months ended June 30, 2017, did not change as a result of including restricted cash with cash and cash equivalents when reconciling the beginning-of-period and end-of-period amounts presented on the statements of cash flows. Restricted cash was included in other non-current assets on the Company's condensed consolidated balance sheets.

Not yet adopted

In February 2016 the FASB issued ASU 2016-02, Leases (“ASU 2016-02”). ASU 2016-02 amends a number of aspects of lease accounting, including requiring lessees to recognize almost all leases with a term greater than one year as a right-of-use asset and corresponding liability, measured at the present value of the lease payments. The guidance will become effective for the Company beginning in the first quarter of 2019 with early adoption permitted and will be adopted using a modified retrospective approach. The Company is evaluating the impact of the adoption of this standard on its consolidated financial statements, and expect its operating lease commitments will be subject to the new standard and recognized as a right-of-use assets and operating lease liabilities upon adoption which will increase total assets and total liabilities as compared to amounts prior to adoption.

NOTE 2—FAIR VALUE MEASUREMENT

The Company measures certain financial assets and liabilities at fair value on a recurring basis, including cash equivalents, and available-for-sale marketable securities. The fair values of these assets were determined based on a three-tier hierarchy under the authoritative guidance for fair value measurements and disclosures that prioritizes the inputs used in measuring fair value as follows:

Level 1: Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities;

Level 2: Quoted prices in markets that are not active or inputs which are observable, either directly or indirectly, for substantially the full term of the asset or liability; and

Level 3: Prices or valuation techniques that require inputs that are both significant to the fair value measurement and unobservable (i.e., supported by little or no market activity).

The fair value measurements of the Company's cash equivalents and available-for-sale marketable securities are identified at the following levels within the fair value hierarchy (in thousands):

	June 30, 2018 Fair Value Measurements			
	Total	Level 1	Level 2	Level 3
Assets:				
Cash equivalents:				
Money market funds	$41,909	$41,909	$—	$ —
Commercial paper securities	15,233	—	15,233	—
Total	57,142	41,909	15,233	—
Marketable securities:				
Commercial paper securities	396,993	—	396,993	—
Corporate debt securities	98,676	—	98,676	—
U.S. government-sponsored entity debt securities	18,553	—	18,553	—
Total	514,222	—	514,222	—
Total cash equivalents and marketable securities	$571,364	$41,909	$529,455	—

	December 31, 2017 Fair Value Measurements			
	Total	Level 1	Level 2	Level 3
Assets:				
Cash equivalents:				
Money market funds	$24,290	$24,290	$—	$ —
Commercial paper securities	4,595	—	4,595	—
Total	28,885	24,290	4,595	—
Marketable securities:				
Commercial paper securities	110,247	—	110,247	—
Corporate debt securities	75,755	—	75,755	—
U.S. government-sponsored entity debt securities	8,492	—	8,492	—

Total	194,494	—	194,494	—
Total cash equivalents and marketable securities	$223,379	$24,290	$199,089	—

The Company generally classifies its marketable securities as Level 2. Instruments are classified as Level 2 when observable market prices for identical securities that are traded in less active markets are used. When observable market prices for identical securities are not available, such instruments are priced using benchmark curves, benchmarking of like securities, sector groupings, matrix pricing and valuation models. These valuation models are proprietary to the pricing providers or brokers and incorporate a number of inputs, including, listed in approximate order of priority: benchmark yields, reported trades, broker/dealer quotes, issuer spreads, two-sided markets, benchmark securities, bids, offers and reference data including market research publications. For certain security types, additional inputs may be used, or some of the standard inputs may not be applicable. Evaluators may prioritize inputs differently on any given day for any security based on market conditions, and not all inputs listed are available for use in the evaluation process for each security evaluation on any given day.

NOTE 3—MARKETABLE SECURITIES

The Company classifies its marketable securities as available-for-sale and records its investments at estimated fair value based on quoted market prices or observable market inputs of substantially identical assets. Unrealized holding gains and losses are included

in accumulated other comprehensive income (loss). Investments that have maturities beyond one year as of the end of the reporting period are classified as non-current.

The Company's investments are subject to a periodic impairment review. The Company recognizes an impairment charge when a decline in the fair value of its investments below the cost basis is judged to be other-than-temporary. The Company considers various factors in determining whether to recognize an impairment charge, including the length of time and extent to which the fair value has been less than the Company's cost basis, the financial condition and near-term prospects of the investee, and the Company's intent and ability to hold the investment for a period of time sufficient to allow for any anticipated recovery in the market value. Realized gains and losses on available-for-sale securities are included in other income, which is determined using the specific identification method

The table below summarizes the Company's investments (in thousands):

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized (Losses)	Estimated Fair Value
June 30, 2018				
Cash equivalents:				
Money market funds	$41,909	$ —	$ —	$41,909
Commercial paper securities	15,232	1	—	15,233
Total	57,141	1	—	57,142
Available-for-sale securities:				
Commercial paper securities	396,958	110	(75)	396,993
Corporate debt securities	98,834	—	(158)	98,676
U.S. government-sponsored entity debt securities	18,556	—	(3)	18,553
Total	514,348	110	(236)	514,222
Total cash equivalents and available-for-sale securities	$571,489	$ 111	$ (236)	$571,364
December 31, 2017				
Cash equivalents:				
Money market funds	$24,290	$ —	$ —	$24,290
Commercial paper securities	4,595	—	—	4,595
Total	28,885	—	—	28,885
Available-for-sale securities:				
Commercial paper securities	110,365	—	(118)	110,247
Corporate debt securities	75,886	—	(131)	75,755
U.S. government-sponsored entity debt securities	8,498	—	(6)	8,492
Total	194,749	—	(255)	194,494
Total cash equivalents and available-for-sale securities	$223,634	—	$ (255)	$223,379

The Company had no material realized losses or other-than-temporary impairments of its investments for the six months ended June 30, 2018 and 2017. As of June 30, 2018, all of the Company's investments had maturity dates within one year, except for $34.2 million, which matures within 24 months. The Company has the intent and ability to hold its investments for a period of time sufficient to allow for any anticipated recovery in market value.

NOTE 4—BASIC AND DILUTED NET LOSS PER SHARE

Basic net loss per share has been computed by dividing net loss by the weighted-average number of shares of common stock outstanding during the period. Diluted net loss per share is calculated by dividing net loss by the weighted-average number of shares of common stock and potential dilutive securities outstanding during the period.

The total number of shares subject to stock options and restricted stock units outstanding, which are all anti-dilutive, were excluded from consideration in the calculation of diluted net loss per share. Stock options and restricted stock units outstanding as of June 30, 2018 and 2017 were 8,702,199 and 9,898,588, respectively.

NOTE 5—MAJOR CUSTOMERS, PARTNERSHIPS AND STRATEGIC ALLIANCES

Collaboration Agreements

Kite Pharma, Inc.

In February 2018, the Company entered into a collaboration and license agreement with Kite Pharma, Inc. ("Kite"), a wholly-owned subsidiary of Gilead Sciences, Inc., for the research, development and commercialization of potential engineered cell therapies for cancer. Kite will be responsible for all clinical development and commercialization of any resulting products. The Kite agreement became effective on April 5, 2018 when the waiting periods under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, and other customary closing conditions were completed.

Subject to the terms of this agreement, the Company granted Kite an exclusive, royalty-bearing, worldwide, sublicensable license, under the Company's relevant patents and know-how, to develop, manufacture and commercialize, for the purpose of treating cancer, specific cell therapy products that may result from the research program and that are engineered ex vivo using selected zinc finger nucleases ("ZFNs") and adeno-associated viral vectors ("AAVs") developed under the research program, to express chimeric antigen receptors ("CARs"), T-cell receptors ("TCRs") or NK-cell receptors ("NKRs") directed to candidate targets.

During the research program term and subject to certain exceptions, except pursuant to this agreement, the Company is prohibited from researching, developing, manufacturing and commercializing, for the purpose of treating cancer, any cell therapy product that, as a result of ex vivo genome editing, expresses a CAR, TCR or NKR that is directed to a target expressed on or in a human cancer cell. After the research program term concludes and subject to certain exceptions, except pursuant to this agreement, the Company will be prohibited from developing, manufacturing and commercializing, for the purpose of treating cancer, any cell therapy product that, as a result of ex vivo genome editing, expresses a CAR, TCR or NKR that is directed to a candidate target.

Following the effective date, in April 2018, the Company received a $150.0 million upfront payment from Kite. In addition, Kite will reimburse the Company's direct costs to conduct the joint research program, and Kite will be responsible for all subsequent development, manufacturing and commercialization of any licensed products. Sangamo is also eligible to receive contingent development- and sales-based milestone payments that could total up to $3.01 billion if all of the specified milestones set forth in this agreement are achieved. Of this amount, approximately $1.26 billion relates to the achievement of specified research, clinical development, regulatory and first commercial sale milestones, and approximately $1.75 billion relates to the achievement of specified sales-based milestones if annual worldwide net sales of licensed products reach specified levels. Each development- and sales-based milestone payment is payable (i) only once for each licensed product, regardless of the number of times that the associated milestone event is achieved by such licensed product, and (ii) only for the first ten times that the associated milestone event is achieved, regardless of the number of licensed products that may achieve such milestone event. In addition, the Company will be entitled to receive escalating, tiered royalty payments with a percentage in the single digits based on potential future annual worldwide net sales of licensed products. These royalty payments will be subject to reduction due to patent expiration, entry of biosimilar products to the market and payments made under certain licenses for third-party intellectual property.

The initial research term in the agreement is six years. Kite has an option to extend the research term of the agreement for up to two additional one-year periods for a separate upfront fee of $10.0 million per year. All contingent payments under the agreement, when earned, will be non-refundable and non-creditable. None of the development and sales-based milestone payments have been included in the $185.9 million transaction price, which includes the upfront license fee and estimated reimbursable service costs for identified research projects over the estimated performance period, as estimated fees for the presumed exercise of the research term extension options and all milestone amounts are fully constrained. As part of its evaluation of the constraint, the Company considered numerous factors, including the fact that achievement of the milestones at this time is uncertain and contingent upon future periods when the uncertainty related to the variable consideration is resolved. The Company will re-evaluate the transaction price, including the estimated variable consideration included in the transaction price and all constrained amounts, in each reporting period and as uncertain events are resolved or other changes in circumstances occur.

Kite has the right to terminate this agreement, in its entirety or on a per licensed product or per candidate target basis, for any reason after a specified notice period. Each party has the right to terminate this agreement on account of the other party's bankruptcy or material, uncured breach.

The Company has identified the primary performance obligations within the Kite agreement as a license to the technology and on-going services. The Company concluded that the license is not discrete as it does not have stand-alone value to Kite apart from the services to be performed by the Company pursuant to the agreement. As a result, the Company recognizes revenue from the upfront payment on a straight-line basis through June 2024, the estimated period the Company will perform research services. The estimated period of performance and project cost is reviewed quarterly and adjusted, as needed, to reflect the Company's current assumptions regarding the timing of its deliverables. As of June 30, 2018, the Company had deferred revenue of $144.0 million related to this

agreement. During the three months ended June 30, 2018 the Company recognized revenue of approximately $6.0 million related to the upfront fee that was received upon effectiveness of the agreement and approximately $1.5 million in research services.

Pfizer Inc.

SB-525 Global Collaboration and License Agreement

In May 2017, the Company entered into an exclusive, global collaboration and license agreement with Pfizer, pursuant to which it established a collaboration for the research, development and commercialization of SB-525, its gene therapy product candidate for hemophilia A, and closely related products.

Under this agreement, the Company is responsible for conducting the Phase 1/2 clinical trial and certain manufacturing activities for SB-525, while Pfizer is responsible for subsequent worldwide development, manufacturing, marketing and commercialization of SB-525. Sangamo may also collaborate in the research and development of additional AAV-based gene therapy products for hemophilia A.

The Company received an upfront fee of $70.0 million and is eligible to receive development milestone payments contingent on the achievement of specified clinical development, intellectual property, regulatory and first commercial sale milestones for SB-525 and potentially other products. In addition, Sangamo is eligible to receive up to $208.5 million in payments upon the achievement of specified clinical development, intellectual property and regulatory milestones and up to $266.5 million in payments upon first commercial sale milestones for SB-525 and potentially other products. The total amount of potential clinical development, intellectual property, regulatory, and first commercial sale milestone payments, assuming the achievement of all specified milestones in the hemophilia A Pfizer agreement, is up to $475.0 million, which includes up to $300.0 million for SB-525 and up to $175.0 million for other products that may be developed under the agreement, subject to reduction on account of payments made under certain licenses for third party intellectual property. In addition, Pfizer agreed to pay the Company royalties for each potential licensed product developed under the agreement that are an escalating tiered, double-digit percentage of the annual net sales of such product and are subject to reduction due to patent expiration, entry of biosimilar products to the market and payment made under certain licenses for third party intellectual property. To date, no milestone payments have been received and no products have been approved and therefore no royalty fees have been earned under the hemophilia A Pfizer agreement. Sangamo is responsible for internal and external research costs as part of the upfront fee and has the ability to request additional reimbursement from Pfizer if certain conditions are met.

None of the clinical or regulatory milestones have been included in the $70.0 million transaction price, as all milestone amounts are fully constrained. As part of its evaluation of the constraint, the Company considered numerous factors, including the fact that achievement of the milestones at this time is uncertain and contingent upon future periods when the uncertainty related to the variable consideration is resolved. The Company will re-evaluate the transaction price, including its estimated variable consideration included in the transaction price and all constrained amounts, in each reporting period and as uncertain events are resolved or other changes in circumstances occur.

Subject to the terms of the agreement, the Company granted Pfizer an exclusive, worldwide, royalty-bearing license, with the right to grant sublicenses, to use certain technology controlled by the Company for the purpose of

developing, manufacturing and commercializing SB-525 and related products. Pfizer granted the Company a non-exclusive, worldwide, royalty free, fully paid license, with the right to grant sublicenses, to use certain manufacturing technology developed under the agreement and controlled by Pfizer to manufacture the Company's products that utilize the AAV delivery system. During a specified period, neither the Company nor Pfizer will be permitted to clinically develop or commercialize, outside of the collaboration, certain AAV-based gene therapy products for hemophilia A.

Unless earlier terminated, the agreement has a term that continues, on a per product and per country basis, until the later of (i) the expiration of patent claims that cover the product in a country, (ii) the expiration of regulatory exclusivity for a product in a country, and (iii) fifteen years after the first commercial sale of a product in a country. Pfizer has the right to terminate the agreement without cause in its entirety or on a per product or per country basis. The agreement may also be terminated by either party based on an uncured material breach by the other party or the bankruptcy of the other party. Upon termination for any reason, the license granted by the Company to Pfizer to develop, manufacture and commercialize SB-525 and related products will automatically terminate. Upon termination by the Company for cause or by Pfizer in any country or countries, Pfizer will automatically grant the Company an exclusive, royalty-bearing license under certain technology controlled by Pfizer to develop, manufacture and commercialize SB-525 in the terminated country or countries.

The Company has identified the performance obligations within the hemophilia A Pfizer agreement as a license to the technology and on-going services. The Company concluded that the license is not discrete as it does not have stand-alone value to Pfizer apart from the services to be performed by the Company pursuant to the agreement. As a result, the Company recognizes revenue from the upfront payment based on proportional performance through 2020, the estimated period the Company will perform

research services. The estimated period of performance and project cost is reviewed quarterly and adjusted, as needed, to reflect the Company's current assumptions regarding the timing of its deliverables. As of June 30, 2018, the Company had deferred revenue of $31.9 million related to this agreement. During the three and six months ended June 30, 2018 the Company recognized revenue of $8.1 million and $15.8 million, respectively, related to the upfront fee that was received upon entering into the agreement.

C9ORF72 Research Collaboration and License Agreement

In December 2017, the Company entered into a separate exclusive, global collaboration and license agreement with Pfizer for the development and commercialization of potential gene therapy products that use ZFP transcription factors ("TFs") to treat amyotrophic lateral sclerosis ("ALS") and frontotemporal lobar degeneration ("FTLD") linked to mutations of the C9ORF72 gene. Pursuant to this agreement, the Company agreed to work with Pfizer on a research program to identify, characterize and preclinically develop ZFP-TFs that bind to and specifically reduce expression of the mutant form of the C9ORF72 gene.

The Company received a $12.0 million upfront payment from Pfizer and is eligible to receive up to $60.0 million in development milestone payments from Pfizer contingent on the achievement of specified preclinical development, clinical development and first commercial sale milestones, and up to $90.0 million commercial milestone payments if annual worldwide net sales of the licensed products reach specified levels. In addition, Pfizer will pay the Company royalties based on an escalating tiered, mid- to high-single digit percentage of the annual worldwide net sales of the licensed products. These royalty payments are subject to reduction due to patent expiration, entry of biosimilar products to the market and payments made under certain licenses for third party intellectual property. Each party will be responsible for the cost of its performance of the research program. Pfizer will be operationally and financially responsible for subsequent development, manufacturing and commercialization of the licensed products.

None of the clinical or regulatory milestones have been included in the $12.0 million transaction price, as all milestone amounts are fully constrained. As part of its evaluation of the constraint, the Company considered numerous factors, including the fact that achievement of the milestones at this time is uncertain and contingent upon future periods when the uncertainty related to the variable consideration is resolved. The Company will re-evaluate the transaction price, including is estimated variable consideration included in the transaction price and all constrained amounts, in each reporting period and as uncertain events are resolved or other changes in circumstances occur.

Subject to the terms of this agreement, the Company granted Pfizer an exclusive, royalty-bearing, worldwide, license under the Company's relevant patents and know-how to develop, manufacture and commercialize gene therapy products that use resulting ZFP-TFs that satisfy pre-agreed criteria. During a specified period, neither the Company nor Pfizer will be permitted to research, develop, manufacture or commercialize outside of the collaboration any ZFPs that specifically bind to the C9ORF72 gene.

Unless earlier terminated, the agreement has a term that continues, on a per licensed product and per country basis, until the later of (i) the expiration of patent claims that cover the licensed product in a country, (ii) the expiration of regulatory exclusivity for a licensed product in a country, and (iii) fifteen years after the first commercial sale of a licensed product in a major market country. Pfizer also has the right to terminate the agreement without cause in its entirety or on a per product or per country basis. The agreement may also be terminated by either party based on an uncured material breach by the other party or the bankruptcy of the other party. The agreement will also terminate if the Company is unable to identify any lead candidates for development within a specified period of time or if Pfizer elects not to advance a lead candidate beyond a certain development milestone within a specified period of time. Upon termination for any reason, the license granted by the Company to Pfizer to develop, manufacture and commercialize licensed products under the agreement will automatically terminate. Upon termination by the Company for cause or by Pfizer without cause for any licensed product or licensed products in any country or countries, the Company will

have the right to negotiate with Pfizer to obtain a non-exclusive, royalty-bearing license under certain technology controlled by Pfizer to develop, manufacture and commercialize the licensed product or licensed products in the terminated country or countries.

Following termination by the Company for Pfizer's material breach, Pfizer will not be permitted to research, develop, manufacture or commercialize ZFPs that specifically bind to the C9ORF72 gene for a period of time. Following termination by Pfizer for the Company's material breach, the Company will not be permitted to research, develop, manufacture or commercialize ZFPs that specifically bind to the C9ORF72 gene for a period of time.

The Company has identified the performance obligations within this agreement as a license to the technology and on-going services. The Company concluded that the license is not discrete as it does not have stand-alone value to Pfizer apart from the services to be performed by the Company pursuant to the agreement. As a result, the Company recognizes revenue from the upfront payment based on proportional performance through March 31, 2019 the estimated period the Company will perform research services. The estimated period of performance and project cost is reviewed quarterly and adjusted, as needed, to reflect the Company's current assumptions regarding the timing of its deliverables. As of June 30, 2018, the Company had deferred revenue of $10.9 million related to this agreement. During the three and six months ended June 30, 2018 the Company recognized revenue of $0.6 million and $1.1 million, respectively, related to the upfront fee that was received upon entering into the agreement.

Bioverativ, a Sanofi company.

In January 2014, the Company entered into an exclusive worldwide collaboration and license agreement with Bioverativ to develop therapeutics for hemoglobinopathies, focused on beta-thalassemia and sickle cell disease ("SCD"). Under the agreement, the Company is jointly conducting two research programs: the beta-thalassemia program and the SCD program. In the beta-thalassemia program, the Company is responsible for all discovery, research and development activities through the first human clinical trial. In the SCD program, both parties are responsible for research and development activities through the submission of an investigational new drug ("IND") application for ZFP therapeutics intended to treat SCD.

Under both programs, Bioverativ is responsible for subsequent worldwide clinical development, manufacturing and commercialization of licensed products developed under the agreement. At the end of the specified research terms for each program or under certain specified circumstances, Bioverativ has the right to step in and take over any of our remaining activities. Furthermore, the Company has an option to co-promote in the United States any licensed products to treat beta-thalassemia and SCD developed under the agreement, and Bioverativ will compensate the Company for such co-promotion activities. Subject to the terms of the agreement, the Company has granted Bioverativ an exclusive, royalty-bearing license, with the right to grant sublicenses, to use certain ZFP and other technology controlled by the Company for the purpose of researching, developing, manufacturing and commercializing licensed products developed under the agreement. The Company also granted Bioverativ a non-exclusive, worldwide, royalty-free, fully paid license, with the right to grant sublicenses, under the Company's interest in certain other intellectual property developed pursuant to the agreement. During the term of the agreement, the Company is not permitted to research, develop, manufacture or commercialize, outside of the agreement, certain gene therapy products that target genes relevant to the licensed products.

Under the agreement, the Company received an upfront license fee of $20.0 million and is eligible to receive development and sales milestone payments upon the achievement of specified regulatory, clinical development and sales milestones. In addition, the Company will also be eligible to receive up to $115.8 million in payments upon the achievement of specified clinical development and regulatory milestones, as well as up to $160.5 million in payments upon the achievement of specified sales milestones. The total amount of potential regulatory, clinical development, and sales milestone payments, assuming the achievement of all specified milestones in the agreement, is up to $276.3 million. In addition, the Company will receive royalty payments for each licensed product that are a tiered double-digit percentage of annual net sales of each product. Bioverativ reimburses Sangamo for agreed upon costs incurred in connection with research and development activities conducted by Sangamo. To date, no milestone payments have been received and no products have been approved and therefore no royalty fees have been earned under the Bioverativ agreement.

The agreement may be terminated by (i) the Company or Bioverativ for the uncured material breach of the other party, (ii) the Company or Bioverativ for the bankruptcy or other insolvency proceeding of the other party; (iii) Bioverativ, upon 180 days' advance written notice to the Company and (iv) Bioverativ, for certain safety reasons upon written

notice to, and after consultation with, the Company. As a result, actual future milestone payments could be lower than the amounts stated above.

All contingent payments under the agreement, when earned, will be non-refundable and non-creditable. None of the clinical or regulatory milestones have been included in the $75.7 million transaction price, which includes the upfront license fee and service costs over the estimated performance period, as all milestone amounts are fully constrained. As part of its evaluation of the constraint, the Company considered numerous factors, including the fact that achievement of the milestones at this time is uncertain and contingent upon future periods when the uncertainty related to the variable consideration is resolved. The Company will re-evaluate the transaction price, including the estimated variable consideration included in the transaction price and all constrained amounts, in each reporting period and as uncertain events are resolved or other changes in circumstances occur.

The Company has identified the performance obligations within this arrangement as a license to the technology and on-going research services activities. The Company concluded that the license is not discrete as it does not have stand-alone value to Bioverativ apart from the research services to be performed pursuant to the agreement. As a result, the Company recognizes revenue from the upfront payment based on proportional performance through 2022, the estimated period the Company will perform research services. The estimated period of performance and project cost is reviewed quarterly and adjusted, as needed, to reflect the Company’s current assumptions regarding the timing of its deliverables. As of June 30, 2018, the Company had deferred revenue of $6.2 million related to this agreement.

Revenues recognized under the agreement for the three and six months ended June 30, 2018 and 2017 were as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Revenue related to Bioverativ agreement:				
Recognition of upfront fee	$1,184	$442	$2,338	$884
Research services	3,332	3,068	6,560	4,777
Total	$4,516	$3,510	$8,898	$5,661

Shire International GmbH

In January 2012, the Company entered into a collaboration and license agreement with Shire to research, develop and commercialize a ZFP therapeutic for treating Huntington's disease. The Company received an upfront license fee of $13.0 million. In 2014, Sangamo recognized a $1.0 million milestone payment related to the hemophilia program. Shire does not have any milestone payment obligations, but is required to pay single digit percentage royalties to the Company, up to a specified maximum cap, on the commercial sales of therapeutic products for Huntington's disease. The Company is required to pay single digit percentage royalties to Shire, up to a specified maximum cap, on commercial sales of therapeutic products from programs returned under the original agreement (which include blood clotting Factors VIII and IX) that use two zinc fingers.

Pursuant to the agreement, the Company granted Shire an exclusive, world-wide, royalty-bearing license, with the right to grant sublicenses, to use the Company's ZFP technology for the purpose of developing and commercializing human therapeutic and diagnostic products for the HTT gene. During the term of the agreement, the Company is not permitted to research, develop or commercialize, outside of the agreement, certain products that target the HTT gene. The Company satisfied the deliverables and research services responsibilities within the amended arrangement which were completed in 2017. The agreement may be terminated by (i) the Company or Shire, in whole or in part, for the uncured material breach of the other party, (ii) the Company or Shire for the bankruptcy or other insolvency proceeding of the other party and (iii) Shire, in its entirety, effective upon at least 90 days' advance written notice.

The Company has concluded that the license is not a separate unit of accounting as it does not have stand-alone value to Shire apart from the research services to be performed pursuant to the Shire agreement. The Company satisfied the deliverables and research services responsibilities within the amended arrangement which were completed in 2017. As a result, the Company recognized the remaining $2.3 million of deferred revenue from the upfront payment during the year ended December 31, 2017.

Revenues recognized under the agreement for the three and six months ended June 30, 2018 and 2017 were as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Revenue related to Shire agreement:				
Recognition of upfront fee	$—	$583	$—	$1,167

Research services	— 3	— 110
Total	$—$586	$—$1,277

Funding from Research Foundations

California Institute for Regenerative Medicine

In May 2018, the California Institute for Regenerative Medicine (“CIRM”) agreed to fund a $8.0 million Strategic Partnership Award to fund the clinical studies of a potentially curative ZFP Therapeutic for the treatment of beta-thalassemia based on the application of Sangamo’s ZFN genome editing technology. The grant exists through December 31, 2022 and provides matching funds to support the evaluate ST-400, a gene-edited cell therapy candidate for people with transfusion-dependent beta-thalassemia. There were no revenues or related costs attributable to research and development performed under the Strategic Partnership Award during the three and six months ended June 30, 2018. As of June 30, 2018, the Company had deferred revenue of $1.7 million related to this award.

NOTE 6—INCOME TAXES

On December 22, 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act (the "Tax Act"). The Tax Act makes broad and complex changes to the U.S. tax code that affected 2017, the current year and onwards, including, but not limited to, a reduction of the U.S. federal corporate tax rate from as high as 35% to 21%, a general elimination of U.S. federal income taxes on dividends from foreign subsidiaries, net operating loss deduction limitations, and 100% disallowance of entertainment expense.

In addition, on December 22, 2017, the SEC staff issued Staff Accounting Bulletin No. 118 ("SAB 118") which provides guidance on accounting for the tax effects of the Tax Act. SAB 118 provides a measurement period that should not extend beyond one year from the Tax Act enactment date for companies to complete the accounting under Accounting Standards Codification 740, Income taxes for the year ended December 31, 2017. In accordance with SAB 118, a company must reflect the income tax effects of those aspects of the Tax Act for which the accounting under ASC 740 is complete. The Company is still within the measurement period as of June 30, 2018 and no further conclusions have been made, as the Company reviews the law change and the impact to the Company.

Due to the Company’s valuation allowance against its deferred tax assets, it does not expect that the provisions of the Tax Act will have a material impact on the Company’s financial position, results of operations, or income tax expense or benefit.

NOTE 7—STOCK-BASED COMPENSATION

The following table shows total stock-based compensation expense included in the condensed consolidated statements of operations for the three and six months ended June 30, 2018 and 2017 (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Research and development	$2,120	$1,218	$3,879	$2,436
General and administrative	1,394	746	2,685	2,315
Total stock-based compensation expense	$3,514	$1,964	$6,564	$4,751

NOTE 8—COMMITMENTS AND CONTINGENCIES

Brisbane Build-to-Suit Lease

In November 2017, the Company entered into a long-term property lease which includes construction by the lessor of a building with approximately 87,700 square feet of space, in Brisbane, California. Substantial completion of the building is estimated to occur in the last quarter of 2018. The lease agreement expires in May 2029, approximately ten years after substantial completion of the building. A letter of credit for $3.5 million was established as the deposit and is classified as restricted cash within restricted cash and other noncurrent assets in the accompanying financial statements. The Company has two options to extend the lease term for up to a combined additional ten years.

The Company is deemed, for accounting purposes only, to be the owner of the entire project including the building shell, even though it is not the legal owner as a result of the cold shell condition of the building and involvement in the construction process. In connection with the Company's accounting for this transaction, the Company capitalized the costs of construction as a build-to-suit property within property and equipment, net, and recognize a corresponding build-to-suit lease obligation, including interest. Fair value of the building was estimated at $20.9 million using comparable market prices per square foot for similar space for public real estate transactions in the surrounding area and is considered a Level 2 fair value measurement. As of June 30, 2018, $27.0 million was capitalized with a corresponding build-to-suit lease obligation recognized related to this lease for the building and construction costs.

Contingencies

Sangamo is not party to any material pending legal proceedings or contingencies. From time to time, the Company may be involved in legal proceedings arising in the ordinary course of business.

NOTE 9— STOCKHOLDERS' EQUITY

In April 2018, Sangamo completed an underwritten public offering of its common stock, in which the Company sold an aggregate of 14.2 million shares of its common stock at a public offering price of $16.25 per share. The net proceeds to Sangamo from the sale of shares in this offering, after deducting underwriting discounts and commissions and other estimated offering expenses, were approximately $215.8 million.

In May 2017, the Company entered into an amended and restated sales agreement with Cowen and Company, LLC ("Cowen") (the "ATM Facility") pursuant to which the Company may offer and sell, in its sole discretion, shares of common stock having an aggregate offering price of up to $75.0 million through Cowen acting as the Company's sales agent. Sales of the Company's common stock, if any, will be made at market prices by any method that is deemed to be an "at the market offering" as defined in Rule 415 under the Securities Act of 1933, as amended. The Company has not sold any common stock under the ATM Facility. As of June 30, 2018, the full $75.0 million provided for under the ATM Facility remained available for sale, subject to certain conditions as specified in the agreement.

NOTE 10— SUBSEQUENT EVENTS

On July 20, 2018, the Company entered into a Share Purchase Agreement (the "SPA") with certain shareholders (the "Sellers") of TxCell S.A., a French société anonyme ("TxCell"), and the Company and TxCell entered into a Tender Offer Agreement (the "TOA"). Pursuant to the SPA and the TOA, the Company, directly or through a subsidiary, expects to acquire 100% of the equity interests of TxCell for approximately €72 million (or approximately $84.0 million), on a debt-free and cash-free basis.

Pursuant to the SPA, the Company, directly or through a subsidiary, has agreed to purchase all of the ordinary shares of TxCell the "Ordinary Shares") held by the Sellers for €2.58 per share (or approximately $3.01 per share) in cash (such per share price being the "Offer Price" and such purchase being the "Block Transaction"). The Sellers own (or will prior to the closing of the Block Transaction own) 13,519,036 Ordinary Shares, which represent approximately 53% of the share capital and voting rights of TxCell. The completion of the Block Transaction is subject to certain conditions, including

- issuance of a fairness opinion by the independent expert to be appointed by TxCell in accordance with articles 261-1 et seq. of the General Regulations of the French Autorité des Marchés Financiers ("AMF") that the Offer Price is fair to TxCell's shareholders from a financial point of view, and the recommendation of the board of directors of TxCell that all holders of Ordinary Shares tender such Ordinary Shares into the Offer;
    - confirmation by the French Ministry of Economy that the Block Transaction and the Offer are not subject to its prior approval pursuant to the French regulations relating to foreign investments control or, failing such confirmation, the prior approval of such transactions by the French Ministry of Economy;
- the absence of any event having a material adverse effect on the business of TxCell since December 31, 2017; and
- the receipt of appropriate clearances from French regulatory agencies relating to the performance by TxCell of activities of preparation and storage of human tissues and cells.

Promptly following the completion of the Block Transaction, the Company will be entitled to designate a number of directors on the board of directors of TxCell representing a majority of the TxCell board.

Pursuant to the TOA, the Company, directly or through a subsidiary, has agreed that, without undue delay following the completion of the Block Transaction, it will commence a cash tender offer (the "Offer") to acquire all of the Ordinary Shares of TxCell not held by the Company or any subsidiary of the Company for the Offer Price. In addition, the Company has agreed to: (a) grant to certain employees (including certain members of management) of TxCell stock options to purchase approximately 150,000 shares of Company common stock, which will be granted under the Company's existing 2018 Equity Incentive Plan, with standard vesting conditions; and (b) enter into arrangements with holders of 495,396 "free shares" of TxCell, pursuant to which the Company would purchase such shares from the holders thereof from time to time through mid-2021. The purchase price for each such free share will be based on the performance of the Company's stock price from the announcement of the transactions contemplated by the SPA and TOA (at which time each free share was valued at €2.58 per share (or approximately $3.01 per share) through the time of purchase (such that, for example, if the Company's stock price doubles during that time period, the value of each free share would similarly double).

The Sellers and TxCell have made limited representations and warranties in the SPA and TOA, respectively, as are customary for such agreements governed under French law, and TxCell has agreed to customary covenants regarding the operation of the business of TxCell and its subsidiaries after the date of the TOA and prior to the closing of the Block Transaction. The SPA and TOA also contain customary termination rights.

If, following completion of the Offer, as it may be extended, the Company owns at least 95% of the share capital and voting rights of TxCell, it plans to acquire the remaining Ordinary Shares for the Offer Price through a compulsory squeeze-out procedure under French law. At this time, the Company is assessing the accounting impact of the agreement.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The discussion in "Management's Discussion and Analysis of Financial Condition and Results of Operations" contains trend analysis, estimates and other forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements include, without limitation, statements containing the words "believes," "anticipates," "expects," "continue," "strategy," "will," "intend" and other words of similar import or the negative of those terms or expressions. Such forward-looking statements are subject to known and unknown risks, uncertainties, estimates and other factors that may cause our actual results, performance or achievements, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements, including but not limited to those described under the caption "Risk Factors" in Part II, Item 1A of this Quarterly Report on Form 10-Q. You should read the following discussion and analysis along with the financial statements and notes attached to those statements included elsewhere in this report and in our Annual Report on Form 10-K for the year ended December 31, 2017, or the 2017 Annual Report, as filed with the Securities and Exchange Commission, or SEC, on March 1, 2018.

Overview

We are a clinical stage biotechnology company focused on translating ground-breaking science into genomic therapies that transform patients' lives using our industry-leading platform technologies in genome editing, gene therapy, gene regulation and cell therapy.

We are a leader in the research and development of zinc finger proteins, or ZFPs, a naturally occurring class of proteins found in humans. We have used our knowledge and expertise to develop a proprietary technology platform in both genome editing and gene regulation. ZFPs can be engineered to make zinc finger nucleases, or ZFNs, proteins that can be used to specifically modify DNA sequences by adding or knocking out specific genes, or genome editing, and ZFP transcription factors, or ZFP TFs, proteins that can be used to increase or decrease gene expression, or gene regulation. In the process of developing this platform, we have accrued significant scientific, manufacturing and regulatory capabilities and know-how that are generally applicable in the broader field of gene therapy and have capitalized this knowledge into a conventional gene therapy platform based on adeno-associated viral vector, or AAV, complementary DNA, or cDNA, gene transfer.

Our strategy is to maximize the value and therapeutic use of our technology platforms. In certain therapeutic areas we intend to capture the value of our proprietary genome editing and gene therapy products by forward integrating into manufacturing, development and commercial operations. In other therapeutic areas we intend to partner with biopharmaceutical companies to develop products.

We are focused on the development of human therapeutics for diverse diseases with well-characterized genetic causes. We have several proprietary clinical and preclinical product candidates in development and have strategically partnered certain programs with biopharmaceutical companies to obtain funding for our own programs and to expedite clinical and commercial development.

We have an ongoing Phase 1/2 clinical trial evaluating SB-525, a gene therapy for the treatment of hemophilia A, a bleeding disorder. We also have ongoing Phase 1/2 clinical trials evaluating three product candidates using our proprietary in vivo genome editing approach: SB-FIX for the treatment of hemophilia B, a bleeding disorder; SB-318, for the treatment of Mucopolysaccharidosis Type I, or MPS I; and SB-913 for the treatment of Mucopolysaccharidosis Type II, or MPS II. MPS I and MPS II are rare lysosomal storage disorders, or LSDs. We also

have an ongoing Phase1/2 clinical trial evaluating ST-400, developed using our proprietary ZFN-mediated ex vivo cell therapy platform, for the treatment of beta-thalassemia, a blood disorder.

We recently announced positive preliminary data from the Phase 1/2 clinical trial evaluating SB-525, or the Alta study. In the Alta study, SB-525 has been generally well tolerated to date with no treatment-related serious adverse events and no use of tapering courses of oral steroids. The fifth patient in the Alta study, the first at the third dose level, was treated in June and has achieved therapeutic Factor VIII activity levels (Epidemiological data indicate that Factor VIII activity above 12% of normal is associated with substantial reduction or elimination of spontaneous bleeds and factor usage. Den Uijl IE et al Haemophilia 2011; 17(6):849-53). A dose dependent effect has been observed in the Alta study, with patients in the second dose cohort reporting reduced use of factor replacement. We and Pfizer expect to present detailed data from the Alta study at a hematology conference in the fourth quarter of 2018.

We also recently treated the fifth and sixth patients in the Phase 1/2 clinical trial evaluating SB-913 for the treatment of MPS II, or the CHAMPIONS study, and we expect to present preliminary safety and efficacy data from this study at the Annual Symposium of the Society for the Study of Inborn Errors of Metabolism (SSIEM) in September 2018.

We also recently began enrolling our first patients into the Phase 1/2 clinical trials evaluating SB-318 for the treatment of MPS I and ST-400 for the treatment of beta-thalassemia. In addition, we have proprietary preclinical and discovery stage programs in other

LSDs, hematological disorders and monogenic diseases, including certain central nervous system, or CNS, disorders, cancer immunotherapy, immunology and infectious disease.

In July 2018, we entered into a Share Purchase Agreement, or the Purchase Agreement, with certain shareholders of TxCell S.A., or TxCell, and we and TxCell entered into a Tender Offer Agreement, or the TO Agreement. Pursuant to the Purchase Agreement and the TO Agreement, we, directly or through a subsidiary, expect to acquire 100% of the equity interests of TxCell for approximately €72 million (or approximately $84.0 million), on a debt-free and cash-free basis. Pursuant to the Purchase Agreement, we, directly or through a subsidiary, expect to purchase TxCell ordinary shares representing approximately 53% of the share capital and voting rights of TxCell for €2.58 per share (or approximately $3.01 per share) in cash, or the Offer Price. Following the completion of the transactions contemplated by the Purchase Agreement, we, directly or through a subsidiary, will commence a cash tender offer pursuant to the TO Agreement to acquire all of the TxCell ordinary shares not held by us or any Sangamo subsidiary for the Offer Price. If, following the completion of the cash tender offer, we own at least 95% of the share capital and voting rights of TxCell, we plan to acquire the remaining TxCell ordinary shares for the Offer Price through a compulsory squeeze-out procedure under French law. We refer to these transactions, collectively, as the TxCell Acquisition in this Quarterly Report on Form 10-Q. We expect to complete the TxCell Acquisition in the fourth quarter of 2018.

If consummated, we expect that the TxCell Acquisition would accelerate our entry into the clinic with a CAR-Treg (which is a regulatory T cell, or Treg, genetically modified with a chimeric antigen receptor, or CAR) therapy. In 2019, we expect to submit a clinical trial authorization application in Europe for TxCell's first CAR-Treg investigational product candidate for solid organ transplant, or TX200, and to initiate a Phase 1/2 clinical trial of TX200 later in 2019. In addition, if the TxCell Acquisition is consummated, we intend to use our ZFN gene editing technology to potentially develop next-generation autologous and allogeneic CAR-Treg cell therapies for use in treating autoimmune diseases. The completion of the TxCell Acquisition is subject to certain conditions, and is subject to a number of risks. Even if completed, the success of the TxCell Acquisition will depend, in part, on our ability to successfully combine and integrate our business with the business of TxCell and to advance the development of TX200 and TxCell’s Treg technology. For additional details on these risks, see “Risk Factors—Risks Relating to our Proposed Acquisition of TxCell” in Part II, Item 1A of this Quarterly Report on Form 10-Q.

In February 2018, we entered into a global collaboration and license agreement with Kite Pharma, Inc., or Kite, a wholly owned subsidiary of Gilead Sciences, Inc., for the research, development and commercialization of potential engineered cell therapies for cancer. The Kite agreement became effective in April 2018 when the waiting periods under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended and other customary closing conditions were completed. Following the effective date, we received a $150.0 million upfront payment from Kite. In this collaboration, we are working together with Kite on a research program under which we are designing ZFNs and AAVs to disrupt and insert certain genes in T cells and natural killer, or NK, cells, including the insertion of genes that encode chimeric antigen receptors, T-cell receptors, and NK-cell receptors directed to mutually agreed targets. Kite is responsible for all clinical development and commercialization of any resulting products.

In December 2017, we entered into a research collaboration and license agreement with Pfizer Inc., or Pfizer, for the development and commercialization of potential gene therapy products that use ZFP TFs to treat amyotrophic lateral sclerosis, or ALS, and frontotemporal lobar degeneration, or FTLD, linked to mutations of the C9ORF72 gene. Under this agreement, we are working with Pfizer on a research program to identify, characterize and preclinically develop ZFP TFs that satisfy pre-agreed criteria. Pfizer is responsible for subsequent development, manufacturing and commercialization of licensed products.

In May 2017, we entered into a global collaboration and license agreement with Pfizer for the research, development and commercialization of SB-525, our gene therapy product candidate for hemophilia A, and closely related products. Under this agreement, we are responsible for conducting the Phase 1/2 clinical trial and certain manufacturing activities for SB-525, while Pfizer is responsible for subsequent worldwide development, manufacturing, marketing and commercialization of SB-525. We and Pfizer may also collaborate in the research and development of additional AAV-based gene therapy products for hemophilia A.

We have also established a collaborative partnership with Bioverativ, a Sanofi company, or Bioverativ, to research, develop and commercialize therapeutic gene-edited cell therapy products in hemoglobinopathies, including beta-thalassemia and sickle cell disease, or SCD. Bioverativ is responsible for subsequent development, manufacturing and commercialization of licensed products.

We have a substantial intellectual property position in the genome editing field including the design, selection, composition and use of engineered ZFPs to support our research and development activities. As of June 30, 2018, we either owned outright or have exclusively licensed the commercial rights to over 870 patents issued in the United States and foreign jurisdictions, and over 680 patent applications pending worldwide. We continue to license and file new patent applications that strengthen our core and accessory patent portfolio. We believe that our intellectual property position is a critical element in our ability to research, develop and commercialize products and services based on genome editing, gene therapy, gene regulation and cell therapy.

Comparability

We adopted Accounting Standards Codification Topic 606—Revenue from Contracts with Customers, or Topic 606, on January 1, 2018, resulting in a change to our accounting policy for revenue recognition. We used the modified retrospective method and recognized the cumulative effect of initially applying Topic 606 as an adjustment to the opening balances of deferred revenues and accumulated deficit at January 1, 2018. Accordingly, comparative information has not been adjusted and continues to be reported under previous accounting standards. Refer to Note 1 in Part I, Item 1 of this Quarterly Report on Form 10-Q for additional information.

Critical Accounting Estimates

The accompanying discussion and analysis of our financial condition and results of operations are based upon our condensed consolidated financial statements and the related disclosures, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates, assumptions and judgments that affect the reported amounts in our condensed consolidated financial statements and accompanying notes. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. Except for the change to our accounting policy for revenue recognition as a result of adopting Topic 606, there have been no significant changes in our critical accounting policies and estimates disclosed in our 2017 Annual Report.

Results of Operations

Three and six months ended June 30, 2018 and 2017

Revenues

	Three Months Ended June 30, (in thousands, except percentage values)				Six Months Ended June 30, (in thousands, except percentage values)			
	2018	2017	Change	%	2018	2017	Change	%
Revenues:								
Collaboration agreements	$21,289	$7,977	$13,312	167%	$33,840	$11,283	$22,557	200%
Research grants	127	276	(149)	(54%)	213	395	(182)	(46%)
Total revenues	$21,416	$8,253	$13,163	159%	$34,053	$11,678	$22,375	192%

Total revenues consisted of revenues from collaboration agreements and research grants. We anticipate revenues over the next several years will be derived primarily from our collaboration agreements with Kite, Pfizer and Bioverativ as we continue to recognize in revenues upfront payments received under such agreements over time.

The increase in revenues from our collaboration agreements for the three months ended June 30, 2018 were primarily due to $7.5 million in revenues related to the Kite agreement, which took effect in April 2018, $4.4 million in revenues related to the hemophilia A Pfizer agreement, $1.0 million in revenues related to our agreement with Bioverativ, and $0.6 million related to the C9ORF72 Pfizer agreement, partially offset by a decrease of $0.6 million in

revenue related to our agreement with Shire International GmbH, formerly Shire AG, as we recognized the remaining deferred revenue under such agreement in December 2017. Kite included $6.0 million related to partial recognition of an upfront license fee of $150.0 million and $1.6 million from research services. The revenues from Pfizer reflect the partial recognition of an upfront fee of $70.0 million under the hemophilia A Pfizer agreement and upfront fee of $12.0 million under the C9ORF72 Pfizer agreement. Bioverativ included $0.7 million related to partial recognition of an upfront license fee of $20.0 million and $0.3. million from research services. Research grant revenues were approximately $0.1 million and $0.3 million for the three months ended June 30, 2018 and 2017, respectively.

The increase in revenues from our collaboration agreements for the six months ended June 30, 2018 were primarily attributable to $12.0 million in revenues related to the hemophilia A Pfizer Agreement, $7.5 million in revenues related to our agreement with Kite, $3.2 million in revenues related to our agreement with Bioverativ, and $1.0 million in revenues related to the C9ORF72 Pfizer agreement, partially offset by a decrease of $1.3 million in revenue from our agreement with Shire. Research grant revenues were $0.2 million for the six months ended June 30, 2018, compared to $0.4 million in the corresponding period in 2017.

Operating Expenses

	Three Months Ended June 30, (in thousands, except percentage values)				Six Months Ended June 30, (in thousands, except percentage values)			
	2018	2017	Change	%	2018	2017	Change	%
Operating expenses:								
Research and development	$29,255	$14,984	$14,271	95%	$52,802	$27,926	$24,876	89%
General and administrative	11,301	6,037	5,264	87%	21,388	13,312	8,076	61%
Total expenses	$40,556	$21,021	$19,535	93%	$74,190	$41,238	$32,952	80%

Research and Development Expenses

Research and development expenses consist primarily of salaries and personnel-related expenses, including stock-based compensation, laboratory supplies, preclinical and clinical studies, manufacturing expenses, allocated facilities expenses, contracted research expenses and expenses for technology licenses. We expect to continue to devote substantial resources to research and development in the future, including in connection with the TxCell Acquisition, and expect research and development expenses to increase in the next several years if we are successful in advancing our clinical programs and if we are able to progress our earlier stage product candidates into clinical trials.

The increase of $14.3 million in research and development expenses for the three months ended June 30, 2018 was primarily due to increases of $7.0 million in manufacturing and clinical trial expenses due to timing of manufacturing activities. A portion of the increase is also due to $2.7 million in salaries and benefits expense, $1.5 million in research and pre-clinical expense, $1.0 million in lab supply expense, $0.9 million in stock-based compensation expense, $0.7 million in facility expense, and $0.3 million in consultant expense.

The increase of $24.9 million in research and development expenses for the six months ended June 30, 2018 was primarily due to increases of $12.3 million in manufacturing and research expenses as our programs move into the clinic, $4.8 million in salaries and benefits expense, $2.6 million in research and pre-clinical expense, $1.7 million in lab supply expense, $1.4 million in stock-based compensation expense, $1.3 million in facility expense, and $0.6 million in consultant expense.

At this time, we cannot provide reliable estimates of how much time or investment will be necessary to enable our product candidates to be commercialized. For a more complete discussion of the risks and uncertainties associated with our research and development activities and the development of our product candidates, see “Risk Factors” in Part II, Item 1A of this Quarterly Report on Form 10-Q.

General and Administrative Expenses

The increase of $5.3 million in general and administrative expenses for the three months ended June 30, 2018 was primarily due to increases of $1.3 million in salaries and benefits expense, $1.0 million in consultant expense, $0.9 million in legal expense. $0.6 million in stock-based compensation expense, and $0.5 million in facility expense. The increases were primarily due to the growth of our business to support the continued advancement of our product candidates into clinical trials.

The increase of $8.1 million in general and administrative expenses for the six months ended June 30, 2018 was primarily due to increases of $2.4 million in salaries and benefits expense, $1.1 million in legal expense, $1.1 million in consultant expense, $0.8 million in facility expense, $0.5 million in audit expense, $0.4 million in business development expense, $0.4 million in stock-based compensation expense, and $0.3 million in travel expense. The increases were primarily due to the growth of our business to support the continued advancement of our product candidates into clinical trials.

Interest and other income, net

The increase of $2.2 million and $2.9 million in interest and other income, net, for the three and six months ended June 30, 2018 and 2017, respectively, is primarily due to changes resulting from our treasury strategy.

Liquidity and Capital Resources

Liquidity

Since inception, we have incurred significant net losses and we have funded our operations primarily through the issuance of equity securities, payments from corporate collaborators and strategic partners, and research grants.

As of June 30, 2018, we had cash, cash equivalents, marketable securities and interest receivable, totaling $574.2 million, excluding restricted cash, compared to $244.6 million as of December 31, 2017, with the increase primarily attributable to $215.7 million net proceeds from our April 2018 issuance of common stock and $150.0 million from our February 2018 collaboration and license agreement with Kite, which became effective in April 2018.

Our most significant use of capital pertains to salaries and benefits for our employees and external research and development expenses, such as manufacturing, clinical trials and preclinical activity related to our therapeutic programs. Our cash and investment balances are held in a variety of interest bearing instruments, including obligations of U.S. government agencies, U.S. Treasury debt securities, corporate debt securities and money market funds. Cash in excess of immediate requirements is invested in accordance with our investment policy with a view toward capital preservation and liquidity.

In July 2018, we entered into the Purchase Agreement and TO Agreement. In the TxCell Acquisition, we, directly or through a subsidiary, expect to acquire 100% of the equity interests of TxCell for approximately €72 million (or approximately $83.5 million), on a debt-free and cash-free basis. See "—Overview" above for further discussion of the TxCell Acquisition.

In April 2018, we completed an underwritten public offering of our common stock, in which we sold an aggregate of 14.2 million shares of our common stock at a public offering price of $16.25 per share. The net proceeds to us from the sale of shares in this offering, after deducting underwriting discounts and commissions and other estimated offering expenses, were approximately $215.7 million.

In February 2018, we entered into a global collaboration and license agreement with Kite for the research, development and commercialization of potential engineered cell therapies for cancer. In April 2018, the Kite agreement became effective when the waiting periods under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended and other customary closing conditions were satisfied. Following the effective date, we received a $150.0 million upfront payment from Kite.

In May 2017, we entered into an amended and restated sales agreement with Cowen and Company, LLC pursuant to which we may offer and sell, in our sole discretion, shares of common stock having an aggregate offering price of up to $75.0 million through Cowen acting as our sales agent. Sales of our common stock, if any, will be made at market prices by any method that is deemed to be an "at the market offering" as defined in Rule 415 under the Securities Act of 1933, as amended. We have not sold any common stock under this agreement. As of June 30, 2018, the full $75.0 million provided for under the agreement remained available for sale, subject to certain conditions as specified in the agreement. We are not able to make offers or sales under this agreement until the lock-up that was put in place in connection with the April 2018 public offering has expired.

Cash Flows

Operating activities. Net cash provided by operating activities was $104.3 million and $43.7 million for the six months ended June 30, 2018 and 2017, respectively. Net cash provided by operating activities for the six months ended June 30, 2018 primarily reflected the increase in deferred revenue due to the $150.0 million upfront license payment from Kite, net loss for the period as well as increase in prepaid expenses and primarily due to increased business activities. Net cash provided by operating activities for the six months ended June 30, 2017 primarily reflected increases in deferred revenue, accrued liabilities, and stock-based compensation for the period offset by the net loss.

Investing activities. Net cash used in investing activities for the six months ended June 30, 2018 was $323.7 million. Net cash provided by investing activities was $78.3 million for the six months ended June 30, 2017. Cash flows from investing activities for both periods primarily related to purchases and maturities of investments.

Financing activities. Net cash provided by financing activities for the six months ended June 30, 2018 and 2017 was $229.0 million primarily related to our April 2018 underwritten public offering of our common stock, which generated net proceeds of approximately $215.7 million, with the remainder primarily related to the $13.3 million from the issuance of common stock upon exercise of stock options. Net cash provided by financing activities for the six months ended June 30, 2017 was primarily related to the completion of our June 2017 underwritten public offering of our common stock, which generated net proceeds of approximately $78.1 million.

Operating Capital and Capital Expenditure Requirements

We anticipate continuing to incur operating losses for at least the next several years. We plan to finance operations with available cash resources, collaborations and strategic partnerships, research grants and from the issuance of equity or debt securities. We believe that our available cash, cash equivalents, marketable securities and interest receivable as of June 30, 2018, along with expected revenues from collaborations, strategic partnerships and research grants, will be adequate to fund the costs of the TxCell Acquisition and to fund our operations at least through the next twelve months. However, we will need to raise substantial additional capital to fund the development, manufacturing and potential commercialization of our product candidates. We regularly consider fund raising opportunities and may decide, from time to time, to raise capital based on various factors, including market conditions and our plans of operation. Additional capital may not be available on terms acceptable to us, or at all. If adequate funds are not available, or if the terms of potential funding sources are unfavorable, our business and our ability to develop our technology and our gene therapy products would be harmed. Furthermore, any sales of additional equity securities may result in dilution to our stockholders, and any debt financing may include covenants that restrict our business.

Our future capital requirements will depend on many factors and are not limited to the following:

- the initiation, progress, timing and completion of clinical trials for our product candidates and potential product candidates;
- the outcome, timing and cost of regulatory approvals;
- the success of our collaboration agreements;
- delays that may be caused by changing regulatory requirements;
- the number of product candidates that we pursue;
- the costs involved in filing and prosecuting patent applications and enforcing and defending patent claims;
    - the timing and terms of future in-licensing and out-licensing transactions;
- the cost and timing of establishing sales, marketing, manufacturing and distribution capabilities;
- the cost of procuring clinical and commercial supplies of our product candidates;
- the extent to which we acquire or invest in businesses, products or technologies, including the costs associated with such acquisitions and investments, such as the TxCell Acquisition; and
- the possible costs of litigation.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements as defined in Regulation S-K, Item 303(a)(4)(ii) of Regulation S-K.

Contractual Obligations and Commercial Commitments

Our future minimum contractual commitments were reported in our 2017 Annual Report and there have been no material changes outside the ordinary course of business in the previously disclosed contractual commitments during the six months ended June 30, 2018. See "—Overview" above for a discussion of the TxCell Acquisition, which increased our contractual commitments subsequent to June 30, 2018.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our exposure to market risk relates to our cash, cash equivalents and investments. The goals of our investment policy are preservation of capital, fulfillment of liquidity needs and capturing a market rate of return based on our investment policy parameters and market conditions. We select investments that maximize interest income to the extent possible within these guidelines. To achieve our goals, we maintain a portfolio of cash equivalents and investments in securities of high credit quality and with varying maturities to match projected cash needs.

The securities in our investment portfolio are not leveraged, are classified as available-for-sale and are, due to their short-term nature, subject to minimal interest rate risk. Our investments currently consist of U.S. Treasury securities, U.S. government-sponsored enterprise securities and corporate notes. Our investment policy, approved by our Board of Directors, limits the amount we may invest in any one type of investment issuer, thereby reducing credit risk concentrations. All investments have a fixed interest rate and are carried at market value, which approximates cost. We do not use derivative financial instruments in our investment portfolio. We do not believe that a change in interest rates would have a material negative impact on the value of our investment portfolio. Our market risks at June 30, 2018 have not changed materially from those discussed in Item 7A of our 2017 Annual Report.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to provide reasonable assurance that information required to be disclosed in our Exchange Act reports is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms and that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure.

Under the supervision of our principal executive officer and principal financial officer, we evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act) as of June 30, 2018. Based on that evaluation, our principal executive officer and principal financial officer have concluded that our disclosure controls and procedures were effective at the reasonable assurance level.

Inherent Limitations on Controls and Procedures

Our management, including the principal executive officer and principal financial officer, does not expect that our disclosure controls and procedures and our internal control over financial reporting will prevent all error and all fraud. A control system, no matter how well designed and operated, can only provide reasonable assurances that the objectives of the control system are met. The design of a control system reflects resource constraints; the benefits of controls must be considered relative to their costs. Because there are inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, for our company have been or will be detected. As these inherent limitations are known features of the disclosure and financial reporting processes, it is possible to design into the processes safeguards to reduce, though not eliminate, these risks. These inherent limitations include the realities that judgments in decision-making can be faulty and that breakdowns occur because of simple error or mistake. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the control. The design of any system of controls is based in part upon certain assumptions about the likelihood of future events. While our disclosure controls and procedures and our internal control over financial reporting are designed to provide reasonable assurance of achieving their objectives, there can be no assurance that any design will succeed in achieving its stated goals under all future conditions. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with the policies or procedures. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Change in Internal Control over Financial Reporting

There has been no change in our internal control over financial reporting that occurred during the three months ended June 30, 2018 that has materially affected, or is reasonably likely to materially affect, our internal controls over financial reporting.

PART II. OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

We are not party to any material pending legal proceedings. From time to time, we may be involved in legal proceedings arising in the ordinary course of business.

ITEM 1A. RISK FACTORS

An investment in our common stock involves significant risk. You should carefully consider the information described in the following risk factors, together with the other information contained herein and in our Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 1, 2018, including our consolidated financial statements and related notes, before making an investment decision regarding our common stock. If any of the events described in the following risk factors occurs, our business, operating results and financial condition could be seriously harmed.

Risks Relating to our Proposed Acquisition of TxCell

If we are unable to complete our proposed acquisition of TxCell, or the TxCell Acquisition, our financial condition and the market value of our common stock could be adversely affected.

On July 20, 2018, we entered into a Share Purchase Agreement, or the Purchase Agreement, with certain shareholders of TxCell, or the Selling TxCell Shareholders, and we entered into a Tender Offer Agreement, or the TO Agreement, with TxCell. Pursuant to the Purchase Agreement and the TO Agreement, we, directly or through a subsidiary, expect to acquire 100% of the equity interests of TxCell for approximately €72 million, on a debt-free and cash-free basis. Consummation of the TxCell Acquisition is subject to customary conditions to closing, including:

- issuance of a fairness opinion by the independent expert to be appointed by TxCell in accordance with articles 261-1 et seq. of the General Regulations of the French Autorité des Marchés Financiers, or AMF, that the offer price is fair to TxCell's shareholders from a financial point of view, and the recommendation of the board of directors of TxCell that all holders of ordinary shares of TxCell tender such ordinary shares into the cash tender offer for the then outstanding TxCell ordinary shares that we are required to conduct under the TO Agreement;
- confirmation by the French Ministry of Economy that the TxCell Acquisition is not subject to its prior approval pursuant to the French regulations relating to foreign investments control or, failing such confirmation, the prior approval of such acquisition by the French Ministry of Economy;
- the absence of any event having a material adverse effect on the business of TxCell since December 31, 2017; and
- the receipt of appropriate clearances from French regulatory agencies relating to the performance by TxCell of activities of preparation and storage of human tissues and cells.

If any condition to the TxCell Acquisition is not satisfied or waived, the TxCell Acquisition will not be completed. We, the Selling TxCell Shareholders and TxCell also may terminate the Purchase Agreement and the TO Agreement under certain circumstances. Any or all of the preceding could jeopardize our ability to consummate the TxCell Acquisition on the already negotiated terms. To the extent the TxCell Acquisition is not completed for any reason, we would have devoted substantial resources and management attention to the TxCell Acquisition without realizing the accompanying benefits expected by our management, and our financial condition and results of operations and the market value of our common stock may be adversely affected. We also could be subject to litigation related to any failure to complete the TxCell Acquisition or to perform our obligations under the Purchase Agreement and/or the TO Agreement, or related to any enforcement proceeding commenced against us. In addition, the TxCell Acquisition may take longer to complete than we anticipate. Any delay in completing the TxCell Acquisition could cause us not to realize some or all of the benefits that we expect to achieve. Additional risks and uncertainties associated with the

TxCell Acquisition include:

- the failure to consummate the TxCell Acquisition may result in negative publicity and a negative impression of us in the investment community;
- the attention of our employees and management may be diverted due to activities related to the TxCell Acquisition; and
- disruptions from the TxCell Acquisition, whether completed or not, may harm our relationships with our employees or business partners and collaborators.

Even if the TxCell Acquisition is consummated, we may not realize the anticipated benefits of the TxCell Acquisition.

If the TxCell Acquisition is consummated, achieving the anticipated benefits of the TxCell Acquisition will depend upon many factors, such as whether the acquired TxCell operations are successfully integrated with our operations. We may not be able to

accomplish this integration process smoothly or successfully. The integration of certain operations following the TxCell Acquisition will take time and will require the dedication of significant management resources, which may temporarily distract our management's attention from the routine business of the combined company. In any event, we may encounter unexpected difficulties, or incur unexpected costs, in connection with our anticipated transition activities and integration efforts, which include:

- the potential disruption of our historical core business;
- the risk that our relative lack of experience in regulatory T cell, or Treg, development and developing product candidates and technology for immunological diseases, will not allow us to advance the development of chimeric antigen receptor Treg, or CAR-Treg, product candidates, including TX200, on the timeframes we expect, or at all;
- the strain on, and need to continue to expand, our existing operational, technical, financial and administrative infrastructure;
- the difficulties in assimilating employees and corporate cultures, including our lack of experience in maintaining positive interactions with unionized employees;
- the difficulties in effectively managing transition and integration activities given the distance between our headquarters and management team and TxCell's headquarters and management team;
- the failure to retain key managers and other personnel, including the employees from the acquired TxCell business who might experience uncertainty about their future roles with us;
- the challenges in controlling additional costs and expenses in connection with and as a result of the TxCell Acquisition; and
- the diversion of our management's attention to integration of operations and corporate and administrative infrastructures; and
- any unanticipated liabilities for activities of or related to TxCell or its operations, technologies or product candidates.

If any of these factors impairs our ability to integrate successfully, we may be required to spend time or money on integration activities that otherwise would be spent on the development and expansion of our business. If we fail to integrate or otherwise manage the acquired TxCell business successfully and in a timely manner, the combined company's potential to achieve the anticipated long-term strategic benefits of the TxCell Acquisition could be compromised and resulting operating inefficiencies could increase costs and expenses more than we planned, could negatively impact the market price of our common stock and could otherwise distract us from execution of our strategy. Failure to maintain effective financial controls and reporting systems and procedures could also adversely affect our ability to produce timely and accurate financial statements.

We intend to avail ourselves of the French tax credit for certain research and development related expenses. We may not receive the anticipated amount. In addition, upon audit by the French tax authority, we may need to make corrective actions.

We are new to the field of immunology and the use of CARs with Tregs. With the acquisition of TxCell we expect to develop a CAR-Treg for use in a patient faster than if we had developed a CAR-Treg on our own. We may not be successful at developing a CAR Treg that can be used in patients. Moreover, we may not achieve the expected accelerated development timeline.

Following the TxCell Acquisition, the combined company will have significantly increased capital requirements. We cannot be certain that we will be able to raise sufficient capital or whether the terms of any capital raised will be acceptable to us. In addition, we might need to reduce expenditures with respect to some of our own programs so that we can adequately fund TxCell's operations. Our failure to obtain adequate and timely funding will materially adversely affect our business and our ability to develop our technology and products candidates and the technology and product candidates of TxCell, including TX200.

TxCell has only limited clinical development experience and no history of commercializing human therapeutics, and risks and uncertainties related to its business may cause the combined company to underperform relative to expectations.

TxCell has only limited clinical development experience and does not have any products approved for commercial sale, which makes it difficult to evaluate the success of its current business and assess the combined company's future viability. In addition, TxCell has incurred significant research and development and other expenses related to its ongoing operations resulting in operating losses in every year since its inception in 2001. We anticipate that TxCell will continue to incur net losses in the future as a result of continued expenditures related to the development of its lead CAR-Treg product candidate, TX200, and additional research and development expenditures related to the development and potential regulatory approval of its other existing and future product candidates. Because TxCell does not generate any revenue from product sales, following the consummation of the TxCell Acquisition, we expect to invest significant time, resources and capital to support the expenditures and on-going operations of the acquired TxCell business. Such investments would reduce our cash available for our existing operations and other uses and divert significant attention of management that may otherwise be focused on development of our existing business. If we are unable to successfully develop and

obtain regulatory approval for TX200 and effectively commercialize it, we may not realize any benefit from the TxCell Acquisition, resulting in possible impairments or other charges or losses which may materially and adversely affect our results of operations and financial condition. Additionally, the business operations of TxCell differ from our business operations, and the combined business will have a different business mix than our business prior to the TxCell Acquisition, presenting different operational risks and challenges. We expect to rely on the experience and expertise of TxCell's existing management team and other key personnel in the development of TX200 and TxCell's other product candidates. If we were to lose the services of a significant portion or key individuals of this team, such development and our business could be adversely affected.

The TxCell business may also face additional risks, including risks relating to (i) the ability to advance the development of TX200 and TxCell's other product candidates through regulatory approval, (ii) competition with companies with more experience and resources in the immunology space and with companies developing other novel cellular therapies, and (iii) maintaining and obtaining intellectual property protection for TxCell's technology and product candidates. In particular, TxCell has exclusively licensed the right to the CAR for use inTX200 from the University of British Columbia, or UBC. Should UBC terminate this license agreement, TxCell may have to develop or acquire the appropriate CAR which would extend the development timeline and add expense. TxCell has also exclusively licensed the right to technology related to redirected Treg cells from the Yeda Research and Development Company, or Yeda. A patent included in this exclusive license agreement with Yeda was granted in Europe in July 2016. Subsequent to this grant, the patent was opposed by several parties in May 2017. TxCell expects the oral proceedings to this opposition will take place in November 2018. Neither we nor TxCell can predict whether TxCell and Yeda will prevail in these actions. If the opposition to this patent prevails, the issued patent may be revoked or be limited in breadth and TxCell could be prevented from making, using, or selling the relevant product or process.

Moreover, TxCell relies on agreements with third parties for its product candidate technology development, manufacture, packaging, supply, and clinical trials. The termination of any of these agreements by the third parties would have an adverse impact on the combined company's ability to develop and manufacture TxCell's product candidates. For example, TxCell has entered into an agreement with Lonza for manufacturing of TX200. Should this agreement be terminated it would adversely impact the development timeline for TX200. Finally, continued development and commercialization of TxCell's product candidates may require the combined company to secure licenses to additional technologies, which it may not be able to do on commercially reasonable terms, if at all.

TxCell will be subject to business uncertainties and contractual restrictions while the TxCell Acquisition is pending.

Uncertainty about the effect of the TxCell Acquisition on employees and counterparties may have an adverse effect on TxCell. These uncertainties may impair TxCell's ability to retain and motivate key personnel and could cause entities dealing with TxCell to defer entering into contracts with TxCell or making other decisions concerning TxCell or seek to change existing business relationships with TxCell. If the TxCell Acquisition is completed, such changes could negatively affect our results of operations and financing condition and adversely affect our ability to realize the anticipated benefits from the TxCell Acquisition. In addition, if key employees of TxCell or Sangamo depart because of uncertainty about their future roles or otherwise, our business could be harmed. These risks may be exacerbated by delays or other adverse developments with respect to the anticipated completion of the TxCell Acquisition.

We and TxCell will incur substantial direct and indirect costs as a result of the TxCell Acquisition.

We and TxCell will incur substantial expenses in connection with and as a result of completing the TxCell Acquisition and, over a period of time following the completion of the TxCell Acquisition, we expect to incur substantial additional expenses in connection with coordinating the businesses, operations, policies and procedures of the combined company. While we have assumed that a certain level of transaction expenses will be incurred, factors beyond our control could affect the total amount or the timing of these expenses. Many of the expenses that will be

incurred, by their nature, are difficult to estimate accurately.

If we are unable to delist the ordinary shares of TxCell from the Euronext Paris and acquire 100% of the equity interests of TxCell, our business, financial condition and results of operations could be adversely affected.

If, following completion of the acquisition of the ordinary shares of TxCell from the Selling TxCell Shareholders pursuant to the Purchase Agreement and in the cash tender offer contemplated by the TO Agreement, we own less than 95% of the share capital and voting rights of TxCell, we will not be able to delist the ordinary shares of TxCell from the Euronext Paris and will not be able to acquire the remaining ordinary shares of TxCell for some period of time, if ever. Maintaining the listing of the ordinary shares on the Euronext Paris will result in additional expenditures, which could have an adverse effect on our financial condition and results of operations. In addition, until such time, if ever, that we acquire 100% of the equity interests of TxCell, we will need to consider the rights of, and duties owed to, the minority shareholders of TxCell under French law when making future decisions that might impact TxCell, its business or its operations, which could adversely affect our business and our ability to realize the anticipated benefits of the TxCell Acquisition.

If the TxCell Acquisition is consummated, we plan to continue to operate the acquired TxCell business in France, which may expose us to unanticipated costs or events.

In the event that the TxCell Acquisition is consummated, TxCell's operations will remain based in France and accordingly, we plan to continue to operate the acquired TxCell business in France. Our anticipated operation of the acquired TxCell business in France involves significant risks, including:

•difficulty hiring and retaining appropriate personnel due to intense competition for such limited resources;

•disruptions in relations with our employees, including legacy TxCell employees; and

•compliance with regulatory requirements, including local French employment regulations and organized labor in France.

In addition, as a result of our anticipated operations in France, we will become more exposed to fluctuations in currency exchange rates between the Euro and the U.S. dollar. Given the volatility of currency exchange rates, there is no assurance that we will be able to effectively manage currency transaction and/or conversion risks. To date, we have not entered into derivative instruments to offset the impact of foreign exchange fluctuations, which fluctuations could have a material adverse effect on our financial condition and results of operations. In any event, difficulties resulting from these and other risks related to our anticipated operations in France could expose us to increased expenses, impair our development efforts, adversely affect our financial condition and results of operations, and harm our competitive position.

If goodwill or other intangible assets that we record in connection with the TxCell Acquisition become impaired, our financial position in future periods could be negatively impacted.

In connection with the accounting for the TxCell Acquisition, it is expected that we will record a significant amount of intangible assets and may also record goodwill. Under GAAP, we must assess, at least annually and potentially more frequently, whether the value of goodwill and other indefinite-lived intangible assets has been impaired. Amortizing intangible assets will be assessed for impairment in the event of an impairment indicator. Events giving rise to impairment are an inherent risk in the biotechnology industry and cannot be predicted. Our results of operations and financial position in future periods could be negatively impacted should future impairments of intangible assets or goodwill occur.

Risks Relating to Development, Commercialization and Regulatory Approval of our Products and Technology

Our success depends substantially on the results of clinical trials of our lead therapeutic programs, and we may not be able to demonstrate safety and efficacy of our product candidates.

We do not have any products that have gained regulatory approval. Our failure to enroll sufficient patients to conduct the trials, demonstrate safety or obtain positive clinical trial results, or our inability to meet the expected timeline of clinical trials or release of data for these programs would have a material adverse effect on our business operations and financial conditions, which may cause a significant decline in our stock price.

Our ability to conduct clinical trials successfully and on a timely basis for these programs is subject to a number of additional risks, including but are not limited to the following:

•disagreement with the design or implementation of our clinical trials;

•the ability to identify and recruit sufficient number of acceptable patients to complete enrollment of trials;

•failure to demonstrate that a product candidate is safe and effective for its proposed indication;

•the occurrence of unexpected adverse events or toxicity;

•disagreement with the U.S. Food and Drug Administration, or FDA, or foreign regulatory authorities, on the interpretation of data from preclinical studies or our clinical trial results;

•failure of clinical trials to meet the level of statistical significance required for approval;

•the insufficiency of data collected from clinical trials of our product candidates to support the submission and filing of a biologics license application, or BLA, or other submission or to obtain regulatory approval;

•changes in the approval policies or regulations that render our preclinical and clinical data insufficient for approval;

•failure to obtain approval of our manufacturing processes or facilities of third-party manufacturers with whom we contract for clinical and commercial supplies or our own manufacturing facility;

•defects in the preparation and manufacturing of our product candidates;

•failure by third parties, including vendors, manufacturers and clinical trial organizations, to provide timely and adequate supplies and services;

•development of similar gene therapies by our competitors;

•unexpected costs and expenses and lack of sufficient funding for these programs; and

•loss of licenses to critical intellectual properties.

We have ongoing Phase 1/2 clinical trials evaluating product candidates for the treatment of hemophilia A (SB-525), hemophilia B (SB-FIX), MPS I (SB-318) and MPS II (SB-913), an ongoing Phase 1/2 clinical trial evaluating ST-400 for the treatment of beta-thalassemia, and for TX200 in 2019 if the TX Cell Acquisition is consummated.

We recently announced positive preliminary data from the Phase 1/2 clinical trial evaluating SB-525, or the Alta study. In the Alta study, SB-525 has been generally well tolerated to date with no treatment-related serious adverse events and no use of tapering courses of oral steroids. The fifth patient in the Alta study, the first at the third dose level, was treated in June and has achieved therapeutic Factor VIII activity levels (Epidemiological data indicate that Factor VIII activity above 12% of normal is associated with substantial reduction or elimination of spontaneous bleeds and factor usage. Den Uijl IE et al Haemophilia 2011; 17(6):849-53). A dose dependent effect has been observed in the Alta study, with patients in the second dose cohort reporting reduced use of factor replacement. We and Pfizer expect to present detailed data from the Alta study at a hematology conference in the fourth quarter of 2018.

We also recently treated the fifth and sixth patients in the Phase 1/2 clinical trial evaluating SB-913 for the treatment of MPS II, or the CHAMPIONS study, and we expect to present preliminary safety and efficacy data from this study at the Annual Symposium of the Society for the Study of Inborn Errors of Metabolism (SSIEM) in September 2018.

We also recently began enrolling our first patients into the Phase 1/2 clinical trials evaluating SB-318 for the treatment of MPS I and ST-400 for the treatment of beta-thalassemia. For potential marketing application approval, additional clinical testing will be required, which involves significantly greater resources, commitments and expertise. Therefore, we may be required to scale up our operations and enter into collaborative relationships with pharmaceutical companies that could assume responsibility for late-stage development and commercialization.

We have limited experience in conducting advanced clinical trials and may not possess the necessary resources and expertise to complete such trials. We have entered into collaborative agreements to provide funding and assistance in the development of certain product candidates through the clinical trial process. However, there is no guarantee that we will be able to enter into future collaborative relationships with third parties that can provide us with the funding and expertise for later stage trials.

We have not yet reached agreement with regulatory authorities on the development pathway for our product candidates. As a result, we have not yet determined what endpoints would support approval for certain of our programs. Due to the novelty of certain programs, such as SB-318 and SB-913, the endpoints needed to support regulatory approvals may be different than originally anticipated. Even if we are able to complete Phase 1/2 trials for these programs successfully, we will likely be required to conduct additional clinical trials with larger patient populations, before obtaining the necessary regulatory approval to commercialize our products. However, there is no guarantee that the positive results achieved in earlier trials are indicative of long-term efficacy in late stage clinical trials. A number of companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in late stage clinical trials even after achieving promising results in earlier-stage clinical trials. If a larger population of

patients does not experience positive results, or if these results are not reproducible, our products may not receive approval from the FDA, which could have a material adverse effect on our business that would cause our stock price to decline significantly.

Even if a product candidate were to successfully obtain approval from the FDA and comparable foreign regulatory authorities, any approval might contain significant limitations related to use restrictions for specified age groups, warnings, precautions or contraindications, or may be subject to burdensome post-approval study or risk management requirements. If we are unable to obtain regulatory approval for one of our product candidates in one or more jurisdictions, or any approval contains significant limitations, we may not be able to obtain sufficient funding to continue the development of that product or generate revenues attributable to that product candidate. Also, any regulatory approval of our current or future product candidates, once obtained, may be withdrawn.

Success in preclinical studies or early clinical trials may not be indicative of results obtained in later trials.

Results from preclinical studies or previous clinical trials are not necessarily predictive of future clinical trial results, and interim results of a clinical trial are not necessarily indicative of final results. Our product candidates may fail to show the desired safety and efficacy in clinical development despite demonstrating positive results in preclinical studies or having successfully advanced through initial clinical trials or preliminary stages of clinical trials.

While we have achieved positive results in preclinical studies of our product candidates for hemophilia A (SB-525), hemophilia B (SB-FIX), MPS I (SB-318) and MPS II (SB-913), Phase 1/2 clinical trials have only recently begun or are expected to begin and there is no guarantee that we can achieve positive safety and efficacy results. Furthermore, all four programs are novel in-vivo gene therapy or genome editing therapies that utilize adeno-associated viral vector, or AAV, to deliver therapeutic levels of ZFN into the patient's blood stream. The AAV delivery system has not been validated in human clinical trials previously, and if such delivery system does not meet the safety criteria or cannot produce the desirable efficacy results we expect, we may be forced to suspend or terminate the affected program.

There is a high failure rate for drugs, biologic products and cell therapies proceeding through clinical trials. Many companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in late-stage clinical trials even after achieving promising results in preclinical testing and earlier-stage clinical trials. Data obtained from preclinical and clinical activities are subject to varying interpretations, which may delay, limit or prevent regulatory approval. In addition, we may experience regulatory delays or rejections as a result of many factors, including due to changes in regulatory policy during the period of our product candidate development. Any such delays could materially and adversely affect our business, financial condition, results of operations and prospects.

Our potential products are subject to a lengthy and uncertain regulatory approval process.

The FDA must approve any human therapeutic product before it can be marketed in the United States. The process for receiving regulatory approval is long and uncertain, and a potential product may not withstand the rigors of testing under the regulatory approval processes.

Before commencing clinical trials in humans, we must submit an Investigational New Drug, or IND, application to the FDA. The FDA has 30 days to comment on the application, and if the agency has no comments, we or our commercial partner may begin clinical trials. While we have stated our intention to file additional IND applications in the future, this is only a statement of intent, and we may not be able to do so because the associated product candidates may not meet the necessary preclinical requirements. In addition, there can be no assurance that, once filed, an IND application will result in the actual initiation of clinical trials or that we will be able to meet our targeted timeline for the initiation of clinical trials. Clinical trials are subject to oversight by institutional review boards, or IRBs, and the FDA. In addition, our proposed clinical studies may require review from the Recombinant DNA Advisory Committee, or RAC, which is the advisory board to the NIH focusing on clinical trials involving gene transfer.

Clinical trials:

•must be conducted in conformance with the FDA's good clinical practices, within the guidelines of the International Council for Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use, or ICH, and other applicable regulations;

•must meet requirements for IRB oversight;

•must follow Institutional Biosafety Committee, or IBC, and NIH RAC guidelines where applicable;

•must meet requirements for informed consent;

•are subject to continuing FDA or similar foreign government oversight;

•may require oversight by a Data Monitoring Committee, or DMC;

•may require large numbers of test subjects; and

•may be suspended by a commercial partner, the FDA, or us at any time if it is believed that the subjects participating in these trials are being exposed to unacceptable health risks or if the FDA finds deficiencies in the IND application or the conduct of these trials.

If we are not able to obtain the necessary regulatory approval to commercialize our products of if such approval is delayed or suspended, it would have an adverse effect on our business operations and trading price of our common stock.

We may encounter difficulties that may delay, suspend or scale back our efforts to advance additional early research programs through preclinical development and IND application filings and into clinical development.

We intend to advance early research programs through preclinical development and to file new IND applications for human clinical trials evaluating the preclinical candidates in our pipeline. The preparation and submission of IND applications requires us to conduct rigorous and time-consuming preclinical testing, studies, and prepare documentation relating to, among other things, the toxicity, safety, manufacturing, chemistry and clinical protocol of our product candidates. We may experience unforeseen difficulties that could delay or otherwise prevent us from executing this strategy successfully. For example, we may encounter problems in the

manufacturing of our products and fail to demonstrate consistency in the formulation of the drug. Our preclinical tests may produce negative or inconclusive results, which may lead us to decide, or regulators may require us, to conduct additional preclinical testing. If we cannot obtain positive results in preclinical testing, we may decide to abandon the projects altogether. In addition, our ability to complete and file certain IND applications depends on the support of our partners and the timely performance of their obligations under relevant collaboration agreements. If our partners are not able to perform such obligations or if they choose to slow down or delay the progress, we may not be able to prepare and file the intended IND applications on a timely basis or at all. Furthermore, the filing of several IND applications involves significant cost and labor, and we may not have sufficient resources and personnel to complete the filing of all intended IND applications, which may force us to scale back the number of IND applications or forego potential IND applications that we believe are promising. Any delay, suspension or reduction of our efforts to pursue our preclinical and IND strategy could have a material adverse effect on our business and cause our stock price to decline.

We may not successfully identify, acquire, develop or commercialize new potential product candidates.

Part of our business strategy is to expand our product candidate pipeline by identifying and validating new product candidates, which we may develop ourselves, in-license or otherwise acquire from others. In addition, in the event that our existing product candidates do not receive regulatory approval or are not successfully commercialized, then the success of our business will depend on our ability to expand our product pipeline through in-licensing or other acquisitions. We may be unable to identify relevant product candidates. If we do identify such product candidates, we may be unable to reach acceptable terms with any third party from which we desire to in-license or acquire them. Even if we are able to successfully identify and acquire such product candidates, we cannot assure you that we will be able to successfully manage the risks associated with integrating acquired or in-licensed product candidates or technologies or the risks arising from anticipated and unanticipated problems in connection with an acquisition or in-licensing transaction. Further, while we seek to mitigate risks and liabilities of potential acquisitions and in-licensing transactions through, among other things, due diligence, there may be risks and liabilities that such due diligence efforts fail to discover, that are not disclosed to us, or that we inadequately assess. Any failure in identifying and managing these risks and uncertainties effectively, including in connection with the TxCell Acquisition, would have a material adverse effect on our business. Additionally, we may not realize the anticipated benefits of such transactions, including the possibility that expected benefits will not be realized or will not be realized within the expected timeframe.

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

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

•delays in reaching a consensus with regulatory authorities on trial design;

•delays in reaching agreement on acceptable terms with prospective CROs and clinical trial sites;

•delays in opening clinical trial sites or obtaining required IRB or independent ethics committee approval at each clinical trial site;

•delays in recruiting suitable subjects to participate in our clinical trials;

•imposition of a clinical hold by regulatory authorities as a result of a serious adverse event or after an inspection of our clinical trial operations or trial sites;

•failure by us, any CROs we engage or any other third parties to adhere to clinical trial requirements;

•failure to perform in accordance with FDA good clinical practices, or GCP, or applicable regulatory guidelines in the European Union and other countries;

•delays in the testing, validation, manufacturing and delivery of our product candidates to the clinical sites, including delays by third parties with whom we have contracted to perform certain of those functions;

•delays in having subjects complete participation in a trial or return for post-treatment follow-up;

•clinical trial sites or subjects dropping out of a trial;

•selection of clinical endpoints that require prolonged periods of clinical observation or analysis of the resulting data;

•occurrence of serious adverse events associated with the product candidate that are viewed to outweigh its potential benefits;

•occurrence of serious adverse events in trials of the same class of agents conducted by other sponsors; or

•changes in regulatory requirements and guidance that require amending or submitting new clinical protocols.

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

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

•be delayed in obtaining marketing approval for our product candidates, if at all;

•obtain approval for indications or patient populations that are not as broad as intended or desired;

•obtain approval with labeling that includes significant use or distribution restrictions or safety warnings;

•be subject to changes in the way the product is administered;

•be required to perform additional clinical trials to support approval or be subject to additional post-marketing testing requirements;

•have regulatory authorities withdraw, or suspend, their approval of the product or impose restrictions on its distribution in the form of a modified risk evaluation and mitigation strategy;

•be subject to the addition of labeling statements, such as warnings or contraindications;

•be sued; or

•experience damage to our reputation.

We may not be able to find acceptable patients or may experience delays in enrolling patients for our clinical trials, which could delay or prevent us from proceeding with clinical trials of our product candidates.

Identifying and qualifying patients to participate in clinical trials of our product candidates is critical to our success. The timing of our clinical trials depends on our ability to recruit patients to participate as well as completion of required follow-up periods. For example, hemophilia trials often take longer to enroll due to the availability of existing treatments. We have been unable to enroll a patient in our hemophilia B clinical trial. If we are not able to enroll the necessary number of patients in a timely manner, we may not be able to complete the clinical trial. We may face similar challenges or delays in our other or future clinical trials. If patients are unwilling to participate in our gene therapy studies because of negative publicity from adverse events related to the biotechnology or gene therapy fields, competitive clinical trials for similar patient populations or for other reasons, the timeline for recruiting patients, conducting studies and obtaining regulatory approval of our product candidates may be delayed. These delays could result in increased costs, delays in advancing our product candidates, delays in testing the effectiveness of our product candidates or termination of the clinical trials altogether.

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

•size of the patient population and process for identifying subjects;

•design of the trial protocol;

•eligibility and exclusion criteria;

•perceived risks and benefits of the product candidate under study;

•perceived risks and benefits of gene therapy-based approaches to treatment of diseases;

•availability of competing therapies and clinical trials;

•severity of the disease under investigation;

•availability of genetic testing for potential patients;

•proximity and availability of clinical trial sites for prospective subjects;

•ability to obtain and maintain subject consent;

•risk that enrolled subjects will drop out before completion of the trial;

•patient referral practices of physicians; and

•ability to monitor subjects adequately during and after treatment.

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

•difficulty in establishing or managing relationships with contract research organizations, or CROs, and physicians;

•different standards for the conduct of clinical trials;

•absence in some countries of established groups with sufficient regulatory expertise for review of gene therapy protocols;

•our inability to locate qualified local consultants, physicians and partners; and

•the potential burden of complying with a variety of foreign laws, medical standards and regulatory requirements, including the regulation of pharmaceutical and biotechnology products and treatment.

If we have difficulty enrolling a sufficient number of patients to conduct our clinical 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.

Our product candidates may cause undesirable side effects or have other properties that could delay or prevent their regulatory approval, limit the commercial potential or result in significant negative consequences following any potential marketing approval.

During the conduct of clinical trials, patients report changes in their health, including illnesses, injuries and discomforts, to their study doctor. Often, it is not possible to determine whether or not the product candidate being studied caused these conditions, particularly as many of the diseases we are studying have complex comorbidities. If clinical experience indicates that our product candidates have side effects or cause serious or life threatening side effects, the development of the product candidate may fail or be delayed, or, if the product candidate has received regulatory approval, such approval may be revoked, which would severely harm our business, prospects, operating results and financial condition.

There have been several significant adverse side effects in gene therapy treatments in the past, including reported cases of leukemia and death seen in other trials using other genomic therapies. Gene therapy is still a relatively new approach to disease treatment and additional adverse side effects could develop. There also is the potential risk of

significantly delayed adverse events following exposure to gene therapy products 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 therapy products include an immunologic reaction early after administration that, while not necessarily adverse to the patient's health, could substantially limit the effectiveness of the treatment.

As we cannot predict whether or when we will obtain regulatory approval to commercialize our product candidates, we cannot predict the timing of any future revenue from these product candidates.

We cannot commercialize any of our product candidates to generate revenue until the appropriate regulatory authorities have reviewed and approved the marketing applications for the product candidates. We cannot ensure that the regulatory agencies will complete their review processes in a timely manner or that we will obtain regulatory approval for any product candidate that we or our collaborators develop. Satisfaction of regulatory requirements typically takes many years, is dependent upon the type, complexity and novelty of the product and requires the expenditure of substantial resources. Regulatory approval processes outside the United States include all of the risks associated with the FDA approval process. In addition, we may experience delays or rejections based upon additional government regulation from future legislation or administrative action or changes in FDA policy during the period of product development, clinical trials and FDA regulatory review.

We may be unable to obtain additional orphan drug designations or orphan drug exclusivity for any product. If our competitors are able to obtain orphan drug exclusivity for products that constitute the same drug and treat the same indications as our product candidates, we may not be able to have competing products approved by the applicable regulatory authority for a significant period of time.

Regulatory authorities in some jurisdictions, including the United States and the European Union, may designate drugs for relatively small patient populations as orphan drugs. Under the Orphan Drug Act of 1983, the FDA may designate a product candidate as an Orphan Drug if it is intended to treat a rare disease or condition, which is generally defined as having a patient population of fewer than 200,000 individuals in the United States, or a patient population greater than 200,000 in the United States where there is no reasonable expectation that the cost of developing the drug will be recovered from sales in the United States. In the European Union, the European Medicines Agency's Committee for Orphan Medicinal Products grants such designation to promote the development of products that are intended for the diagnosis, prevention or treatment of a life-threatening or chronically debilitating condition affecting not more than five in 10,000 persons in the European Union. Additionally, orphan designation is granted for products intended for the diagnosis, prevention or treatment of a life-threatening, seriously debilitating or serious and chronic condition and when, without incentives, it is unlikely that sales of the drug in the European Union would be sufficient to justify the necessary investment in developing the drug or biologic product.

Our four most advanced product candidates, SB-525, SB-FIX, SB-318 and SB-913 have all been granted Orphan Drug Designation by the FDA, and SB-525 and SB-318 and SB-913 have also been designated Orphan Medicinal Products by the European Medicines Agency, or EMA. If we request such designation for our other current or future product candidates, there can be no assurances that the FDA or the EMA will grant any of our product candidates such designation. Additionally, such designation does not guarantee that any regulatory agency will accelerate regulatory review of, or ultimately approve, that product candidate, nor does it limit the ability of any regulatory agency to grant such designation to product candidates of other companies that treat the same indications as our product candidates prior to our product candidates receiving exclusive marketing approval.

Generally, if a product candidate with an orphan drug designation receives the first marketing approval for the indication for which it has such designation, the product is entitled to a period of marketing exclusivity, which precludes the FDA or the EMA from approving another marketing application for a product that constitutes the same drug treating the same indication for that marketing exclusivity period, except in limited circumstances. If another sponsor receives such approval before we do (regardless of our orphan drug designation), we will be precluded from receiving marketing approval for our product for the applicable exclusivity period. The applicable period is seven years in the United States and 10 years in the European Union. The exclusivity period in the United States can be extended by six months if the BLA sponsor submits pediatric data that fairly respond to a written request from the FDA for such data. The exclusivity period in the European Union can be reduced to six years if a product no longer meets the criteria for orphan drug designation or if the product is sufficiently profitable so that market exclusivity is no longer justified. Orphan drug exclusivity may be revoked if any regulatory agency determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the product to meet the needs of patients with the rare disease or condition.

Even if we obtain orphan drug exclusivity for a product candidate, that exclusivity may not effectively protect the product candidate from competition because different drugs can be approved for the same condition. In the United States, even after an orphan drug is approved, the FDA may subsequently approve another drug for the same condition if the FDA concludes that the latter drug is