# 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, 2017**

**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: 000-50633**

# CYTOKINETICS, INCORPORATED

**(Exact name of registrant as specified in its charter)**

| **Delaware** | **94-3291317** |
|---|---|
| **(State or other jurisdiction of incorporation or organization)** | **(I.R.S. Employer Identification No.)** |
| **280 East Grand Avenue South San Francisco, California** | **94080** |
| **(Address of principal executive offices)** | **(Zip Code)** |

**Registrant's telephone number, including area code: (650) 624-3000**

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

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

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

| | | | |
|---|---|---|---|
| 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 ☒

Number of shares of common stock, $0.001 par value, outstanding as of July 27, 2017: 53,666,761

**CYTOKINETICS, INCORPORATED**
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**FOR THE QUARTER ENDED JUNE 30, 2017**

**PART I. FINANCIAL INFORMATION**

**ITEM 1. FINANCIAL STATEMENTS**

**CYTOKINETICS, INCORPORATED**
**CONDENSED CONSOLIDATED BALANCE SHEETS**
(In thousands, except share and per share data) (Unaudited)

| | June 30, 2017 | December 31, 2016 |
|---|---|---|
| **ASSETS** | | |
| Current assets: | | |
| Cash and cash equivalents | $ 100,711 | $ 66,874 |
| Short-term investments | 211,340 | 89,375 |
| Accounts receivable | - | 24 |
| Prepaid and other current assets | 4,945 | 2,360 |
| Total current assets | 316,996 | 158,633 |
| Long-term investments | 20,087 | 7,672 |
| Property and equipment, net | 3,268 | 3,637 |
| Other assets | 279 | 200 |
| Total assets | $ 340,630 | $ 170,142 |
| **LIABILITIES AND STOCKHOLDERS' EQUITY** | | |
| Current liabilities: | | |
| Accounts payable | $ 1,783 | $ 4,236 |
| Accrued liabilities | 13,545 | 18,047 |
| Deferred revenue, current | 7,942 | 8,060 |
| Current portion of long-term debt | 7,315 | 2,500 |
| Other current liabilities | 474 | 415 |
| Total current liabilities | 31,059 | 33,258 |
| Long-term debt, net | 22,844 | 27,381 |
| Liability related to the sale of future royalties, net | 96,657 | — |
| Deferred revenue, non-current | 15,067 | 15,000 |
| Other long-term liabilities | 2 | 142 |
| Total liabilities | 165,629 | 75,781 |
| Commitments and contingencies (Note 12) | | |
| Stockholders' equity: | | |
| Preferred stock, $0.001 par value: | | |
| Authorized: 10,000,000 shares; | | |
| Issued and outstanding: Series A Convertible Preferred Stock — zero shares at June 30, 2017 and December 31, 2016 | — | — |
| Common stock, $0.001 par value: | | |
| Authorized: 163,000,000 shares; | | |
| Issued and outstanding: 53,457,091 shares at June 30, 2017 and 40,646,595 shares at December 31, 2016 | 53 | 41 |
| Additional paid-in capital | 748,273 | 612,474 |
| Accumulated other comprehensive income (loss) | (86) | 137 |
| Accumulated deficit | (573,239) | (518,291) |
| Total stockholders' equity | 175,001 | 94,361 |
| Total liabilities and stockholders' equity | $ 340,630 | $ 170,142 |

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

**CYTOKINETICS, INCORPORATED**
**CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS**
(In thousands, except per share data) (Unaudited)

| | Three Months Ended | | Six Months Ended | |
|---|---|---|---|---|
| | June 30, 2017 | June 30, 2016 | June 30, 2017 | June 30, 2016 |
| Revenues: | | | | |
| Research and development, grant and other revenues, net | $ (1,889) | $ 3,852 | $ 818 | $ 8,299 |
| License revenues | 4,942 | 1,950 | 6,388 | 5,923 |
| Total revenues | $ 3,053 | $ 5,802 | $ 7,206 | $ 14,222 |
| Operating expenses: | | | | |
| Research and development | $ 19,809 | 9,723 | $ 39,098 | 23,256 |
| General and administrative | 8,438 | 7,090 | 16,553 | 13,931 |
| Total operating expenses | 28,247 | 16,813 | 55,651 | 37,187 |
| Operating loss | (25,194) | (11,011) | (48,445) | (22,965) |
| Interest expense | (782) | (707) | (1,540) | (1,271) |
| Non-cash interest expense on liability related to sale of future royalties | (3,717) | - | (6,012) | - |
| Interest and other income, net | 612 | 107 | 1,049 | 170 |
| Net loss | (29,081) | (11,611) | (54,948) | (24,066) |
| Net loss per share - basic and diluted | $ (0.60) | $ (0.29) | $ (1.22) | $ (0.61) |
| Weighted-average number of shares used in computing net loss per share — basic and diluted | 48,218 | 39,666 | 44,910 | 39,629 |
| Other comprehensive (loss) income: | | | | |
| Unrealized (loss) gain on available-for-sale securities, net | (78) | 73 | (223) | 80 |
| Comprehensive loss | $ (29,159) | $ (11,538) | $ (55,171) | $ (23,986) |

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

**CYTOKINETICS, INCORPORATED**
**CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS**
(In thousands) (Unaudited)

| | Six Months Ended | |
|---|---|---|
| | June 30, 2017 | June 30, 2016 |
| **Cash flows from operating activities:** | | |
| Net loss | $ (54,948) | $ (24,066) |
| Adjustments to reconcile net loss to net cash used in operating activities: | | |
| Depreciation and amortization of property and equipment | 860 | 340 |
| Gain on disposal of equipment | (82) | (2) |
| Stock-based compensation | 4,141 | 3,400 |
| Non-cash interest expense related to long-term debt | 278 | 257 |
| Non-cash interest expense on liability related to sale of future royalties | 6,036 | — |
| Changes in operating assets and liabilities: | | |
| Accounts receivable | 24 | (14) |
| Prepaid and other assets | (2,663) | (4,600) |
| Accounts payable | (1,888) | 841 |
| Accrued and other liabilities | (3,912) | 1,143 |
| Deferred revenue | (51) | (6,024) |
| Net cash used in operating activities | (52,205) | (28,725) |
| **Cash flows from investing activities:** | | |
| Purchases of investments | (201,531) | (70,709) |
| Proceeds from sales and maturities of investments | 66,928 | 47,036 |
| Proceeds from sale of property and equipment | - | 32 |
| Purchases of property and equipment | (1,646) | (436) |
| Net cash used in investing activities | (136,249) | (24,077) |
| **Cash flows from financing activities:** | | |
| Proceeds from public offerings of common stock, net of issuance costs | 112,232 | — |
| Proceeds from sale of future royalties, net of issuance costs | 90,621 | — |
| Proceeds from issuance of common stock related to sale of future royalties, net of issuance costs | 7,560 | — |
| Proceeds from long term debt, net of debt discount and issuance costs | - | 14,996 |
| Proceeds from stock based award activities and warrants, net | 11,878 | 454 |
| Net cash provided by financing activities | 222,291 | 15,450 |
| Net increase (decrease) in cash and cash equivalents | 33,837 | (37,352) |
| Cash and cash equivalents, beginning of period | 66,874 | 65,076 |
| Cash and cash equivalents, end of period | $ 100,711 | $ 27,724 |

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

**Note 1 — Organization and Significant Accounting Policies**

Cytokinetics, Incorporated (the "Company", "we" or "our") was incorporated under the laws of the state of Delaware on August 5, 1997. The Company is a late stage biopharmaceutical company focused on the discovery and development of novel small molecule therapeutics that modulate muscle function for the potential treatment of serious diseases and medical conditions.

The Company's financial statements contemplate the conduct of the Company's operations in the normal course of business. The Company has incurred an accumulated deficit of $573.2 million since inception and there can be no assurance that the Company will attain profitability. The Company had a net loss of $54.9 million and net cash used in operations of $52.2 million for the six months ended June 30, 2017. Cash, cash equivalents and investments increased to $332.1 million at June 30, 2017 from $163.9 million at December 31, 2016. The Company anticipates that it will have operating losses and net cash outflows in future periods.

The Company is subject to risks common to late stage biopharmaceutical companies including, but not limited to, development of new drug candidates, dependence on key personnel, and the ability to obtain additional capital as needed to fund its future plans. The Company's liquidity will be impaired if sufficient additional capital is not available on terms acceptable to the Company. To date, the Company has funded its operations primarily through sales of its common stock, contract payments under its collaboration agreements, sale of future royalties, debt financing arrangements, sales of its convertible preferred stock, government grants and interest income. Until it achieves profitable operations, the Company intends to continue to fund operations through payments from strategic collaborations, additional sales of equity securities, grants and debt financings. The Company has never generated revenues from commercial sales of its drugs and may not have drugs to market for at least several years, if ever. The Company's success is dependent on its ability to enter into new strategic collaborations and/or raise additional capital and to successfully develop and market one or more of its drug candidates. As a result, the Company may choose to raise additional capital through equity or debt financings to continue to fund its operations in the future. The Company cannot be certain that sufficient funds will be available from such a financing or through a collaborator when required or on satisfactory terms. Additionally, there can be no assurance that the Company's drug candidates will be accepted in the marketplace or that any future products can be developed or manufactured at an acceptable cost. These factors could have a material adverse effect on the Company's future financial results, financial position and cash flows.

Based on the current status of its research and development plans, the Company believes that its existing cash, cash equivalents and investments will be sufficient to fund its cash requirements for at least the next 12 months, from the filing date of this Quarterly Report on Form 10-Q. If, at any time, the Company's prospects for financing its research and development programs decline, the Company may decide to reduce research and development expenses by delaying, discontinuing or reducing its funding of one or more of its research or development programs. Alternatively, the Company might raise funds through strategic collaborations, public or private financings or other arrangements. Such funding, if needed, may not be available on favorable terms, or at all. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

***Use of Estimates***

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

***Basis of Presentation***

The condensed consolidated financial statements include the accounts of Cytokinetics and its wholly owned subsidiary. The accompanying unaudited condensed consolidated financial statements have been prepared in accordance with generally accepted accounting principles in the United States of America ("GAAP") for interim financial information and the instructions to Form 10-Q and Rule 10-01 of Regulation S-X. The financial statements include all adjustments (consisting only of normal recurring adjustments) that management believes are necessary for the fair statement of the Company's position at June 30, 2017, and the results of operations for the three and six months ended June 30, 2017 and the cash flows for the six months ended June 30, 2017. These interim financial statement results are not necessarily indicative of results to be expected for the full fiscal year or any future interim period. The balance sheet at December 31, 2016 has been derived from the audited financial statements at that date, but does not include all of the information and footnotes required by GAAP for complete financial statements. The financial statements and related disclosures have been prepared with the presumption that users of the interim financial statements have read or have access to the audited

financial statements for the preceding fiscal year. Accordingly, these financial statements should be read in conjunction with the audited financial statements and notes thereto contained in the Company's Form 10-K for the year ended December 31, 2016, as filed with the SEC on March 6, 2017.

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

***Stock-Based Compensation***

The Company accounts for stock-based payment awards made to employees and directors, including employee stock options and employee stock purchases by measuring the stock-based compensation cost at the grant date based on the calculated fair value of the award, and recognizing expense on a straight-line basis over the employee's requisite service period, generally the vesting period of the award. Stock compensation for non-employees is measured at the fair value of the award for each period until the award is fully vested. Compensation cost for restricted stock awards that contain performance conditions is based on the grant date fair value of the award and compensation expense is recorded over the implicit or explicit requisite service period based on management's best estimate as to whether it is probable that the shares awarded are expected to vest.

The Company reviews the valuation assumptions at each grant date and, as a result, from time to time it will likely change the valuation assumptions it uses to value stock based awards granted in future periods. The assumptions used in calculating the fair value of share-based payment awards represent management's best estimates at the time, but these estimates involve inherent uncertainties and the application of management judgment. As a result, if conditions change and the management uses different assumptions, the Company's stock-based compensation expense could be materially different in the future. In addition, the Company will continue to maintain the current forfeiture policy to estimate the expected forfeiture rate and recognize expense only for those shares expected to vest. If the actual forfeiture rate is materially different from management's estimate, stock-based compensation expense could be significantly different from what has been recorded in the current period.

***Non-Cash Interest Expense on Liabilities Related to Sale of Future Royalties***

The Company accounted for Liabilities related to sale of future royalties as a debt financing for accounting purposes, to be amortized under the effective interest rate method over the life of the related royalty stream when the Company has a significant continuing involvement in the generation of royalty streams.

Liabilities related to sale of future royalties and the debt amortization are based on the Company's current estimates of future royalties expected to be paid over the life of the arrangement. The Company will periodically assess the expected royalty payments using a combination of internal projections and forecasts from external sources. To the extent the Company's future estimates of future royalty payments are greater or less than its previous estimates or the estimated timing of such payments is materially different than its previous estimates, the Company will adjust the liabilities related to sale of future royalties and prospectively recognize related non-cash interest expense.

***Prior Year's Presentations***

Certain amounts in the prior year's presentations have been reclassified to conform to the current presentation. These reclassifications had no effect on previously reported net income.

***Recent Accounting Pronouncements***

In May 2017, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update ("ASU") 2017-09, *Compensation – Stock Compensation (Topic 718): Scope of Modification Accounting* to clarify when to account for a change to the terms or conditions of a share-based payment award as a modification. Under this new guidance, modification accounting is required if the fair value, vesting conditions, or classification of the award changes as a result of the change in terms or conditions. ASU 2017-09 is effective for annual reporting periods beginning after December 15, 2017, including interim reporting periods within each annual reporting period. The Company does not expect the adoption of this guidance to have a material impact on its financial statements or disclosures.

In August 2016, the FASB issued ASU 2016-15, *'Statement of cash flows (Topic 230): Classification of certain cash receipts and cash payments'*. ASU 2016-15 issued guidance to clarify how certain cash receipts and payments should be presented in the statement of cash flows. ASU 2016-15 is effective for annual and interim reporting periods beginning after December 15, 2017 and

early adoption is permitted. The Company does not expect the adoption of this standard to have a material effect on its financial statements or disclosures.

In June 2016, the FASB issued ASU 2016-13, *'Financial Instruments — Credit Losses — Measurement of Credit Losses on Financial Instruments.* ASU 2016-13 changes the impairment model for most financial assets and certain other instruments. ASU 2016-13 is effective for annual and interim reporting periods beginning after December 15, 2019. The Company is in the process of evaluating the impact the adoption of this standard would have on its financial statements and disclosures.

In March 2016, the FASB issued *ASU No. 2016-09 — Improvements to Employee Share-Based Payment Accounting* which simplifies various aspects of accounting for share-based payments and presentation in the financial statements. ASU 2016-09 is effective for annual and interim reporting periods beginning after December 15, 2016 and early adoption is permitted. During the three months ended March 31, 2017, the Company adopted ASU No. 2016-09 on a modified retrospective approach. The guidance requires us to recognize all excess tax benefits and tax deficiencies as income tax expense or benefit in the income statement and recognize previously unrecognized excess tax benefits upon adoption as a cumulative-effect adjustment in retained earnings, which eliminates the need to track unrecognized excess tax benefits for both new and existing awards. As of January 1, 2017, the Company recognized excess tax benefit of $0.7 million as an increase to deferred tax assets related to tax loss carryover. However, the entire amount was offset by a full valuation allowance. Accordingly, no cumulative-effect adjustment to retained earnings was recorded as of June 30, 2017. The Company will maintain its current forfeiture policy to estimate forfeitures expected to occur to determine stock-based compensation expense. The adoption of this aspect of the guidance did not have a material impact on our financial statements and disclosures.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842).* ASU 2016-02 requires management to record right-to-use asset and lease liability on the statement of financial position for operating leases. ASU 2016-02 is effective for annual and interim reporting periods beginning on or after December 15, 2018 and the modified retrospective approach is required. The Company is in the process of evaluating the impact the adoption of this standard would have on its financial statements and disclosures.

In January 2016, the FASB issued ASU 2016-01, *Financial instruments (Subtopic 825-10).* ASU 2016-01 requires management to measure equity investments at fair value with changes in fair value recognized in net income. ASU 2016-01 is effective for annual and interim reporting periods beginning on or after December 15, 2017 and early adoption is not permitted. The Company does not expect the adoption of ASU 2016-01 to have a material effect upon its financial statements or disclosures.

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers (Topic 606),* which requires an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of promised goods or services to customers. The ASU will replace most existing revenue recognition guidance in U.S. GAAP when it becomes effective. In March 2016, the FASB amended the principal-versus-agent implementation guidance and illustrations in the new standard. In April 2016, the FASB amended the guidance on identifying performance obligations and the implementation guidance on licensing in the new standard. In May 2016, the FASB amended the guidance on collectability, noncash consideration, presentation of sales tax and transition in the new standard. In December 2016, the FASB issued ASU No. 2016-20, *Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers*, which amends certain narrow aspects of the guidance issued in ASU 2014-09. The new standard will become effective starting on January 1, 2018. Early application is permitted to the original effective date of January 1, 2017. The Company will adopt the standard on January 1, 2018. The standard permits the use of either the modified retrospective method or full retrospective approach for all periods presented. While the Company is continuing to assess all potential impacts of the standard, the Company believes the most significant accounting impact will relate to the timing of the recognition of our license, collaboration, and milestone revenues.

**Note 2 — Net Loss Per Share**

The following is the calculation of basic and diluted net loss per share (in thousands, except per share data):

| | Three Months Ended | | Six Months Ended | |
|---|---|---|---|---|
| | June 30, 2017 | June 30, 2016 | June 30, 2017 | June 30, 2016 |
| Net loss | $ (29,081) | $ (11,611) | $ (54,948) | $ (24,066) |
| Weighted-average shares used in computing net loss per share — basic and diluted | 48,218 | 39,666 | 44,910 | 39,629 |
| Net loss per share — basic and diluted | $ (0.60) | $ (0.29) | $ (1.22) | $ (0.61) |

Basic net loss per share is computed by dividing net loss by the weighted average number of vested common shares outstanding during the period. Diluted net loss per share is computed by giving effect to all potentially dilutive common shares, including

outstanding stock options, unvested restricted stock units, warrants, and shares issuable under the Company's Employee Stock Purchase Plan ("ESPP"), by applying the treasury stock method, if they have a dilutive effect. The following instruments were excluded from the computation of diluted net income (loss) per share because their effect would have been antidilutive (in thousands):

| | Three and Six Months Ended | |
|---|---|---|
| | June 30, 2017 | June 30, 2016 |
| Options to purchase common stock | 6,170 | 5,996 |
| Warrants to purchase common stock | 310 | 5,710 |
| Restricted and Performance stock units | 461 | 757 |
| Shares issuable related to the ESPP | 18 | 24 |
| Total shares | 6,959 | 12,487 |

**Note 3 — Supplemental Cash Flow Data**

Supplemental cash flow data was as follows (in thousands):

| | Six Months Ended | |
|---|---|---|
| | June 30, 2017 | June 30, 2016 |
| Cash paid for interest | $ 1,270 | $ 951 |
| Cash paid for taxes | 1 | 1 |
| Significant non-cash investing and financing activities: | | |
| Debt discount netted against proceeds from long term debt, recorded in equity | — | 288 |
| Interest paid on the long-term debt, at inception | — | 63 |
| Purchases of property and equipment through accounts payable | 484 | 234 |
| Purchases of property and equipment through accrued liabilities | 670 | (76) |

**Note 4 — Research and Development Arrangements**

*Amgen Inc. ("Amgen")*

The Company and Amgen continue activities to discover, develop and commercialize novel small molecule therapeutics, including omecamtiv mecarbil, that activate cardiac muscle contractility for potential applications in the treatment of heart failure under the collaboration and option agreement between the Company and Amgen, as amended (the "Amgen Agreement"). The Company has recognized research and development revenue from Amgen for reimbursements of internal costs of certain full-time employee equivalents, supporting a collaborative research program directed to the discovery of next-generation cardiac sarcomere activator compounds and the development program for omecamtiv mecarbil, and other costs related to the research and development program.

In December 2016, the Company provided notice of its exercise of its option under the Amgen Agreement to co-invest in the Phase 3 development program of omecamtiv mecarbil at the level of $10.0 million in exchange for an incremental royalty from Amgen of up to 1% on increasing worldwide sales of omecamtiv mecarbil outside Japan. In February 2017, the Company provided notice to Amgen of its further exercise of its co-invest option in the additional amount of $30.0 million (i.e. to fully co-invest $40.0 million) in the Phase 3 development program of omecamtiv mecarbil in exchange for a total incremental royalty from Amgen of up to 4% on increasing worldwide sales of omecamtiv mecarbil outside Japan.

The Company made co-investment payments of $6.3 million and $7.5 million during the three and six months ended June 30, 2017, respectively. Because these payments are contingent on Amgen continuing the Phase 3 development program of omecamtiv mecarbil and the benefit to be received in exchange for the payments is not sufficiently separable from the Amgen Agreement the Company reduced research and development revenues by the amount of these payments.

Revenue from Amgen was as follows (in thousands):

| | Three Months Ended | | Six Months Ended | |
|---|---|---|---|---|
| | June 30, 2017 | June 30, 2016 | June 30, 2017 | June 30, 2016 |
| Research and development revenues | | | | |
| Reimbursement of internal costs | $ 388 | $ 616 | $ 1,279 | $ 1,233 |
| Co-investment option payment | (6,250) | — | (7,500) | — |
| Total revenues from Amgen | $ (5,862) | $ 616 | $ (6,221) | $ 1,233 |

There were no accounts receivables due from Amgen as of June 30, 2017 and December 31, 2016.

Under the Amgen Agreement, the Company is eligible to receive over $300.0 million in additional development milestone payments which are based on various clinical milestones, including the initiation of certain clinical studies, the submission of an application for marketing authorization for a drug candidate to certain regulatory authorities and the receipt of such approvals. Additionally, the Company is eligible to receive up to $300.0 million in commercial milestone payments provided certain sales targets are met. Due to the nature of drug development, including the inherent risk of development and approval of drug candidates by regulatory authorities, it is not possible to estimate if and when these milestone payments could be achieved or become due. The achievement of each of these milestones is dependent solely upon the results of Amgen's development and commercialization activities.

In 2013, in conjunction with the Amgen Agreement, the Company sold 1,404,100 shares of its common stock to Amgen, subject to certain trading restrictions. In prior periods, the Company considered Amgen to be a related party, due in part to Amgen's equity ownership percentage, and reported revenue under the Amgen Agreement to be revenues from a related party. Effective April 1, 2017, in part due to a decrease in Amgen's equity ownership percentage, the Company no longer considers Amgen to be a related party.

***Astellas Pharma Inc. ("Astellas")***

The Company and Astellas continue activities focused on the research, development, and commercialization of skeletal muscle activators, including CK-2127107, as novel drug candidates for diseases and medical conditions associated with muscle weakness under the Amended and Restated License and Collaboration Agreement dated December 22, 2014, as amended (the "Astellas Agreement"). The Astellas Agreement was further amended effective April 1, 2017 to adjust the payment mechanism under the Astellas Agreement because Astellas will also be incurring a portion of the development costs for ALS. This amendment had no effect on the accounting for the Astellas Agreement.

The Company has recognized research and development revenue from Astellas for reimbursements of internal costs of certain full-time employee equivalents, supporting collaborative research and development programs, and of other costs related to those programs.

In connection with the Astellas Agreement, in 2015, Astellas paid the Company a $30 million non-refundable upfront license fee and a $15.0 million milestone payment relating to Astellas' decision to advance CK-2127107 into Phase 2 clinical development. The Company determined that the license and the research and development services relating to the Astellas Agreement are a single unit of accounting as the license was determined to not have stand-alone value. Accordingly, the Company is recognizing this revenue over the research term of the Astellas Agreement using the proportional performance model.

In 2016, in connection with an amendment to the Astellas Agreement (the "2016 Astellas Amendment"). Astellas paid the Company a $35.0 million non-refundable upfront amendment fee and an accelerated $15.0 million milestone payment for the initiation of the first Phase 2 clinical trial of CK-2127107 in ALS that was otherwise provided for in the Astellas Agreement, as if such milestone had been achieved upon the execution of the 2016 Astellas Amendment, and committed research and development consideration of $44.2 million (total consideration of $94.2 million), which the Company allocated between units of accounting for license fees and research and development services. The Company allocated $24.9 million of research and development consideration to the license and $19.3 million of the research and development consideration to research and development services, to be recognized as revenue as research and development services are performed.

*Astellas' Option on Tirasemtiv*

In 2016, in connection with the 2016 Astellas Amendment, Astellas paid the Company a $15.0 million non-refundable option fee for an option for a global collaboration for the development and commercialization of tirasemtiv (the "Option on Tirasemtiv"). Unless exercised, the Option on Tirasemtiv expires following the receipt of the approval letter for tirasemtiv from the FDA.

Prior to Astellas' exercise of the Option on Tirasemtiv, the Company will continue the development of tirasemtiv, including VITALITY-ALS, at its own expense to support regulatory approval in the U.S., EU and certain other jurisdictions and will retain the final decision making authority on the development of tirasemtiv. Therefore, the Company concluded that there was no obligation related to any development services during the option period.

If Astellas exercises the Option on Tirasemtiv:

- the Company will grant Astellas an exclusive license to develop and commercialize tirasemtiv outside the Company's own commercialization territory of North America, Europe and other select countries under a license and collaboration agreement for tirasemtiv (the "License on Tirasemtiv"). Each party would be primarily responsible for the further development of tirasemtiv in its territory and have the exclusive right to commercialize tirasemtiv in its territory.

- the Company will receive an option exercise payment ranging from $25.0 million (if exercise occurs following receipt of data from VITALITY-ALS) to $80.0 million (if exercise occurs following receipt of FDA approval) and a milestone payment of $30.0 million from Astellas associated with the Company's initiation of the open-label extension trial for tirasemtiv (VIGOR-ALS). If Astellas exercises the option after the defined review period following receipt of data from VITALITY-ALS, Astellas will at the time of option exercise reimburse the Company for a share of any additional costs incurred after such review period.

- the parties will share the future development costs of tirasemtiv in North America, Europe and certain other countries (with Cytokinetics bearing 75% of such shared costs and Astellas bearing 25% of such costs), and Astellas will be solely responsible for the development costs of tirasemtiv specific to its commercialization territory.

Contingent upon the successful development of tirasemtiv, the Company may receive from Astellas milestone payments up to $100.0 million for the initial indication and up to $50.0 million for each subsequent indication. If tirasemtiv is commercialized, Astellas will pay the Company royalties (at rates ranging from the mid-teens to twenty percent) on sales of tirasemtiv in Astellas' territory, and the Company will pay Astellas royalties (at rates up to the mid-teens) on sales of tirasemtiv in the Company's territory, in each case subject to various possible adjustments.

The Company concluded that the Option on Tirasemtiv is a substantive option, and is therefore not considered a deliverable at the execution of the 2016 Astellas Amendment. The Company determined that the License on Tirasemtiv is contingent upon the exercise of the Option on Tirasemtiv, and is therefore not effective during the periods presented, since the option has not been exercised as of the latest balance sheet date. In addition, the Company did evaluate the consideration set to be received for the License on Tirasemtiv in relation to the fair value of the License on Tirasemtiv, and determined that it was not being provided at a significant incremental discount.

The Company further determined that the option fee of $15.0 million was deemed to be a prepayment towards the License on Tirasemtiv, and therefore deferred revenue recognition of the option fee either until the Option on Tirasemtiv is exercised or expires unexercised. Unless exercised, the Option on Tirasemtiv expires following the receipt of the approval letter for tirasemtiv from the FDA. If the Option on Tirasemtiv expires unexercised, the $15.0 million received would be added to the 2016 Astellas Amendment consideration, to be allocated to the units of accounting.

*Revenue and deferred revenue from Astellas*

Research and development revenue from Astellas was as follows (in thousands):

| | Three Months Ended June 30, 2017 | Three Months Ended June 30, 2016 | Six Months Ended June 30, 2017 | Six Months Ended June 30, 2016 |
|---|---|---|---|---|
| License revenues | $ 4,942 | $ 1,950 | $ 6,388 | $ 5,923 |
| Research and development revenues | 3,973 | 2,898 | 6,698 | 6,578 |
| Total Revenue from Astellas | $ 8,915 | $ 4,848 | $ 13,086 | $ 12,501 |

Deferred Revenue reflecting the unrecognized portion of the license revenue, option fee and payment of expenses from the Astellas Agreement was as follows (in thousands):

| | June 30, 2017 | December 31, 2016 |
|---|---|---|
| Deferred revenue, current | $ 7,942 | $ 8,060 |
| Deferred revenue, non-current | $ 15,067 | $ 15,000 |

There were no accounts receivable due from Astellas at June 30, 2017 and December 31, 2016.

Under the Astellas Agreement, additional research and early and late state development milestone payments which are based on various research and clinical milestones, including the initiation of certain clinical studies, the submission of an application for marketing authorization for a drug candidate to certain regulatory authorities and the commercial launch of collaboration products could total over $600.0 million, including up to $95.0 million relating to CK-2127107 in non-neuromuscular indications, and over $100.0 million related to CK-2127107 in each of spinal muscular atrophy (“SMA”), amyotrophic lateral sclerosis (“ALS”) and other neuromuscular indications. Additionally, $200.0 million in commercial milestones could be received under the Astellas Agreement provided certain sales targets are met. The achievement of each of the late stage development milestones and the commercialization milestones are dependent solely upon the results of Astellas’ development activities and therefore these potential milestone payments were not deemed to be substantive. The Company is eligible to receive up to $2.0 million in research milestone payments under the collaboration for each future potential drug candidate. The Company believes that each of the milestones related to research under the Astellas Agreement is substantive and can only be achieved with the Company’s past and current performance and each milestone will result in additional payments to the Company. Due to the nature of drug development, including the inherent risk of development and approval of drug candidates by regulatory authorities, it is not possible to estimate if and when these milestone payments could be achieved or become due.

In conjunction with the Astellas Agreement in December 2014, the Company also sold 2,040,816 shares of its common stock to Astellas at a price per share of $4.90 and an aggregate purchase price of $10.0 million, subject to certain trading restrictions. In prior periods, the Company considered Astellas to be a related party, due in part to Astellas’ equity ownership percentage, and reported revenue under the Astellas Agreement to be revenues from a related party. Effective April 1, 2017, in part due to a decrease in Astellas’ equity ownership percentage, the Company no longer considers Astellas to be a related party.

**Note 5 — Cash Equivalents and Investments**

***Cash Equivalents and Available for Sale Investments***

The amortized cost and fair value of cash equivalents and available for sale investments at June 30, 2017 and December 31, 2016 were as follows (in thousands):

| | June 30, 2017 | | | | |
|---|---|---|---|---|---|
| | Amortized Cost | Unrealized Gains | Unrealized Losses | Fair Value | Maturity Dates |
| Cash equivalents — U.S. Treasury and money market funds | $ 93,824 | $ 1 | $ — | $ 93,825 | |
| Short-term investments — U.S. Treasury securities and Agency bonds | $ 211,564 | $ 1 | $ (225) | $ 211,340 | 7/2017 - 6/2018 |
| Long-term investments — Equity, U.S. Treasury securities and Agency bonds | $ 19,950 | $ 180 | $ (43) | $ 20,087 | 7/2018 - 8/2018 |

| | December 31, 2016 | | | | |
|---|---|---|---|---|---|
| | Amortized Cost | Unrealized Gains | Unrealized Losses | Fair Value | Maturity Dates |
| Cash equivalents — U. S. Treasury securities and money market funds | $ 55,658 | $ — | $ — | $ 55,658 | |
| Short-term investments — U.S. Treasury securities | $ 89,396 | $ 2 | $ (23) | $ 89,375 | 1/2017 – 12/2017 |
| Long-term investments — Equity and U.S. Treasury securities | $ 7,513 | $ 176 | $ (17) | $ 7,672 | 2/2018 – 3/2018 |

At June 30, 2017 there were no investments that had been in a continuous unrealized loss position for 12 months or longer.

Interest income was as follows (in thousands):

| | Three Months Ended | | Six Months Ended | |
|---|---|---|---|---|
| | June 30, 2017 | June 30, 2016 | June 30, 2017 | June 30, 2016 |
| Interest income | $ 694 | $ 105 | $ 1,183 | $ 168 |

**Note 6 — Fair Value Measurements**

The Company follows the fair value accounting guidance to value its financial assets and liabilities. Fair value is defined as the price that would be received for assets when sold or paid to transfer a liability in an orderly transaction between market participants at the measurement date (exit price). The Company utilizes market data or assumptions that the Company believes market participants would use in pricing the asset or liability, including assumptions about risk and the risks inherent in the inputs to the valuation technique. These inputs can be readily observable, market corroborated or generally unobservable.

The Company primarily applies the market approach for recurring fair value measurements and endeavors to utilize the best information reasonably available. Accordingly, the Company utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible, and considers the security issuers' and the third-party insurers' credit risk in its assessment of fair value.

The Company classifies the determined fair value based on the observability of those inputs. Fair value accounting guidance establishes a fair value hierarchy that prioritizes the inputs used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurement) and the lowest priority to unobservable inputs (Level 3 measurement). The three defined levels of the fair value hierarchy are as follows:

Level 1 — Observable inputs, such as quoted prices in active markets for identical assets or liabilities;

Level 2 — Inputs, other than the quoted prices in active markets, that are observable either directly or through corroboration with observable market data; and

Level 3 — Unobservable inputs, for which there is little or no market data for the assets or liabilities, such as internally-developed valuation models.

**Fair value of financial assets:**

Financial assets measured at fair value on a recurring basis as of June 30, 2017 and December 31, 2016 are classified in the table below in one of the three categories described above (in thousands):

| | June 30, 2017 | | | |
|---|---|---|---|---|
| | Fair Value Measurements Using | | | |
| | Level 1 | Level 2 | Level 3 | Assets At Fair Value |
| **Assets:** | | | | |
| Money market funds | $ 43,829 | $ — | $ — | $ 43,829 |
| U.S. Treasury securities | 179,411 | — | — | 179,411 |
| Agency bonds | — | 101,834 | — | 101,834 |
| Equity securities | 178 | — | — | 178 |
| Total | $ 223,418 | $ 101,834 | $ — | $ 325,252 |
| Amounts included in: | | | | |
| Cash and cash equivalents | $ 93,825 | $ - | $ — | $ 93,825 |
| Short-term investments | 114,481 | 96,859 | — | 211,340 |
| Long-term investments | 15,112 | 4,975 | — | 20,087 |
| Total | $ 223,418 | $ 101,834 | $ — | $ 325,252 |

| | December 31, 2016 | | | |
|---|---|---|---|---|
| | Fair Value Measurements Using | | | |
| | Level 1 | Level 2 | Level 3 | Assets At Fair Value |
| **Assets:** | | | | |
| Money market funds | $ 52,657 | $ — | $ — | $ 52,657 |
| U.S. Treasury securities | 99,872 | — | — | 99,872 |
| Equity securities | 176 | — | — | 176 |
| Total | $ 152,705 | $ — | $ — | $ 152,705 |
| Amounts included in: | | | | |
| Cash and cash equivalents | $ 55,658 | $ — | $ — | $ 55,658 |
| Short-term investments | 89,375 | — | — | 89,375 |
| Long-term investments | 7,672 | — | — | 7,672 |
| Total | $ 152,705 | $ — | $ — | $ 152,705 |

The valuation technique used to measure fair value for the Company's Level 1 assets is a market approach, using prices and other relevant information generated by market transactions involving identical assets. When quoted market prices are not available for the specific security, then the Company estimates fair value by using benchmark yields, reported trades, broker/dealer quotes, and issuer spreads; these securities are classified as Level 2. As of June 30, 2017 and December 31, 2016, the Company had no financial assets measured at fair value on a recurring basis using significant Level 3 inputs. The carrying amount of the Company's accounts receivable and accounts payable approximates fair value due to the short-term nature of these instruments.

**Fair value of financial liabilities:**

As of June 30, 2017 and December 31, 2016, the fair value of the long-term debt, payable in installments through year ended 2020, approximated its carrying value of $30.0 million and $29.9 million, respectively, because it is carried at a market observable interest rate, which are considered Level 2.

As of June 30, 2017, the fair value of liabilities related to the sale of future royalties is based on the Company's current estimates of future royalties expected to be paid to RPI over the life of the arrangement, which are considered Level 3 (See Note 9 – "Liability Related to Sale of Future Royalties").

**Note 7 — Balance Sheet Components**

Accrued liabilities were as follows (in thousands):

| | June 30, 2017 | December 31, 2016 |
|---|---|---|
| Accrued liabilities: | | |
| Clinical and preclinical costs | $ 6,782 | $ 10,092 |
| Bonus | 2,311 | 3,800 |
| Other payroll related | 2,145 | 1,888 |
| Consulting and professional fees | 1,605 | 698 |
| Other accrued expenses | 702 | 897 |
| Leasehold improvements | — | 672 |
| Total accrued liabilities | $ 13,545 | $ 18,047 |

**Note 8 — Long-Term Debt**

Long-term debt and unamortized debt discount balances are as follows (in thousands):

| | June 30, 2017 | December 31 2016 |
|---|---|---|
| Notes payable, gross | $ 30,000 | $ 30,000 |
| Less: Unamortized debt discount | (372) | (472) |
| Accretion of final payment fee | 531 | 353 |
| Carrying value of notes payable | $ 30,159 | $ 29,881 |
| Less: Current portion of long-term debt | (7,315) | (2,500) |
| Long-term debt | $ 22,844 | $ 27,381 |

The Company entered into a loan and security agreement (the "Loan Agreement") with Oxford Finance LLC ("Oxford") and Silicon Valley Bank ("SVB") (Oxford and SVB, collectively the "Lenders") to fund its working capital and other general corporate needs. The Loan Agreement provides for term loans of up to $40.0 million in aggregate and warrants that are exercisable upon issuance and will remain exercisable for five years from issuance or the closing of a merger consolidation transaction in which the Company is not the surviving entity.

Under the Loan Agreement, the Company drew down $15.0 million in October 2016 and an additional $15.0 million in February 2016 and issued warrants to purchase 65,189 shares of the Company's common stock at an exercise price of $6.90 and warrants to purchase 68,285 shares of the Company's common stock at an exercise price of $6.59 per share. These draw downs bear interest at a rate of 7.5% per annum.

The Company is required to repay the outstanding principal in 36 equal installments beginning October 2017 through October 2020 and to make a final payment fee of 4.0% of the amounts of the Term Loans drawn payable on the earlier of (i) the prepayment of the Term Loans or (ii) the Maturity Date. The loan carries prepayment penalties of 3.0% and 2.0% for prepayment within one and two years, respectively, of the loan origination and 1.0% thereafter.

The Company allocated a portion of the gross proceeds from each draw down under the Loan Agreement to the underlying warrants, using the relative fair value method. This resulted in the allocation of $0.6 million of the draw down proceeds to the warrants, which was accounted for as debt discount. Debt discount is being amortized over the term of the debt, and recorded in interest expense in the statement of operations. The fair value of the warrants was determined using the Black-Scholes pricing model and are classified as equity.

The Loan Agreement contains customary representations and warranties and customary affirmative and negative covenants applicable to the Company and its subsidiaries, including, among other things, restrictions on dispositions, changes in business, management, ownership or business locations, mergers or acquisitions, indebtedness, encumbrances, distributions, investments,

transactions with affiliates and subordinated debt. The Loan Agreement also includes customary events of default, including but not limited to the nonpayment of principal or interest, violations of covenants, material adverse changes, attachment, levy, restraint on business, cross-defaults on material indebtedness, bankruptcy, material judgments, misrepresentations, subordinated debt, governmental approvals, lien priority and delisting. Upon an event of default, the Lenders may, among other things, accelerate the loans and foreclose on the collateral. The Company's obligations under the Loan Agreement are secured by substantially all of the Company's current and future assets, other than its intellectual property.

The Company recorded interest on principal, amortization of the debt discount and debt issuance costs, and the accretion of the final payments as interest expense of $0.8 million and $0.7 million for the three months ended June 30, 2017 and 2016, respectively and $1.5 million and $1.3 million for the six months ended June 30, 2017 and 2016, respectively. The effective interest rate on the Loan Agreement, including the amortization of the debt discount and issuance cost, and the accretion of the final payment, was 9.3% for both the three and six months ended June 30, 2017 and 2016.

Future minimum payments under the Loan Agreement, as of June 30, 2017 are as follows (in thousands):

| | | |
|---|---|---|
| Remainder of 2017 | $ | 3,635 |
| 2018 | | 11,743 |
| 2019 | | 10,982 |
| 2020 | | 8,938 |
| Total minimum payments | | 35,298 |
| Less: Interest and final payment | | (5,298) |
| Notes payable, gross | $ | 30,000 |

**Note 9 - Liabilities Related to Sale of Future Royalties**

In February 2017, the Company entered into a Royalty Purchase Agreement (the "Royalty Agreement") with RPI Finance Trust ("RPI"), an entity related to Royalty Pharma. Under the Royalty Agreement, the Company sold a portion of the Company's right to receive royalties on potential net sales of omecamtiv mecarbil (and potentially other compounds with the same mechanism of action) under the Amgen Agreement to RPI for a payment of $90.0 million (the "Royalty Monetization"). The Royalty Monetization is non-refundable, even if omecamtiv mecarbil is never commercialized. The Company accounts for the Royalty Monetization as a liability reported as Liabilities related to sale of future royalties, primarily because the Company has significant continuing involvement in generating the royalty stream under the Amgen Agreement, including the Company's option to co-invest in the Phase 3 development program of omecamtiv mecarbil.

Also in February 2017, pursuant to a concurrently-executed Common Stock Purchase Agreement with RPI, the Company issued 875,656 shares of its common stock to RPI for $10.0 million (the "RPI Common Stock").

The Company concluded that there are two units of accounting for the Royalty Monetization and the RPI Common Stock: (1) the liability related to sale of future royalties and (2) the RPI Common Stock. The Company allocated the $90 million from the Royalty Monetization and the $10 million from the RPI Common Stock among the two units of accounting on a relative fair value basis. The Company determined the fair value for the liability related to sale of future royalties at the time of the Royalty Monetization to be $96.7 million, with an effective annual non-cash interest rate of 17%. The Company determined the fair value of the RPI Common Stock at March 31, 2017 to be $8.1 million, based on the closing stock price at the transaction date and adjusted for the trading restrictions.

The Company allocated the transaction consideration on a relative fair value basis to the liability and the common stock, as follows (in millions):

| | | Allocated Consideration |
|---|---|---|
| Units of Accounting: | | |
| Liability related to sale of future royalties | $ | 92.3 |
| Common stock | | 7.7 |
| Total consideration | $ | 100.0 |

The Company allocated $1.8 million of transaction costs incurred in connection with the Royalty Monetization and the RPI Common Stock to the liability and common stock in proportion to the allocation of proceeds to those components. The transaction costs allocated to the liability will be amortized to non-cash interest expense over the estimated term of the Royalty Agreement.

The following table shows the activity within liabilities related to sale of future royalties during the six months ended June 30, 2017 (in thousands):

| | | |
|---|---|---|
| Liability related to sale of future royalties at February 1, 2017 | $ | 92,300 |
| Non-cash interest expense recognized | | 6,012 |
| Liability related to sale of future royalties at June 30, 2017 | | 98,312 |
| Less: Unamortized transaction costs | | (1,655) |
| Carrying value of liability related to sale of future royalties at June 30, 2017 | | 96,657 |

**Note 10 — Stockholders' Equity**

During the second quarter of 2017, the Company completed a secondary offering of its common stock and issued 6,049,000 shares for net proceeds of $82.8 million, before expenses.

***Accumulated Other Comprehensive Loss***

Comprehensive loss is comprised of net loss and other comprehensive loss. Other comprehensive loss is comprised of unrealized holding gains and losses on the Company's available-for-sale securities that are excluded from net loss and reported separately in stockholders' equity.

In the first six months of 2017 and 2016, the Company recorded insignificant amounts of unrealized gains (losses) in available-for-sale securities in accumulated other comprehensive loss.

***Warrants***

In June 2012, the Company issued warrants in connection with two separate, concurrent offerings for our securities. These warrants had an expiration date of June 25, 2017. During the six months ended June 30, 2017, the Company issued 3,240,549 shares of Common stock for exercises of these warrants.

Pursuant to the Loan Agreement described in Note 8 "Long Term Debt," the Company issued warrants to purchase 65,189 shares of the Company's common stock at an exercise price of $6.90 per share and additional warrants to purchase 68,285 shares of the Company's common stock at an exercise price of $6.59 per share. In January 2017, the Company issued 16,126 shares of common stock related to cashless exercises of some of these warrants.

***Committed Equity Offering***

In September 2015, the Company and Cantor Fitzgerald & Co. entered into a Committed Equity Offering (the "CE Offering") that is an at-the-market issuance sales agreement (the "Cantor Fitzgerald Agreement") pursuant to which the Company could issue and sell shares of common stock having an aggregate offering price of up to $40.0 million. During the three and six months ended June 30, 2017, the Company issued 987,068 shares and 2,425,625 shares under the Cantor Fitzgerald Agreement for net proceeds totaling $12.5 million and $29.9 million, respectively, completing the sale of all common stock subject to the Cantor Fitzgerald Agreement.

***Equity Incentive Plan***

In May 2017, the Company's stockholders approved an amendment to the Amended and Restated 2004 Equity Incentive Plan (the "2004 Equity Incentive Plan") to increase the number of authorized shares reserved for issuance under the 2004 Equity Incentive Plan by 3.9 million shares. As of June 30, 2017, 3.8 million authorized shares were available for grant under the 2004 Equity Incentive Plan.

Total employee stock-based compensation expenses were $2.2 million and $1.8 million for the three months ended June 30, 2017 and 2016, respectively and $4.1 million and $3.4 million for the six months ended June 30, 2017 and 2016, respectively.

***Stock Options***

Stock option activity under the 2004 Equity Incentive Plan, for the six months ended June 30, 2017, was as follows:

| | Stock Options Outstanding | Weighted Average Exercise Price per Share of Stock Options |
|---|---|---|
| Balance at December 31, 2016 | 5,192,813 | $ 9.27 |
| Options granted | 1,169,624 | 11.49 |
| Options exercised | (24,055) | 7.09 |
| Options forfeited/expired | (168,294) | 34.25 |
| Balance at June 30, 2017 | 6,170,088 | $ 9.02 |

***Restricted Stock Units***

Restricted stock unit activity for the six months ended June 30, 2017 was as follows:

| | Number of Shares | Weighted Average Award Date Fair Value per Share |
|---|---|---|
| Restricted stock units outstanding at December 31, 2016 | 64,502 | $ 7.19 |
| Restricted stock units granted | 269,000 | 10.60 |
| Restricted stock units released | (43,500) | 6.67 |
| Restricted stock units forfeited | (500) | 6.67 |
| Unvested restricted stock units outstanding at June 30, 2017 | 289,502 | $ 10.44 |

***Restricted Stock Units that Contain Performance Conditions***

Performance stock unit activity was as follows:

| | Number of Shares | Weighted Average Award Date Fair Value per Share |
|---|---|---|
| Performance stock units outstanding at December 31, 2016 | 685,000 | $ 7.00 |
| Restricted stock units granted | — | — |
| Restricted stock units released | (171,250) | 7.00 |
| Restricted stock units forfeited | (342,500) | 7.00 |
| Performance stock units outstanding at June 30, 2017 | 171,250 | $ 7.00 |

**Note 11 — Interest and Other Income, Net**

Interest and other income, net for the three and six months ended June 30, 2017 and 2016 primarily consisted of interest income generated from the Company's cash, cash equivalents and investments.

**Note 12 — Commitments and Contingencies**

***Commitments***

***Operating Lease***

The Company leases office space and equipment under a non-cancelable operating lease that expires in 2018, with an option to extend the lease for an additional three-year period. The lease terms provide for rental payments on a graduated scale and the Company's payment of certain operating expenses. During March 2016, the Company amended the lease agreement to include certain additional operating expenses, related to the replacement of two boilers. The Company recognizes rent expense on a straight-line basis over the lease period. Rent expense was $0.9 million and $0.8 million, respectively, for the three months ended June 30, 2017 and 2016 and $1.8 million and $1.7 million, respectively, for the six months ended June 30, 2017 and 2016.

***Co-invest option***

In December 2016, the Company agreed to exercise its option to co-invest $10.0 million in the Phase 3 development program of omecamtiv mecarbil under the Amgen Agreement. In February 2017, the Company provided notice to Amgen of its further exercise of its co-investment option in the additional amount of $30.0 million (i.e. to co-invest $40.0 million) in the Phase 3 development program of omecamtiv mecarbil under the Amgen Agreement. By exercising its option and fully co-funding $40.0 million, the Company will be eligible to receive a total incremental royalty of up to 4% on increasing worldwide sales of omecamtiv mecarbil outside of Japan and have the right to co-promote omecamtiv mecarbil in institutional care settings in North America, with reimbursement by Amgen for certain sales force activities.

Quarterly co-investment payments are contingent on Amgen continuing the Phase 3 development program of omecamtiv mecarbil. As of June 30, 2017, future minimum payments due to Amgen were as follows (in thousands):

| | | |
|---|---|---|
| Remainder of 2017 | $ | 12,500 |
| 2018 | | 18,750 |
| Total | $ | 31,250 |

***Contingencies***

In the ordinary course of business, the Company may provide indemnifications of varying scope and terms to vendors, lessors, business partners and other parties with respect to certain matters, including, but not limited to, losses arising out of the Company's breach of such agreements, services to be provided by or on behalf of the Company, or from intellectual property infringement claims made by third parties. In addition, the Company has entered into indemnification agreements with its directors and certain of its officers and employees that will require the Company, among other things, to indemnify them against certain liabilities that may arise by reason of their status or service as directors, officers or employees. The Company maintains director and officer insurance, which may cover certain liabilities arising from its obligation to indemnify its directors and certain of its officers and employees, and former officers and directors in certain circumstances. The Company maintains product liability insurance and comprehensive general liability insurance, which may cover certain liabilities arising from its indemnification obligations. It is not possible to determine the maximum potential amount of exposure under these indemnification obligations due to the limited history of prior indemnification claims and the unique facts and circumstances involved in each particular indemnification obligation. Such indemnification obligations may not be subject to maximum loss clauses. Management is not currently aware of any matters that could have a material adverse effect on the financial position, results of operations or cash flows of the Company.

**Note 13 — Income Taxes**

The Company did not record a provision for income tax for the three and six months ended June 30, 2017 because the Company expects to report a net tax loss for the year ending December 31, 2017.

The Company defines the threshold for recognizing the benefits of tax return positions in the financial statements as "more-likely-than-not" to be sustained by the taxing authorities based solely on the technical merits of the position. If the recognition threshold is met, the tax benefit is measured and recognized as the largest amount of tax benefit that, in the Company's judgment, is greater than 50% likely to be realized.

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

This discussion and analysis should be read in conjunction with our financial statements and accompanying notes included elsewhere in this report. Operating results are not necessarily indicative of results that may occur in future periods.

This report contains forward-looking statements indicating expectations about future performance and other forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Private Securities Litigation Reform Act of 1995, that involve risks and uncertainties. We intend that such statements be protected by the safe harbor created thereby. Forward-looking statements involve risks and uncertainties and our actual results and the timing of events may differ significantly from the results discussed in the forward-looking statements. Examples of such forward-looking statements include, but are not limited to, statements about or relating to:

- guidance concerning revenues, research and development expenses and general and administrative expenses for 2017;
- the sufficiency of existing resources to fund our operations for at least the next 12 months;
- our capital requirements and needs for additional financing;
- the initiation, design, conduct, enrollment, progress, timing and scope of clinical trials and development activities for our drug candidates conducted by ourselves or our partners, Amgen Inc. ("Amgen") and Astellas Pharma Inc. ("Astellas"), including the anticipated timing for initiation of clinical trials, anticipated rates of enrollment for clinical trials and anticipated timing of results becoming available or being announced from clinical trials;
- the results from the clinical trials, the non-clinical studies, and chemistry, manufacturing, and controls ("CMC") activities of our drug candidates and other compounds, and the significance and utility of such results;
- anticipated interactions with regulatory authorities;
- the further development of tirasemtiv for the potential treatment of amyotrophic lateral sclerosis ("ALS");
- the expected acceptability by regulatory authorities of the effects of tirasemtiv on slow vital capacity or other measures of clinical benefit related to respiratory function in patients with ALS as Phase 3 clinical trial endpoints to support the registration of tirasemtiv as a treatment for ALS;
- our and our partners' plans or ability to conduct the continued research and development of our drug candidates and other compounds;
- the further development of omecamtiv mecarbil for the potential treatment of heart failure;
- our expected roles in research, development, or commercialization under our strategic alliances with Amgen and Astellas;
- the properties and potential benefits of, and the potential market opportunities for, our drug candidates and other compounds, including the potential indications for which they may be developed;
- the sufficiency of the clinical trials conducted with our drug candidates to demonstrate that they are safe and efficacious;
- our receipt of milestone payments, royalties, reimbursements, and other funds from current or future partners under strategic alliances, such as with Amgen or Astellas;
- our ability to continue to identify additional potential drug candidates that may be suitable for clinical development;
- our plans or ability to commercialize drugs with or without a partner, including our intention to develop sales and marketing capabilities;
- the focus, scope, and size of our research and development activities and programs;
- the utility of our focus on the biology of muscle function, and our ability to leverage our experience in muscle contractility to other muscle functions;
- our ability to protect our intellectual property and to avoid infringing the intellectual property rights of others;
- future payments and other obligations under loan and lease agreements;
- potential competitors and competitive products;
- retaining key personnel and recruiting additional key personnel; and
- the potential impact of recent accounting pronouncements on our financial position or results of operations.

Such forward-looking statements involve risks and uncertainties, including, but not limited to:

- further clinical development of tirasemtiv for the potential treatment of ALS will require significant additional funding and we may be unable to obtain such additional funding on acceptable terms, if at all;
- the U.S. Food and Drug Administration ("FDA") and/or other regulatory authorities may not accept effects on respiratory function, including slow vital capacity, as appropriate clinical trial endpoints to support the registration of tirasemtiv for the treatment of ALS;
- Amgen's decisions with respect to the timing, design and conduct of research and development activities for omecamtiv mecarbil and other cardiac muscle activators, including decisions to postpone or discontinue research or development activities relating to omecamtiv mecarbil and other cardiac muscle activators;
- Astellas' decisions with respect to the timing, design and conduct of research and development activities for CK-2127107 and other skeletal muscle activators, including decisions to postpone or discontinue research or development activities relating to CK-2127107 and other skeletal muscle activators, as well as Astellas' decisions with respect to its option to enter into a global collaboration for the development and commercialization of tirasemtiv;
- our ability to enter into strategic partnership agreements for any of our programs on acceptable terms and conditions or in accordance with our planned timelines;
- our ability to obtain additional financing on acceptable terms, if at all;
- our receipt of funds and access to other resources under our current or future strategic alliances;
- difficulties or delays in the development, testing, manufacturing, or commercialization of our drug candidates;
- difficulties or delays, or slower than anticipated patient enrollment, in our or partners' clinical trials;
- difficulties or delays in the manufacture and supply of clinical trial or commercial materials;
- failure by our contract research organizations, contract manufacturing organizations, and other vendors to properly fulfill their obligations or otherwise perform as expected;
- results from non-clinical studies that may adversely impact the timing or the further development of our drug candidates and other compounds;
- the possibility that the FDA or foreign regulatory agencies may delay or limit our or our partners' ability to conduct clinical trials or may delay or withhold approvals for the manufacture and sale of our products;
- changing standards of care and the introduction of products by competitors or alternative therapies for the treatment of indications we target that may limit the commercial potential of our drug candidates;
- difficulties or delays in achieving market access and reimbursement for our drug candidates and the potential impacts of health care reform;
- changes in laws and regulations applicable to drug development, commercialization, or reimbursement;
- the uncertainty of protection for our intellectual property, whether in the form of patents, trade secrets, or otherwise;
- potential infringement or misuse by us of the intellectual property rights of third parties;
- activities and decisions of, and market conditions affecting, current and future strategic partners;
- accrual information provided by our contract research organizations ("CROs"), contract manufacturing organizations ("CMOs"), and other vendors;
- potential ownership changes under Internal Revenue Code Section 382; and
- the timeliness and accuracy of information filed with the U.S. Securities and Exchange Commission (the "SEC") by third parties.

In addition, such statements are subject to the risks and uncertainties discussed in the "Risk Factors" section and elsewhere in this document. Such statements speak only as of the date on which they are made, and, except as required by law, we undertake no obligation to update any forward-looking statement to reflect events or circumstances after the date on which the statement is made or to reflect the occurrence of unanticipated events. New factors emerge from time to time, and it is not possible for us to predict which factors will arise. In addition, we cannot assess the impact of each factor on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements.

When used in this report, unless otherwise indicated, “Cytokinetics,” “the Company,” “we,” “our” and “us” refers to Cytokinetics, Incorporated. CYTOKINETICS, and our logo used alone and with the mark CYTOKINETICS, are registered service marks and trademarks of Cytokinetics. Other service marks, trademarks and trade names referred to in this report are the property of their respective owners.

**Overview**

We were incorporated in Delaware in August 1997 as Cytokinetics, Incorporated. We are a late-stage biopharmaceutical company focused on the discovery and developments of first-in-class muscle activators as potential treatment for debilitating diseases in which muscle performance is compromised and/or declining. Our research and development activities relating to the biology of muscle function have evolved from our knowledge and expertise regarding the cytoskeleton, a complex biological infrastructure that plays a fundamental role within every human cell. Our most advanced research and development programs relate to the biology of muscle function and are directed to small molecule modulators of the contractility of skeletal or cardiac muscle. We are also conducting earlier-stage research directed to other compounds with the potential to modulate muscle contractility and other muscle functions.

Our drug candidates currently in clinical development are tirasemtiv, CK-2127107, and omecamtiv mecarbil. Tirasemtiv is being evaluated for the potential treatment of ALS. CK-2127107 is being evaluated for the potential treatment of spinal muscle atrophy (“SMA”) and chronic obstructive pulmonary disease (“COPD”) and for the potential use in other indications associated with muscle weakness (including frailty and ALS) under a strategic alliance with Astellas established in 2013 and expanded in 2014 and 2016. Omecamtiv mecarbil is being evaluated for the potential treatment of heart failure under a strategic alliance with Amgen established in 2006.

***Skeletal Muscle Contractility Program***

*Overview*

Tirasemtiv, a fast skeletal muscle troponin activator (“FSTA”), is the lead drug candidate from our skeletal muscle contractility program and has been granted orphan drug designation and fast track status by the FDA and orphan medicinal product designation by the European Medicines Agency, in each case for the potential treatment of ALS. We are conducting a Phase 3 development program for tirasemtiv for ALS and are preparing for the potential commercialization of tirasemtiv in North America and Europe.

We retain exclusive rights to tirasemtiv, subject to Astellas’ option for a global collaboration for the development and commercialization of tirasemtiv (the “Option on Tirasemtiv”) described below. In collaboration with Astellas, we are also developing CK-2127107, a next-generation FSTA, for potential indications associated with muscle weakness, including SMA, COPD, frailty, and ALS.

Tirasemtiv and CK-2127107 are structurally distinct and selective small molecules that activate the fast skeletal muscle troponin complex in the sarcomere by increasing its sensitivity to calcium, leading to an increase in skeletal muscle contractility. Both have demonstrated pharmacological activity in preclinical models and evidence of potentially clinically relevant pharmacodynamic effects in humans. We are evaluating other potential indications for which tirasemtiv and CK-2127107 may be useful.

*Astellas’ Option on Tirasemtiv.*

In 2016, we and Astellas expanded our collaboration in skeletal muscle activators to include ALS (the “2016 Astellas Amendment”). Under the 2016 Astellas Amendment, we granted Astellas the Option on Tirasemtiv. Prior to Astellas’ exercise of the Option on Tirasemtiv, we will continue the development of tirasemtiv, including VITALITY-ALS (**V**entilatory **I**nvestigation of **T**irasemtiv and **A**ssessment of **L**ongitudinal **I**ndices after **T**reatment for a **Y**ear in **ALS)**, at our own expense to support regulatory approval in the U.S., EU and certain other jurisdictions and will retain the final decision making authority on the development of tirasemtiv. If Astellas exercises the Option on Tirasemtiv, we will grant Astellas an exclusive license to develop and commercialize tirasemtiv outside our own commercialization territory of North America, Europe and other select countries under a license and collaboration agreement for tirasemtiv (the “License on Tirasemtiv”); each party would be primarily responsible for the further development of tirasemtiv in its territory and have the exclusive right to commercialize tirasemtiv in its territory.

Should Astellas exercise this option, we will receive an option exercise payment ranging from $25.0 million (if exercise occurs following receipt of data from VITALITY-ALS) to $80.0 million (if exercise occurs following receipt of FDA approval) and a milestone payment of $30.0 million from Astellas associated with the Company's initiation of the open-label extension trial for tirasemtiv. If Astellas exercises the option after the defined review period following receipt of data from VITALITY-ALS, Astellas will at the time of option exercise reimburse us for a share of any additional costs incurred after such review period. In addition, the parties will share the future development costs of tirasemtiv in North America, Europe and certain other countries (with Cytokinetics bearing 75% of such shared costs and Astellas bearing 25% of such costs), and Astellas will be solely responsible for the development costs of tirasemtiv specific to its commercialization territory.

Contingent upon the successful development of tirasemtiv, we may receive from Astellas milestone payments up to $100.0 million for the initial indication and up to $50.0 million for each subsequent indication. If tirasemtiv is commercialized, Astellas will pay us royalties (at rates ranging from the mid-teens to twenty percent) on sales of tirasemtiv in Astellas' territory, and we will pay Astellas royalties (at rates up to the mid-teens) on sales of tirasemtiv in our territory, in each case subject to various possible adjustments.

*Tirasemtiv: Clinical Development*

VITALITY-ALS: VITALITY-ALS is a multi-national, randomized, double-blind, placebo-controlled trial that was originally designed to enroll 445 patients with possible, probable or definite ALS diagnosed within 24 months, and with a baseline vital capacity > 70 % of predicted, based on age, sex, and height. Patients were eligible whether or not they were on riluzole therapy. The primary endpoint of the trial will assess change from baseline in slow vital capacity ("SVC"), a measure of the strength of the skeletal muscles responsible for breathing, to be assessed after 24 weeks of double-blind, placebo-controlled treatment. Secondary endpoints include time to decline from baseline in percent predicted SVC by ≥ 20 percentage points or the onset of respiratory insufficiency or death; time to decline from baseline in percent predicted SVC to ≤ 50 percent predicted or the onset of respiratory insufficiency or death; time to first occurrence of any use of assisted ventilation or death; time to decline in any of the three respiratory domains of the ALSFRS-R or death; and change in the Mega-Score of muscle strength.

Patients enrolled in VITALITY-ALS received two-weeks of open-label treatment with tirasemtiv administered at 250 mg/day and were randomized to double-blind treatment with placebo or one of three target tirasemtiv dose levels (250 mg/day, 375 mg/day, 500 mg/day) in a 3:2:2:2 ratio for a total of 48 weeks of randomized, double-blind, placebo-controlled treatment. Then in a four-week double-blind, tirasemtiv withdrawal phase, patients on tirasemtiv are randomized either to continue the double-blind tirasemtiv dose they were receiving or to be withdrawn to placebo in a 1:1 ratio. Patients who had been receiving placebo during the 48 weeks of double-blind, placebo-controlled treatment will continue to receive placebo. VITALITY-ALS is being conducted in 81 centers in 11 countries in North America and Europe and includes most of the sites which participated in our Phase 2b clinical trial of tirasemtiv, BENEFIT-ALS (**B**linded **E**valuation of **N**euromuscular **E**ffects and **F**unctional **I**mprovement with **T**irasemtiv in **ALS**).

In January 2016, we amended the protocol of VITALITY-ALS to increase enrollment from approximately 445 patients to approximately 600 patients. Increasing the number of patients enrolled increases the statistical power to detect a difference in the primary efficacy endpoint (change from baseline in SVC at 24 weeks) between tirasemtiv and placebo.

In August 2016, we announced the completion of patient enrollment in VITALITY-ALS.

In March 2017, we convened the third Data Monitoring Committee Meeting for VITALITY-ALS to review unblinded safety and efficacy data; the Committee recommended continuing the trial without modification.

In June 2017, we amended the protocol and the statistical analysis plan for VITALITY-ALS. In consideration of feedback we received on the clinical meaningfulness of the different secondary endpoints and a review of the blinded aggregate event rates, we prioritized the analyses of two of the pre-specified secondary endpoints – change in baseline in any of the three respiratory domains of the ALSFRS-R or death and slope of the change from baseline in muscle strength – both evaluated over the entire 48 weeks of double- blind placebo- controlled treatment. We believe that both of these endpoints are viewed as especially clinically meaningful by ALS clinicians, regulatory authorities and payers. We wanted to ensure that both endpoints would be formally analyzed and elevated in the statistical hierarchy of pre-specified secondary endpoints.

We have a $1.5 million grant from The ALS Association (the "ALSA Grant") to support the conduct of VITALITY-ALS as well as the collection of clinical data and plasma samples from patients in VITALITY-ALS in order to help advance the discovery of potentially useful biomarkers in ALS. The grant provides funding for collaboration among Cytokinetics, The ALS Association and the Barrow Neurological Institute to enable plasma samples collected from patients enrolled in VITALITY-ALS to be added to The Northeastern ALS Consortium (NEALS) Repository, a resource for the academic research community to identify biomarkers that may help to assess disease progression and underlying disease mechanisms in ALS. To date, Cytokinetics has achieved two milestones

under the ALSA Grant receiving $0.8 million in accordance with the ALSA Grant. As of June 30, 2017, we recorded $0.3 million as grant revenue as qualified expenses were incurred and approved by management.

In March 2017, in collaboration with Origent Data Sciences, Inc. we announced the advancement of our research collaboration to prospectively validate Origent's computer model to predict the course of ALS disease progression using data from VITALITY-ALS. This collaboration, funded by a grant from The ALS Association to Origent, is designed to enable the first prospective validation of their predictive model in a clinical trial for ALS.

VIGOR-ALS: In October 2016, we initiated VIGOR-ALS (**V**entilatory **I**nvestigations in **G**lobal **O**pen-Label **R**esearch in **ALS**), an open-label extension clinical trial designed to assess the long-term safety and tolerability of tirasemtiv in patients with ALS who have completed their participation in VITALITY-ALS. VIGOR-ALS will provide supplemental data on the effects of the long-term use of tirasemtiv.

The clinical trials program for tirasemtiv may proceed for several years, and we will not be in a position to generate any revenues or material net cash flows from sales of this drug candidate until the program is successfully completed, regulatory approval is achieved, and the drug is commercialized. We cannot yet predict if or when this may occur. Our expenditures are expected to increase as we continue to progress tirasemtiv towards potential registration and commercialization.

*CK-2127107 and Other Skeletal Muscle Activators*

*Astellas Strategic Alliance.*

CK-2127107, a next-generation FSTA, has been granted orphan drug designation for the potential treatment of SMA by the FDA and is being developed jointly by Cytokinetics and Astellas under the Amended and Restated License and Collaboration Agreement dated December 22, 2014, as further amended in 2016 and 2017 (the "Astellas Agreement"). In 2013, we formed a collaboration with Astellas with the primary objective of advancing novel therapies for diseases and medical conditions associated with muscle impairment and weakness. Under the collaboration, we exclusively licensed to Astellas rights to co-develop and potentially co-commercialize CK-2127107 in non-neuromuscular indications. In 2014, we and Astellas agreed to expand the collaboration to include certain neuromuscular indications, including SMA, and to advance CK-2127107 into Phase 2 clinical development, initially in SMA. Under the 2016 Astellas Amendment, Cytokinetics and Astellas further amended the collaboration agreement to expand our collaboration to include the development of CK-2127107 for the potential treatment of ALS, as well as the possible development in ALS of other fast skeletal regulatory activators previously licensed by us to Astellas. The 2016 Astellas Amendment also extended the existing joint research program focused on the discovery of additional next-generation skeletal muscle activators through 2017 and included sponsored research at Cytokinetics. Cytokinetics retains an option to conduct early-stage development for certain agreed indications at its initial expense, subject to reimbursement if development continues under the collaboration. Cytokinetics also retains an option to co-promote collaboration products containing FSTAs for neuromuscular indications in the U.S., Canada and Europe, in addition to its option to co-promote other collaboration products in the U.S. and Canada. Astellas will reimburse Cytokinetics for certain expenses associated with its co-promotion activities.

Based on the achievement of pre-specified criteria, Cytokinetics may receive over $600.0 million in milestone payments relating to the development and commercial launch of collaboration products, including up to $112.0 million (of which Cytokinetics has now received $17.0 million) relating to early development of CK-2127107 and for later-stage development and commercial launch milestones for CK-2127107 in non-neuromuscular indications, and over $100.0 million in development and commercial launch milestones for CK-2127107 in each of SMA and other neuromuscular indications. Cytokinetics may also receive up to $200.0 million in payments for achievement of pre-specified sales milestones related to net sales of all collaboration products under the Astellas Agreement. If Astellas commercializes any collaboration products, we will also receive royalties on sales of such collaboration products, including royalties ranging from the high single digits to the high teens on sales of products containing CK-2127107. We can co-fund certain development costs for CK-2127107 and other compounds in exchange for increased milestone payments and royalties; such royalties may increase under certain scenarios to exceed twenty percent. In addition to the foregoing development, commercial launch and sales milestones, Cytokinetics may also receive payments for the achievement of pre-specified milestones relating to the joint research program.

*CK-2127107: Clinical Development*

SMA Clinical Development: Cytokinetics in collaboration with Astellas is conducting a Phase 2 clinical development program. Cytokinetics started a Phase 2 clinical trial of CK-2127107 in patients with SMA in December 2015. The clinical trial is designed to assess effects of CK-2127107 on multiple measures of muscle function in both ambulatory and non-ambulatory patients with SMA, a

severe, genetic neuromuscular disease that leads to debilitating muscle wasting and weakness. The primary objective of this double-blind, randomized, placebo-controlled clinical trial is to determine the potential pharmacodynamic effects of a suspension formulation of CK-2127107 following multiple oral doses in patients with Type II, Type III, or Type IV SMA. Secondary objectives are to evaluate the safety, tolerability and pharmacokinetics of CK-2127107. The trial will enroll seventy-two patients in two sequential, ascending dose cohorts (two cohorts of 36 patients each, stratified approximately half ambulatory and half non-ambulatory).

The first cohort of patients received 150 mg of CK-2127107 dosed twice daily for eight weeks; the second cohort of patients is receiving 450 mg of CK-2127107 dosed twice daily. At the conclusion of the trial, approximately 24 patients will have been randomized to placebo, approximately 24 patients to 150 mg of CK-2127107 twice daily and approximately 24 patients to 450 mg of CK-2127107 twice daily. In each of these three treatment groups of approximately 24 patients each, roughly half will be ambulatory and half will be non-ambulatory. Multiple assessments of skeletal muscle function and fatigability will be performed including respiratory assessments, upper limb strength and functionality for non-ambulatory patients, as well as six-minute walk and timed-up-and-go for ambulatory patients.

In March 2017, we announced that we completed enrollment of Cohort 1 and the second cohort of the Phase 2 clinical trial was open to enrollment. We anticipate that the trial will complete enrollment in 2017 and report data in Q1 2018.

COPD Clinical Development: In June 2016, Astellas, in collaboration with Cytokinetics, started a Phase 2 clinical trial of CK-2127107 in patients with COPD. Astellas is conducting this randomized, double-blind, placebo controlled two period crossover clinical trial designed to assess the effect of CK-2127107 on physical function in patients with COPD. The trial is expected to enroll approximately 40 patients in the United States and is designed to assess the effect of CK-2127107 compared to placebo on exercise tolerance. Additionally, the trial will assess the cardiopulmonary and neuromuscular effect of CK-2127107 relative to placebo and the effect of CK-2127107 on resting spirometry relative to placebo. The safety, tolerability and pharmacokinetics of CK-2127107 also will be assessed. We expect Astellas to continue enrollment in this Phase 2 clinical trial of CK-2127107 in patients with COPD in 2017.

Frailty Clinical Development: In June 2017, Astellas, in collaboration with Cytokinetics, started a Phase 1b clinical trial of CK-2127107 in elderly subjects with limited mobility. The clinical trial is expected to enroll at least 60 subjects in the United States who are 70 to 89 years of age with limited mobility. Patients will be randomized to one of two treatment sequences in a 1:1 ratio to receive both CK-2127107 and placebo over two 14-day treatment periods, separated by a 14-day washout period. During treatment periods, patients will receive 500 mg of CK-2127107 or placebo twice daily, except on days 1 and 14, when they receive 500 mg of CK-2127107 once daily. The total study duration including the screening period and follow-up visit will be approximately 12 weeks. The trial is designed to assess the effect of CK-2127107 on skeletal muscle fatigue assessed as change from baseline versus 14 days of treatment in sum of peak torque during isokinetic knee extensions. Additionally, the trial will assess the effects of CK-2127107 on physical performance via a short physical performance battery, stair-climb test and 6-minute walk test. In addition, the safety, tolerability and pharmacokinetics of CK-2127107 will be assessed.

ALS Clinical Development: In July 2017, in collaboration with Astellas, we started FORTITUDE-ALS (**F**unctional **O**utcomes in a **R**andomized **T**rial of **I**nvestigational **T**reatment with CK-2127107 to **U**nderstand **D**ecline in **E**ndpoints – in **ALS**), a Phase 2 clinical trial of CK-2127107 in patients with ALS. Approximately 450 eligible ALS patients from centers in the U.S. and Canada will be randomized (1:1:1:1) to receive either 150 mg, 300 mg or 450 mg of CK-2127107 dosed orally twice daily or placebo for 12 weeks. The primary efficacy endpoint is the change from baseline in the percent predicted SVC at 12 weeks. Secondary endpoints include slope of the change from baseline in the mega-score of muscle strength measured by hand held dynamometry (HHD) and handgrip dynamometry in patients on CK-2127107; change from baseline in the ALS Functional Rating Scale – Revised (ALSFRS-R); incidence and severity of treatment-emergent adverse events (TEAEs); and plasma concentrations of CK-2127107 at the sampled time points during the study. Exploratory endpoints will be measured including the effect of CK-2127107 versus placebo on self-assessments of respiratory function made at home by the patient with help as needed by the caregiver; disease progression through quantitative measurement of speech production characteristics over time; disease progression through quantitative measurement of handwriting abilities over time; and change from baseline in quality of life (as measured by the ALSAQ-5) in patients on CK-2127107.

The clinical trials programs for CK-2127107 may proceed for several years, and we will not be in a position to generate any revenues or material net cash flows from sales of this drug candidate until the program is successfully completed, regulatory approval is achieved, and the drug is commercialized. CK-2127107 is at too early a stage of development for us to predict if or when this may occur. Our expenditures will increase if Astellas terminates development of CK-2127107 or related compounds and we elect to develop them independently, or if we conduct early-stage development for certain agreed indications at our initial expense, subject to reimbursement if development continues under the collaboration.

*Ongoing Research in Skeletal Muscle Activators*

Our research on the direct activation of skeletal muscle continues in two areas. We are conducting translational research in preclinical models of disease and muscle function with fast skeletal muscle troponin activators to explore the potential clinical applications of this novel mechanism in diseases or conditions associated with skeletal muscle dysfunction. We also intend to conduct preclinical research on other chemically and pharmacologically distinct mechanisms to activate the skeletal sarcomere.

We are conducting a joint research program with Astellas directed to the discovery of next-generation skeletal muscle activators. Under the 2016 Astellas Amendment, the joint research program will continue through 2017 and Astellas will reimburse us for certain research activities we perform.

***Cardiac Muscle Contractility Program***

*Overview*

Our lead drug candidate from our cardiac contractility program is omecamtiv mecarbil, a novel cardiac muscle myosin activator. We expect omecamtiv mecarbil to be developed as a potential treatment across the continuum of care in heart failure both for use in the hospital setting and for use in the outpatient setting. Omecamtiv mecarbil is the subject of a Phase 3 development program under our strategic alliance with Amgen Inc. (“Amgen”).

*Amgen Strategic Alliance*

We have a collaboration and option agreement, as amended, with Amgen to discover, develop, and commercialize novel small molecule therapeutics designed to activate cardiac muscle, including omecamtiv mecarbil, for the potential treatment of heart failure (the “Amgen Agreement”). Under the Amgen Agreement, Amgen has exclusive, worldwide rights to develop and commercialize omecamtiv mecarbil and related compounds subject to our specified development and commercial participation rights. Amgen has also entered an alliance with Servier for exclusive commercialization rights in Europe as well as the Commonwealth of Independent States, including Russia. Servier contributes funding for development and provides strategic support to the program.

Under the Amgen Agreement we are eligible for potential additional pre-commercialization and commercialization milestone payments of over $600.0 million in the aggregate on omecamtiv mecarbil and other potential products arising from research under the collaboration, and royalties that escalate based on increasing levels of annual net sales of products commercialized under the agreement. The Amgen Agreement also provides for us to receive increased royalties by co-funding the Phase 3 development costs of omecamtiv mecarbil and other drug candidates under the collaboration.

In December 2016, we provided notice of our exercise of our option under the Amgen Agreement to co-invest in the Phase 3 development program of omecamtiv mecarbil at the level of $10.0 million in exchange for an incremental royalty from Amgen of up to 1% on increasing worldwide sales of omecamtiv mecarbil outside Japan. In February 2017, we provided notice to Amgen of our further exercise of our co-invest option in the additional amount of $30.0 million (i.e. to fully co-invest $40.0 million) in the Phase 3 development program of omecamtiv mecarbil. By exercising our option and fully co-funding $40.0 million, we will be eligible to receive a total incremental royalty of up to 4% on increasing worldwide sales of omecamtiv mecarbil outside of Japan and have the right to co-promote omecamtiv mecarbil in institutional care settings in North America, with reimbursement by Amgen for certain sales force activities. A joint commercial operating team comprising representatives of Cytokinetics and Amgen will then be responsible for the commercialization program of omecamtiv mecarbil.

*Omecamtiv Mecarbil: Clinical Development*

GALACTIC-HF. GALACTIC-HF (**G**lobal **A**pproach to **L**owering **A**dverse **C**ardiac **O**utcomes **T**hrough **I**mproving **C**ontractility in **H**eart **F**ailure) is a Phase 3 cardiovascular outcomes clinical trial of omecamtiv mecarbil which is being conducted by Amgen, in collaboration with Cytokinetics. The primary objective of this double-blind, randomized, placebo-controlled multicenter clinical trial is to determine if treatment with omecamtiv mecarbil when added to the current standard of care is superior to standard of care plus placebo in reducing the risk of cardiovascular death or heart failure events in patients with high risk chronic heart failure and reduced ejection fraction. GALACTIC-HF is being conducted under a Special Protocol Assessment (“SPA”) with the U.S. FDA. GALACTIC-HF is planned to enroll approximately 8,000 symptomatic chronic heart failure patients in over 800 sites in 34 countries who are either currently hospitalized for a primary reason of heart failure or have had a hospitalization or admission to an emergency room for heart failure within one year prior to screening. In order to be eligible to participate in GALACTIC-HF patients should have an LVEF ≤ 35%, be NYHA class II to IV, and have an elevated BNP or NT-proBNP. Patients will be randomized to either placebo or omecamtiv mecarbil with dose titration up to a maximum dose of 50 mg twice daily based on the plasma concentration of omecamtiv mecarbil after initiation of drug therapy. The primary endpoint is a composite of time to cardiovascular death or first heart failure

event, which is defined as either a hospitalization for heart failure or other urgent treatment for worsening heart failure. Secondary endpoints include time to cardiovascular death; patient reported outcomes as measured by the Kansas City Cardiomyopathy Questionnaire Total Symptom Score; time to first heart failure hospitalization; and all-cause death.

Cytokinetics and Amgen are also planning a potential exercise performance/cardiac function clinical trial to be conducted by Cytokinetics. Amgen will be responsible for reimbursing us for the out-of-pocket development costs associated with this clinical trial.

In April 2016, we announced the start of a Phase 2 clinical trial of omecamtiv mecarbil in Japanese subjects with chronic heart failure and reduced ejection fraction. In August 2017, we announced that this trial met its pharmacokinetic primary endpoint and demonstrated statistically significant improvements in systolic ejection time, a secondary endpoint. We are eligible to earn a $10 million milestone payment from Amgen upon the first dosing of a patient in Japan in GALACTIC-HF.

*Presentations and Publications*

In May 2017, we announced that results from the dose escalation phase of COSMIC-HF (**C**hronic **O**ral **S**tudy of **M**yosin **A**ctivation to **I**ncrease **C**ontractility in **H**eart **F**ailure), our Phase 2 clinical trial of omecamtiv mecarbil, were presented in a Poster Session at the Rapid Fire Abstract Presentation at Heart Failure 2017, the annual congress of the Heart Failure Association of the European Society of Cardiology.

*Ongoing Research in Cardiac Muscle Contractility.*

We continued our joint research program with Amgen directed to next-generation compounds in our cardiac muscle contractility program in 2016. We expect to continue our joint research program with Amgen in 2017. Under the Amgen Agreement, Amgen reimburses us for certain research activities we perform.

**Beyond Muscle Contractility**

We have developed preclinical expertise in the mechanics of skeletal, cardiac and smooth muscle that extends from proteins to tissues to intact animal models. Our translational research in muscle contractility has enabled us to better understand the potential impact of small molecule compounds that increase skeletal or cardiac muscle contractility and to apply those findings to the further evaluation of our drug candidates in clinical populations. In addition to contractility, other major functions of muscle play a role in certain diseases that could benefit from novel mechanism treatments. Accordingly, our knowledge of muscle contractility may serve as an entry point to the discovery of novel treatments for disorders involving muscle functions other than muscle contractility. We are leveraging our current understandings of muscle biology to investigate new ways of modulating these other aspects of muscle function for other potential therapeutic applications.

**Development Risks**

The successful development of any of our drug candidates is highly uncertain. We cannot estimate with certainty or know the exact nature, timing and costs of the activities necessary to complete the development of any of our drug candidates or the date of completion of these development activities due to numerous risks and uncertainties, including, but not limited to:

- the results of clinical trials of our drug candidates conducted by us or our partners may not support the further clinical development of those drug candidates;
- further clinical development of tirasemtiv for the potential treatment of ALS will require significant additional funding and we may be unable to obtain such additional funding on acceptable terms, if at all;
- the FDA and/or other regulatory authorities may not accept effects on respiratory function, including SVC, as appropriate clinical trial endpoints to support the registration of tirasemtiv for the treatment of ALS;
- the FDA and/or other regulatory authorities may not accept the data from the clinical trials of tirasemtiv as sufficient to determine the safest and most effective dose of tirasemtiv for the treatment of ALS;
- decisions made by Amgen with respect to the development of omecamtiv mecarbil and by Astellas with respect to the development of CK-2127107;
- the uncertainty of the timing of the initiation and completion of patient enrollment and treatment in our or our partners' clinical trials;

- the possibility of delays in the collection of clinical trial data and the uncertainty of the timing of the analyses of our clinical trial data after these trials have been initiated and completed;
- our potential inability to obtain additional funding and resources for our development activities on acceptable terms, if at all, including, but not limited to, our potential inability to obtain or retain partners to assist in the design, management, conduct and funding of clinical trials;
- failure by our clinical trial sites, clinical research organizations, clinical manufacturing organizations, and other third parties supporting our or our partners' clinical trials to fulfill their obligations or otherwise perform as expected;
- delays or additional costs in manufacturing of our drug candidates for clinical trial use, including developing appropriate formulations of our drug candidates;
- the uncertainty of clinical trial results, including variability in patient response;
- the uncertainty of obtaining FDA or other foreign regulatory agency approval required for the clinical investigation of our drug candidates;
- the uncertainty related to the development of commercial scale manufacturing processes and qualification of a commercial scale manufacturing facility;
- the possibility that results from non-clinical studies may adversely impact the timing or further development of our drug candidates; and
- possible delays in the characterization, formulation and manufacture, packaging, labeling and distribution of drug candidates and other compounds.

If we fail to complete the development of any of our drug candidates in a timely manner, it could have a material adverse effect on our operations, financial position and liquidity. In addition, any failure by us or our partners to obtain, or any delay in obtaining, regulatory approvals for our drug candidates could have a material adverse effect on our results of operations. A further discussion of the risks and uncertainties associated with completing our programs as planned, or at all, and certain consequences of failing to do so are discussed further in the risk factors entitled "We will need substantial additional capital in the future to sufficiently fund our operations," "We have never generated, and may never generate, revenues from commercial sales of our drugs and we may not have drugs to market for at least several years, if ever," "Clinical trials may fail to demonstrate the desired safety and efficacy of our drug candidates, which could prevent or significantly delay completion of clinical development and regulatory approval" and "Clinical trials are expensive, time-consuming and subject to delay," and other risk factors.

**Results of Operations**

***Revenues***

Total revenues for the three and six months ended June, 2017 and 2016, respectively, were as follows (in thousands):

| | Three Months Ended | | | Six Months Ended | | |
|---|---|---|---|---|---|---|
| | June 30, 2017 | June 30, 2016 | Increase (Decrease) | June 30, 2017 | June 30, 2016 | Increase (Decrease) |
| Research and development, grant and other revenues, net | $ (1,889) | $ 3,852 | $ (5,741) | $ 818 | $ 8,299 | $ (7,481) |
| License revenues from related parties | 4,942 | 1,950 | 2,992 | 6,388 | 5,923 | 465 |
| Total revenues | $ 3,053 | $ 5,802 | $ (2,749) | $ 7,206 | $ 14,222 | $ (7,016) |

Revenues for the three and six months ended June 30, 2017 were $3.1 million and $7.2 million, respectively, compared to $5.8 million and $14.2 million for the corresponding periods in 2016. Revenues for the first six months of 2017 included $6.7 million of research and development revenues and $6.4 million of license revenues from our collaboration with Astellas, and $1.3 million of research and development revenues from our collaboration with Amgen. Revenues for the first six months of 2017 were offset by $7.5 million (out of the total of $40 million) for payments to Amgen related to our option to co-fund the Phase 3 development program of omecamtiv mecarbil in exchange for an increased royalty upon potential commercialization. By exercising our option and fully co-funding $40.0 million, we become eligible to receive a total incremental royalty of up to 4% on increasing worldwide sales of omecamtiv mecarbil outside of Japan and have the right to co-promote omecamtiv mecarbil in institutional care settings in North America, with reimbursement by Amgen for certain sales force activities.

***Research and Development Expenses***

Research and development expenses for the three and six months ended June 30, 2017 and 2016, respectively, were as follows (in thousands):

| | Three Months Ended | | | Six Months Ended | | |
|---|---|---|---|---|---|---|
| | June 30, 2017 | June 30, 2016 | Increase | June 30, 2017 | June 30, 2016 | Increase |
| Research and development expenses | $ 19,809 | $ 9,723 | $ 10,086 | $ 39,098 | $ 23,256 | $ 15,842 |

Research and development expenses for the three and six months ended June 30, 2017 increased to $19.8 million and $39.1 million, respectively, from $9.7 million and $23.3 million for the same periods in 2016, primarily due to increased clinical activity, including activity for VITALITY-ALS and other activities intended to support potential regulatory filings and registration of tirasemtiv in North America and Europe, as well as increased personnel.

| | Three Months Ended | | | Six Months Ended | | |
|---|---|---|---|---|---|---|
| | June 30, 2017 | June 30, 2016 | Increase | June 30, 2017 | June 30, 2016 | Increase |
| Cardiac muscle contractility | $ 2,442 | $ 2,361 | $ 81 | $ 4,715 | $ 4,103 | $ 612 |
| Skeletal muscle contractility | 16,177 | 6,578 | 9,599 | 32,444 | 17,616 | 14,828 |
| All other research programs | 1,190 | 784 | 406 | 1,939 | 1,537 | 402 |
| Total research and development expenses | $ 19,809 | $ 9,723 | $ 10,086 | $ 39,098 | $ 23,256 | $ 15,842 |

From a program perspective, the increase in research and development expenses for the three and six months ended June 30, 2017, compared to the same periods in 2016 was primarily due to increased activity for our skeletal muscle contractility program.

Clinical development timelines, the likelihood of success and total completion costs vary significantly for each drug candidate and are difficult to estimate. We anticipate that we will determine on an ongoing basis which research and development programs to pursue and how much funding to direct to each program, taking into account the scientific and clinical success of each drug candidate. The lengthy process of seeking regulatory approvals and subsequent compliance with applicable regulations requires the expenditure of substantial resources. Any failure by us to obtain and maintain, or any delay in obtaining, regulatory approvals could cause our research and development expenditures to increase and, in turn, could have a material adverse effect on our results of operations.

We expect our research and development expenditures to increase significantly in 2017 compared to 2016. We expect to continue the Phase 3 clinical development of our drug candidate tirasemtiv for the potential treatment of ALS. Under our strategic alliance with Astellas, we expect to continue development of our drug candidate CK-2127107 for the potential treatment of SMA and potentially other diseases and medical conditions associated with muscle weakness or wasting. Under our strategic alliance with Amgen, we expect to continue the Phase 3 development of our drug candidate omecamtiv mecarbil for the potential treatment of heart failure.

***General and Administrative Expenses***

General and administrative expenses for the three and six months ended June 30, 2017 and 2016, respectively, were as follows (in thousands):

| | Three Months Ended | | | Six Months Ended | | |
|---|---|---|---|---|---|---|
| | June 30, 2017 | June 30, 2016 | Increase | June 30, 2017 | June 30, 2016 | Increase |
| General and Administrative expenses | $ 8,438 | $ 7,090 | $ 1,348 | $ 16,553 | $ 13,931 | $ 2,622 |

General and administrative expenses for the three and six months ended June 30, 2017 increased to $8.4 million and $16.6 million from $7.1 million and $13.9 million for the same periods in 2016 primarily due to increased personnel, non-cash stock compensation expense and increased commercial readiness activities. We expect that general and administrative expenses in 2017 will increase significantly compared to 2016, mainly due to increased headcount.

***Interest Expense***

Interest expenses for the three and six months ended June 30, 2017 and 2016, respectively, were as follows (in thousands):

| | Three Months Ended | | | Six Months Ended | | |
|---|---|---|---|---|---|---|
| | June 30, 2017 | June 30, 2016 | Increase | June 30, 2017 | June 30, 2016 | Increase |
| Interest expense | $ 782 | $ 707 | $ 75 | $ 1,540 | $ 1,271 | $ 269 |
| Non-cash interest expense on liability related to sale of future royalties | $ 3,717 | $ - | $ 3,717 | $ 6,012 | $ - | $ 6,012 |

Interest expense for the three and six months ended June 30, 2017 primarily consisted interest expense related to the loan and security agreement with Oxford Finance LLC and Silicon Valley Bank entered into in October 2015.

We also have non-cash interest expense related to sale of future royalties of $3.7 million and $6.0 million for the three and six months ended June 30, 2017, respectively. We anticipate that non-cash interest expenses in 2017 will increase significantly compared to 2016 mainly due to accretion expense related to the liability related to the sale of future royalties.

**Critical Accounting Policies**

The accounting policies that we consider to be our most critical (i.e., those that are most important to the portrayal of our financial condition and results of operations and that require our most difficult, subjective or complex judgments), the effects of those accounting policies applied and the judgments made in their application are summarized in "*Item 7 — Management's Discussion and Analysis of Financial Condition and Results of Operations — Critical Accounting Policies and Estimates*" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2016. See Note 1 in the Notes to Unaudited Condensed Consolidated Financial Statements for changes to our critical accounting policies since then.

**Recent Accounting Pronouncements**

See Note 1, "Recent Accounting Pronouncements" in the Notes to Unaudited Condensed Consolidated Financial Statements for a discussion of recently adopted accounting pronouncements and accounting pronouncements not yet adopted, and their expected impact on our financial position and results of operations.

**Liquidity and Capital Resources**

Our cash, cash equivalents and marketable securities and a summary of our borrowings and working capital is summarized as follows:

| | As of June 30, | | Increase (Decrease) |
|---|---|---|---|
| | 2017 | 2016 | 2017 |
| Financial assets: | | | |
| Cash and cash equivalents | $ 100,711 | $ 27,724 | $ 72,987 |
| Short-term investments | 211,340 | 62,614 | 148,726 |
| Long-term investments | 20,087 | 7,684 | 12,403 |
| Total cash, cash equivalents and marketable securities | $ 332,138 | $ 98,022 | $ 234,116 |
| Borrowings: | | | |
| Current portions of long-term debt | $ 7,315 | — | $ 7,315 |
| Long-term debt | 22,844 | 29,604 | (6,760) |
| Total borrowings | $ 30,159 | $ 29,604 | $ 555 |
| Liability related to the sale of future royalties, net | $ 96,657 | $ - | $ 96,657 |
| Working capital: | | | |
| Current assets | $ 316,996 | $ 96,618 | $ 220,378 |
| Current liabilities | 31,059 | 26,272 | 4,787 |
| Total working capital | $ 285,937 | $ 70,346 | $ 215,591 |

*Sources and Uses of Cash*

From inception, we funded our operations through the sale of equity securities, non-equity payments from collaborators, a royalty monetization agreement, long term debt, capital equipment financings, grants and interest income. We have generated significant operating losses since our inception. Our expenditures are primarily related to research and development activities. Based on current plans, we believe that our existing cash, cash equivalents and investments will be sufficient to fund our cash requirements for at least the next 24 months.

During the second quarter of 2017, the Company completed a secondary offering of its common stock and issued 6,049,000 shares for net proceeds of $82.8 million, before expenses.

In February 2017, we entered into a Royalty Purchase Agreement ("Royalty Agreement") with RPI Finance Trust ("RPI"), an entity related to Royalty Pharma. Under the Royalty Agreement, we sold a portion of our right to receive royalties on future net sales of omecamtiv mecarbil (and potentially other compounds with the same mechanism of action) under the Amgen Agreement to RPI for a payment of $90.0 million. In addition, RPI purchased $10.0 million of our common stock pursuant to a concurrently executed Common Stock Purchase Agreement with RPI. See Note 9, "Liability related to sale of future royalties", for further details.

Net cash used in operating activities was $52.2 million in the six months ended June 30, 2017 and was largely due to ongoing research and development activities and general and administrative spend to support those activities. Net loss for the six months ended June 30, 2017 included non-cash stock based compensation of $4.1 million and non-cash interest expense related to sale of future royalties of $6.0 million. Net cash used in operating activities was $28.7 million in the six months ended June 30, 2016 and was largely due to the ongoing research and development activities. The net loss for the six months ended June 30, 2016 included non-cash stock based compensation of $3.4 million.

Net cash used in investing activities of $136.2 million in the six months ended June 30, 2017 was primarily due to purchases of investments, exceeding proceeds from the maturity of investments by $134.6 million and purchases of equipment of $1.6 million. Net cash used in investing activities was $24.1 million in the first six months of 2016 was primarily due to purchases of investments, exceeding proceeds from the maturity of investments, by $23.4 million.

Net cash provided by financing activities was $222.3 million in the six months ended June 30, 2017 was primarily due to net proceeds from a secondary offering of $82.4 million, net proceeds from the liability related to sales of future royalties of $90.6 million, net proceeds pursuant to the CE Offering of $29.9 million, net proceeds issuance of common stock to RPI as part of the Royalty Monetization transaction of $7.6 million, and proceeds from common stock issuances from warrant exercises of $12.1 million. Net cash provided by financing activities was $15.5 million in the first six months of 2016 and primarily consisted of net proceeds received of $15.0 million from long-term debt.

In December 2016, we filed a registration statement on Form S-3 with the SEC, which was declared effective in January 2017 (the "January 2017 Shelf"). The January 2017 Shelf registered up to $200.0 million of our common stock and preferred stock, and/or warrants to purchase any of such securities. The specific terms any offering pursuant to the January 2017 Shelf will be established at the time of such offering. During the six months ended June 30, 2017, we used $86.2 million of the 2017 Shelf in a public offering of our common stock and as of June 30, 2017, we have $113.8 million of the 2017 Shelf available.

Our contractual obligations for the next five years and thereafter are as follows (in thousands):

| | Payments Due by Period | | | | |
|---|---|---|---|---|---|
| | Remainder of 2017 | 2018-2019 | 2020-2021 | Beyond | Total |
| Liability related to sale of future royalties (1) | $ — | $ — | $ — | $ 98,312 | $ 98,312 |
| Long-term debt (2) | $ 2,500 | $ 20,000 | $ 7,500 | $ — | $ 30,000 |
| Interest obligation on long-term debt (3) | $ 1,135 | $ 2,725 | $ 1,438 | $ — | $ 5,298 |
| Operating lease obligations (4) | $ 1,828 | $ 1,860 | $ — | $ — | $ 3,688 |
| Co-investment option (5) | $ 12,500 | $ 18,750 | $ — | $ — | $ 31,250 |
| Total obligations | $ 17,963 | $ 43,335 | $ 8,938 | $ 98,312 | $ 168,548 |

(1) Liability represents the carrying value at the latest balance sheet date of payments we would make to RPI under the Royalty Agreement, based on estimated future sales of omecamtiv mecarbil. Actual payments may be significantly higher or lower based

on actual future sales of omecamtiv mecarbil, assuming omecamtiv mecarbil is approved by Regulatory Authorities and commercialized. For further discussion regarding the liability related to the sale of future royalties, see Note 9.

(2) For further discussion regarding long-term debt, see Note 8, “Long-Term Debt” of the Notes to the Condensed Consolidated Financial Statements.

(3) Interest obligation on long-term debt has been calculated based on the interest rate applicable as of June 30, 2017.

(4) Our long-term commitment under operating lease relates to payments under our facility lease in South San Francisco, California, which expires in 2018.

(5) In February 2017, the Company provided notice to Amgen of its further exercise of its co-investment option in the additional amount of $30.0 million (i.e. to fully co-invest $40.0 million) in the Phase 3 development program of omecamtiv mecarbil under the Amgen Agreement. For further discussion regarding the co-investment option, see Note 4, “Research and Development Arrangements” of the Notes to the Condensed Consolidated Financial Statements.

In future periods, we expect to incur substantial costs as we continue to expand our research programs and related research and development and commercial readiness activities. Our future capital uses and requirements depend on numerous factors. These factors include, but are not limited to, the following:

- the initiation, progress, timing, scope and completion of preclinical research, non-clinical development, chemistry, manufacturing, and controls (CMC), and clinical trials for our drug candidates and other compounds;
- the time and costs involved in obtaining regulatory approvals;
- delays that may be caused by requirements of regulatory agencies;
- Amgen’s decisions with regard to funding of development and commercialization of omecamtiv mecarbil or other compounds for the potential treatment of heart failure under our collaboration;
- Astellas’ decisions with regard to funding of development and commercialization of CK-2127107 or other skeletal muscle activators under our collaboration;
- our level of funding for the development of current or future drug candidates;
- the number of drug candidates we pursue;
- the costs involved in filing and prosecuting patent applications and enforcing or defending patent claims;
- our ability to establish and maintain selected strategic alliances required for the development of drug candidates and commercialization of our potential drugs;
- our plans or ability to expand our drug development capabilities, including our capabilities to conduct clinical trials for our drug candidates;
- our plans or ability to engage third party manufacturers for our drug candidates and potential drugs;
- our plans or ability to build or access sales and marketing capabilities and to achieve market acceptance for potential drugs;
- the expansion and advancement of our research programs;
- the hiring of additional employees and consultants;
- the expansion of our facilities;
- the acquisition of technologies, products and other business opportunities that require financial commitments; and
- our revenues, if any, from successful development of our drug candidates and commercialization of potential drugs.

We have incurred an accumulated deficit of $573.2 million since inception and there can be no assurance that we will attain profitability. We are subject to risks common to clinical-stage companies including, but not limited to, development of new drug candidates, dependence on key personnel, and the ability to obtain additional capital as needed to fund our future plans. Our liquidity will be impaired if sufficient additional capital is not available on terms acceptable to us, if at all. To date, we have funded our operations primarily through sales of our common stock and convertible preferred stock, contract payments under our collaboration agreements, debt financing arrangements, grants and interest income. Until we achieve profitable operations, we intend to continue to fund operations through payments from various sources, including but not limited to strategic collaborations, additional sales of equity securities, grants and debt financings. Potential future sources of cash from our strategic alliances and related agreements from option and other fees, milestone payments and royalties are uncertain. We have never generated revenues from commercial sales of our drugs and may not have drugs to market for at least several years, if ever. Our success is dependent on our ability to obtain additional capital, and ultimately on our and our collaborators’ ability to successfully develop and market one or more of our drug candidates.

We cannot be certain that sufficient funds will be available from such collaborators or financings when needed or on satisfactory terms. Additionally, there can be no assurance that any of drugs based on our drug candidates will be accepted in the marketplace or that any future products can be developed or manufactured at an acceptable cost. These factors could have a material adverse effect on our future financial results, financial position and cash flows.

If, at any time, our prospects for internally financing our research and development programs decline, we may decide to reduce our spending by delaying, discontinuing or reducing our funding of development of one or more of our drug candidates or of other research and development programs. Alternatively, we might raise funds through strategic relationships, public or private financings or other arrangements. There can be no assurance that funding, if needed, will be available on attractive terms, or at all, or in accordance with our planned timelines. Furthermore, financing obtained through future strategic relationships may require us to forego certain commercialization and other rights to our drug candidates. Similarly, any additional equity financing may be dilutive to stockholders and debt financing, if available, may involve restrictive covenants. Our failure to raise capital as and when needed could have a negative impact on our financial condition and our ability to pursue our business strategy.

**Off-Balance Sheet Arrangements**

We are not party to any off-balance sheet arrangements that have, or are reasonably likely to have, a material current or future effect on our financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources.

## ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our exposure to market risk has not changed materially since our disclosures in Item 7A, “Quantitative and Qualitative Disclosures About Market Risk” in our Annual Report on Form 10-K for the year ended December 31, 2016.

## ITEM 4. CONTROLS AND PROCEDURES

(a) Evaluation of disclosure controls and procedures

Our management evaluated, with the participation and under the supervision of our Chief Executive Officer and our Chief Financial Officer, the effectiveness of our disclosure controls and procedures as of the end of the period covered by this report. Based on this evaluation, our Chief Executive Officer and our Chief Financial Officer have concluded, subject to the limitations described below, that our disclosure controls and procedures are effective to ensure that information we are required to disclose in reports that we file or submit under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the time periods specified in Securities and Exchange Commission rules and forms, and that such information is accumulated and communicated to management as appropriate to allow timely decisions regarding required disclosures.

(b) Changes in internal control over financial reporting

There was no change in our internal control over financial reporting that occurred during the period covered by this report that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

(c) Limitations on the effectiveness of controls

A control system, no matter how well-conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the controls are met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues, if any, within a company have been detected. Accordingly, our disclosure controls and procedures are designed to provide reasonable, not absolute, assurance that the objectives of our disclosure control system are met.

**PART II. OTHER INFORMATION**

**ITEM 1. LEGAL PROCEEDINGS**

None

**ITEM 1A. RISK FACTORS**

*In evaluating our business, you should carefully consider the following risks in addition to the other information in this report. Any of the following risks could materially and adversely affect our business, results of operations, financial condition or your investment in our securities, and many are beyond our control. The risks and uncertainties described below are not the only ones facing us. Additional risks and uncertainties not presently known to us, or that we currently see as immaterial, may also adversely affect our business.*

**Risks Related to Our Business**

***We have a history of significant losses and may not achieve or sustain profitability and, as a result, you may lose all or part of your investment.***

We have generally incurred operating losses in each year since our inception in 1997, due to costs incurred in connection with our research and development activities and general and administrative costs associated with our operations. Our drug candidates are all in early through late-stage clinical testing, and we and our partners must conduct significant additional clinical trials before we and our partners can seek the regulatory approvals necessary to begin commercial sales of our drugs. We expect to incur increasing losses for at least several more years, as we continue our research activities and conduct development of, and seek regulatory approvals for, our drug candidates, and commercialize any approved drugs. If our drug candidates fail or do not gain regulatory approval, or if our drugs do not achieve market acceptance, we will not be profitable. If we fail to become and remain profitable, or if we are unable to fund our continuing losses, you could lose all or part of your investment.

***We will need substantial additional capital in the future to sufficiently fund our operations.***

We have consumed substantial amounts of capital to date, and our operating expenditures will increase over the next several years if we expand our research and development activities. We have funded all of our operations and capital expenditures with proceeds from private and public sales of our equity securities, strategic alliances with Amgen, Astellas and others, long term debt, equipment financings, interest on investments, government grants and other grants. We believe that our existing cash and cash equivalents, short-term investments and interest earned on investments should be sufficient to meet our projected operating requirements for at least the next 12 months. We have based this estimate on assumptions that may prove to be wrong, and we could utilize our available capital resources sooner than we currently expect. Because of the numerous risks and uncertainties associated with the development of our drug candidates and other research and development activities, including risks and uncertainties that could impact the rate of progress of our development activities, we are unable to estimate with certainty the amounts of capital outlays and operating expenditures associated with these activities.

For the foreseeable future, our operations will require significant additional funding, in large part due to our research and development expenses and the absence of any revenues from product sales. For example, we will require significant additional funding to enable us to conduct further development of tirasemtiv for the potential treatment of ALS, including any additional Phase 3 clinical trials that may be required by regulatory authorities to receive marketing approval for tirasemtiv. Until we can generate a sufficient amount of product revenue, we expect to raise future capital through strategic alliance and licensing arrangements, public or private equity offerings and debt financings. We do not currently have any commitments for future funding other than reimbursements, milestone and royalty payments that we may receive under our collaboration agreements with Amgen and Astellas. We may not receive any further funds under those agreements. Our ability to raise funds may be adversely impacted by current economic conditions. As a result of these and other factors, we do not know whether additional financing will be available when needed, or that, if available, such financing would be on terms favorable to our stockholders or us.

To the extent that we raise additional funds through strategic alliances or licensing and other arrangements with third parties, we will likely have to relinquish valuable rights to our technologies, research programs or drug candidates, or grant licenses on terms that may not be favorable to us. To the extent that we raise additional funds by issuing equity securities, our stockholders will experience additional dilution and our share price may decline. To the extent that we raise additional funds through debt financing, the financing may involve covenants that restrict our business activities. In addition, funding from any of these sources, if needed, may not be available to us on favorable terms, or at all, or in accordance with our planned timelines.

If we cannot raise the funds we need to operate our business, we will need to delay or discontinue certain research and development activities. For example, if we cannot raise the funds necessary to enable the conduct of further development for tirasemtiv for the potential treatment of ALS, our ability to continue the development of tirasemtiv will be delayed or suspended. If we delay or discontinue research and development activities, our stock price may be negatively affected.

***Covenants in our loan and security agreement restrict our business and operations in many ways and if we do not effectively manage our covenants, our financial conditions and results of operations could be adversely affected. In addition, our operations may not provide sufficient revenue to meet the condition required in order to access the final loan available under the agreement and may also not provide sufficient cash to meet the repayment obligations of our debt incurred under the loan and security agreement.***

Our loan and security agreement with Oxford Finance LLC and Silicon Valley Bank provided for up to $40.0 million in term loans due on October 1, 2020, of which $30.0 million in term loans has been borrowed. All of our current and future assets, except for intellectual property, are secured for our borrowings under the loan and security agreement. The loan and security agreement requires that we comply with certain covenants applicable to us, including among other things, covenants restricting dispositions, changes in business, management, ownership or business locations, mergers or acquisitions, indebtedness, encumbrances, distributions, investments, transactions with affiliates and subordinated debt, any of which could restrict our business and operations, particularly our ability to respond to changes in our business or to take specified actions to take advantage of certain business opportunities that may be presented to us. Our failure to comply with any of the covenants could result in a default under the loan and security agreement, which could permit the lenders to declare all or part of any outstanding borrowings to be immediately due and payable, or to refuse to permit additional borrowings under the loan and security agreement. If we are unable to repay those amounts, the lenders under the loan and security agreement could proceed against the collateral granted to them to secure that debt, which would seriously harm our business. In addition, should we be unable to comply with these covenants or if we default on any portion of our outstanding borrowings, the lenders can also impose a 5.0% penalty and restrict access to additional borrowings under the loan and security agreement.

***We have never generated, and may never generate, revenues from commercial sales of our drugs and we will not have drugs to market for at least several years, if ever.***

We currently have no drugs for sale and we cannot guarantee that we will ever develop or obtain approval to market any drugs. To receive marketing approval for any drug candidate, we must demonstrate that the drug candidate satisfies rigorous standards of safety and efficacy to the FDA in the United States and other regulatory authorities abroad. We and our partners will need to conduct significant additional research and preclinical and clinical testing before we or our partners can file applications with the FDA or other regulatory authorities for approval of any of our drug candidates. In addition, to compete effectively, our drugs must be easy to use, cost-effective and economical to manufacture on a commercial scale, compared to other therapies available for the treatment of the same conditions. We may not achieve any of these objectives. Currently, our only drug candidates in clinical development are tirasemtiv for the potential treatment of ALS, CK-2127107 for the potential treatment of SMA, COPD, limited mobility, ALS and potentially other neuromuscular and non-neuromuscular indications associated with muscle weakness and omecamtiv mecarbil for the potential treatment of heart failure. We cannot be certain that the clinical development of these or any future drug candidates will be successful, that they will receive the regulatory approvals required to commercialize them, that they will ultimately be accepted by prescribers or reimbursed by insurers or that any of our other research programs will yield a drug candidate suitable for clinical testing or commercialization. Our commercial revenues, if any, will be derived from sales of drugs that we do not expect to be commercially marketed for at least several years, if at all. The development of any one or all of these drug candidates may be discontinued at any stage of our clinical trials programs and we may not generate revenue from any of these drug candidates.

***Clinical trials may fail to demonstrate the desired safety and efficacy of our drug candidates, which could prevent or significantly delay completion of clinical development and regulatory approval.***

Prior to receiving approval to commercialize any of our drug candidates, we or our partners must adequately demonstrate to the satisfaction of FDA and foreign regulatory authorities that the drug candidate is sufficiently safe and effective with substantial evidence from well-controlled clinical trials. We or our partners will need to demonstrate efficacy in clinical trials for the treatment of specific indications and monitor safety throughout the clinical development process and following approval. None of our drug candidates have yet met the safety and efficacy standards required for regulatory approval for commercialization and they may never do so. In addition, for each of our preclinical compounds, we or our partners must adequately demonstrate satisfactory chemistry, formulation, quality, stability, and toxicity in order to submit an investigational new drug application ("IND") to the FDA, or an equivalent application in foreign jurisdictions, that would allow us to advance that compound into clinical trials. Furthermore, we or our partners may need to submit separate INDs (or foreign equivalent) to different divisions within the FDA (or foreign regulatory authorities) in order to pursue clinical trials in different therapeutic areas. Each new IND (or foreign equivalent) must be reviewed by the new division before the clinical trial under its jurisdiction can proceed, entailing all the risks of delay inherent to regulatory review. If our or our partners' current or future preclinical studies or clinical trials are unsuccessful, our business will be significantly harmed and our stock price could be negatively affected.

All of our drug candidates are prone to the risks of failure inherent in drug development. Preclinical studies may not yield results that would adequately support the filing of an IND (or a foreign equivalent) with respect to our potential drug candidates. Even if the results of preclinical studies for a drug candidate are sufficient to support such a filing, the results of preclinical studies do not necessarily predict the results of clinical trials. As an example, because the physiology of animal species used in preclinical studies may vary substantially from other animal species and from humans, it may be difficult to assess with certainty whether a finding from a study in a particular animal species will result in similar findings in other animal species or in humans. For any of our drug candidates, the results from Phase 1 clinical trials in healthy volunteers and clinical results from Phase 1 and 2 trials in patients are not necessarily indicative of the results of later and larger clinical trials that are necessary to establish whether the drug candidate is safe and effective for the applicable indication. Likewise, interim results from a clinical trial may not be indicative of the final results from that trial, and results from early Phase 2 clinical trials may not be indicative of the results from later clinical trials. For example, early Phase 2 clinical trials of tirasemtiv in patients with ALS showed encouraging dose-related trends in measurements of the ALS Functional Rating Scale in its revised form (ALSFRS-R), a clinically validated instrument designed to measure disease progression and changes in functional status, for patients receiving tirasemtiv compared to those receiving placebo. However, BENEFIT-ALS, a Phase 2b clinical trial of tirasemtiv in patients with ALS, did not achieve its primary efficacy endpoint, the mean change from baseline in the ALSFRS-R for patients receiving tirasemtiv compared to those receiving placebo.

In addition, while the clinical trials of our drug candidates are designed based on the available relevant information, such information may not accurately predict what actually occurs during the course of the trial itself, which may have consequences for the conduct of an ongoing clinical trial or for the eventual results of that trial. For example, the number of patients planned to be enrolled in a placebo-controlled clinical trial is determined in part by estimates relating to expected treatment effect and variability about the primary endpoint. These estimates are based upon earlier nonclinical and clinical studies of the drug candidate itself and clinical trials of other drugs thought to have similar effects in a similar patient population. If information gained during the conduct of the trial shows these estimates to be inaccurate, we may elect to adjust the enrollment accordingly, which may cause delays in completing the trial, additional expense or a statistical penalty to apply to the evaluation of the trial results.

Furthermore, in view of the uncertainties inherent in drug development, such clinical trials may not be designed with focus on indications, patient populations, dosing regimens, endpoints, safety, efficacy or pharmacokinetic parameters or other variables that will provide the necessary safety or efficacy data to support regulatory approval to commercialize the resulting drugs. For example, we believe that effects on respiratory function, including slow vital capacity (SVC), may be appropriate as a clinical endpoint for tirasemtiv; however, regulatory authorities may not accept these effects as a clinical endpoint to support registration of tirasemtiv for the treatment of ALS. Clinical trials of our drug candidates are designed based on guidance or advice from regulatory agencies, which is subject to change during the development of the drug candidate at any time. Such a change in a regulatory agency's guidance or advice may cause that agency to deem results from trials to be insufficient to support approval of the drug candidate and require further clinical trials of that drug candidate to be conducted. In addition, individual patient responses to the dose administered of a drug may vary in a manner that is difficult to predict. Also, the methods we select to assess particular safety, efficacy or pharmacokinetic parameters may not yield the same statistical precision in estimating our drug candidates' effects as may other methodologies. Even if we believe the data collected from clinical trials of our drug candidates are promising, these data may not be sufficient to support approval by the FDA or foreign regulatory authorities. Non-clinical and clinical data can be interpreted in different ways. Accordingly, the FDA or foreign regulatory authorities could interpret these data in different ways from us or our partners, which could delay, limit or prevent regulatory approval.

Administering any of our drug candidates or potential drug candidates may produce undesirable side effects, also known as adverse events. Toxicities and adverse events observed in preclinical studies for some compounds in a particular research and development program may also occur in preclinical studies or clinical trials of other compounds from the same program. Potential toxicity issues may arise from the effects of the active pharmaceutical ingredient itself or from impurities or degradants that are present in the active pharmaceutical ingredient or could form over time in the formulated drug candidate or the active pharmaceutical ingredient. These toxicities or adverse events could delay or prevent the filing of an IND (or a foreign equivalent) with respect to our drug candidates or potential drug candidates or cause us, our partners or the FDA or foreign regulatory authorities to modify, suspend or terminate clinical trials with respect to any drug candidate at any time during the development program. Further, the administration of two or more drugs contemporaneously can lead to interactions between them, and our drug candidates may interact with other drugs that trial subjects are taking. For example, co-administration of tirasemtiv and riluzole (an approved treatment for ALS) approximately doubles the average maximum riluzole plasma level. If the adverse events are severe or frequent enough to outweigh the potential efficacy of a drug candidate, the FDA or other regulatory authorities could deny approval of that drug candidate for any or all targeted indications. Even if one or more of our drug candidates were approved for sale as drugs, the occurrence of even a limited number of toxicities or adverse events when used in large populations may cause the FDA or foreign regulatory authorities to impose restrictions on, or stop, the further marketing of those drugs. Indications of potential adverse events or toxicities which do not seem significant during the course of clinical trials may later turn out to actually constitute serious adverse events or toxicities when a drug is used in large populations or for extended periods of time.

We have observed certain adverse events in the clinical trials conducted with our drug candidates. For example, in BENEFIT-ALS, adverse events of dizziness, fatigue, nausea, confusional state, muscle spasms, somnolence (sleepiness), decreased appetite, headache, insomnia, dyspnea (difficulty breathing) and dysathria (difficulty speaking) occurred more frequently during treatment with tirasemtiv than with placebo. In addition, weight loss was significantly greater in patients with gastrointestinal adverse events (e.g., nausea and decreased appetite), which occurred more frequently on tirasemtiv than on placebo. In clinical trials of omecamtiv mecarbil, adverse events of chest discomfort, palpitations, dizziness and feeling hot, increases in heart rate, declines in blood pressure, electrocardiographic changes consistent with acute myocardial ischemia and transient rises in the MB fraction of creatine kinase and cardiac troponins I and T, which are indicative of myocardial infarction were observed during treatment with omecamtiv mecarbil.

In addition, clinical trials of tirasemtiv and omecamtiv mecarbil enroll patients who typically suffer from serious diseases which put them at increased risk of death. These patients may die while receiving our drug candidates. In such circumstances, it may not be possible to exclude with certainty a causal relationship to our drug candidate, even though the responsible clinical investigator may view such an event as not study drug-related.

Any failure or significant delay in completing preclinical studies or clinical trials for our drug candidates, or in receiving and maintaining regulatory approval for the sale of any resulting drugs, may significantly harm our business and negatively affect our stock price.

***The failure of a number of Phase 3 clinical trials evaluating other compounds as potential treatments for patients with ALS may suggest an increased risk that our planned Phase 3 clinical development program of tirasemtiv in patients with ALS will also fail.***

In recent years, a number of Phase 3 clinical trials of potential treatments for ALS have failed to demonstrate the requisite efficacy for approval or for their continued development. These include Biogen's trial of dexpramipexole, known as EMPOWER, the National Institute of Neurological Disorders and Stroke's trial of ceftriaxone, and Trophos SA's trial of olesoxime. Tirasemtiv, like these compounds, may fail in Phase 3 clinical development if it does not show a statistically significant level of clinical efficacy or if the adverse event profile is too great compared to it benefits. Further, even if we believe the data collected from our planned Phase 3 clinical development program of tirasemtiv are promising and should support approval, the FDA or other regulatory authorities may not deem these data to be sufficient to support approval.

***We have never before conducted a Phase 3 clinical trial nor submitted an application for marketing authorization to regulatory authorities, and may be unable to do so for tirasemtiv or any other drug candidates we are developing.***

We are conducting VITALITY-ALS, a Phase 3 clinical trial, designed to assess the effects of tirasemtiv versus placebo on slow vital capacity ("SVC") and other measure of respiratory function in patients with ALS. Conducting Phase 3 clinical trials and submitting a successful application for marketing authorization is complex, time consuming and expensive. We have not previously conducted a Phase 3 clinical trial and have limited experience in preparing, submitting and prosecuting a marketing authorization. Consequently, we may be unable to effectively and efficiently execute and complete the trial in a manner that leads to the submission to and approval by regulatory authorities of a marketing application for tirasemtiv. We may require more time and incur greater costs than our competitors and may not succeed in obtaining regulatory approvals of products that we develop. Failure to commence or complete, or delays in, our planned clinical trials, would prevent us from or delay us in commercializing tirasemtiv, and other product candidates we are developing.

***Neither the FDA nor European regulatory authorities has accepted the primary endpoint in our Phase 3 clinical trial in patients with ALS (a statistically significant reduction in the decline in SVC) as a sufficient measure of clinical significance alone to support regulatory approval of tirasemtiv for the treatment of ALS.***

To commercialize tirasemtiv, we must first demonstrate to the satisfaction of the FDA or foreign regulatory authorities that tirasemtiv is sufficiently safe and effective. To date, neither the FDA nor European regulatory authorities has indicated that the primary endpoint that we have specified in our Phase 3 clinical trial in patients with ALS (change from baseline to 24 weeks in SVC) is, in and of itself, a sufficient measure of clinical significance to establish the efficacy of tirasemtiv. Our Phase 3 clinical trial will also be measuring secondary endpoints of respiratory function and patient condition to provide further evidence of the potential clinical significance of a treatment effect. However, there is no assurance as to which of these secondary endpoints (if any) will be affected even if treatment with tirasemtiv achieves the primary efficacy objective of the trial. Further, there is no assurance as to whether regulatory authorities would accept the outcome of the trial as being a sufficient demonstration of clinical efficacy even if the primary endpoint and all secondary endpoints are achieved. We will continue interactions with regulatory authorities regarding the appropriate assessment(s) of the clinical meaningfulness and potential efficacy of therapy in the ALS population. If the results of our Phase 3 clinical trial in ALS are not sufficient to persuade regulatory authorities of the safety and efficacy of tirasemtiv, either because of a failure to achieve pre-specified endpoints or because the authorities do not accept such endpoints as being sufficient, then we would be required to conduct successfully one or more additional Phase 3 clinical trials, prior to receiving marketing authorization, which would be expensive, time consuming and uncertain.

***It is not known whether the FDA or other regulatory authorities would accept a single Phase 3 clinical trial as being adequate to support marketing approval of tirasemtiv, even if the results of such trial are positive.***

The conventional standard for granting marketing authorization of a new investigational medicine is the demonstration of safety and efficacy in two large, well-controlled Phase 3 clinical trials. The Phase 3 trial of tirasemtiv in ALS that we are currently conducting is the first Phase 3 trial of this drug candidate. In the case of diseases with high unmet medical need, such as ALS, regulatory authorities may exercise their discretion to approve a new pharmaceutical on the basis of a single outcomes trial (sometimes subject to the conduct of subsequent confirmatory trial(s)). However, this is always within the judgment of the regulatory authorities and is dependent on their assessment of the degree of success achieved in the clinical trial as balanced by the potential risks associated with treatment. In addition, the design of the Phase 3 clinical trial, VITALITY-ALS, may not provide conclusive data on the most safe and effective dose of tirasemtiv in patients with ALS that meets the satisfaction of regulatory authorities, thereby requiring us to conduct another Phase 3 trial. Even if our first Phase 3 trial of tirasemtiv shows positive results, and provides all necessary data to determine appropriate dosing, regulatory authorities may nonetheless require us to successfully conduct one or more additional Phase 3 clinical trials prior to receiving marketing authorization, which would be expensive, time consuming and uncertain.

***Clinical trials are expensive, time-consuming and subject to delay.***

Clinical trials are subject to rigorous regulatory requirements and are very expensive, difficult and time-consuming to design and implement. The length of time and number of trial sites and patients required for clinical trials vary substantially based on the type, complexity, novelty, intended use of the drug candidate and safety concerns. We estimate that the clinical trials of our current drug candidates will each continue for several more years. However, the clinical trials for all or any of our drug candidates may take significantly longer to complete. The commencement and completion of our or our partners' clinical trials could be delayed or prevented by many factors, including, but not limited to:

- delays in obtaining, or inability to obtain, regulatory or other approvals to commence and conduct clinical trials in the manner we or our partners deem necessary for the appropriate and timely development of our drug candidates and commercialization of any resulting drugs;
- delays in identifying and reaching agreement, or inability to identify and reach agreement, on acceptable terms, with prospective clinical trial sites and other entities involved in the conduct of our or our partners' clinical trials;
- delays or additional costs in developing, or inability to develop, appropriate formulations of our drug candidates for clinical trial use, including an appropriate modified release oral formulation for omecamtiv mecarbil;
- slower than expected rates of patient recruitment and enrollment, including as a result of competition for patients with other clinical trials or approved therapies; limited numbers of patients that meet the enrollment criteria; patients', investigators' or trial sites' reluctance to agree to the requirements of a protocol; or the introduction of alternative therapies or drugs by others;
- for those drug candidates that are the subject of a strategic alliance, delays in reaching agreement with our partner as to appropriate development strategies;

- a regulatory authority may require changes to a protocol for a clinical trial that then may require approval from regulatory agencies in other jurisdictions where the trial is being conducted;
- an institutional review board ("IRB") or its foreign equivalent may require changes to a protocol that then require approval from regulatory agencies and other IRBs and their foreign equivalents, or regulatory authorities may require changes to a protocol that then require approval from the IRBs or their foreign equivalents;
- for clinical trials conducted in foreign countries, the time and resources required to identify, interpret and comply with foreign regulatory requirements or changes in those requirements, and political instability or natural disasters occurring in those countries;
- lack of effectiveness of our drug candidates during clinical trials;
- unforeseen safety issues;
- inadequate supply, or delays in the manufacture or supply, of clinical trial materials;
- uncertain dosing issues;
- failure by us, our partners, or clinical research organizations, investigators or site personnel engaged by us or our partners to comply with good clinical practices and other applicable laws and regulations, including those concerning informed consent;
- inability or unwillingness of investigators or their staffs to follow clinical protocols;
- failure by our clinical research organizations, clinical manufacturing organizations and other third parties supporting our or our partners' clinical trials to fulfill their obligations;
- inability to monitor patients adequately during or after treatment;
- introduction of new therapies or changes in standards of practice or regulatory guidance that render our drug candidates or their clinical trial endpoints obsolete; and
- results from non-clinical studies that may adversely impact the timing or further development of our drug candidates.

We do not know whether planned clinical trials will begin on time, or whether planned or currently ongoing clinical trials will need to be restructured or will be completed on schedule, if at all. Significant delays in clinical trials will impede our ability to commercialize our drug candidates and generate revenue and could significantly increase our development costs.

***We depend on Amgen for the conduct and funding of the development and commercialization of omecamtiv mecarbil.***

Under our strategic alliance, Amgen holds an exclusive worldwide license to our drug candidate omecamtiv mecarbil. As a result, Amgen is responsible for the development and obtaining and maintaining regulatory approval of omecamtiv mecarbil for the potential treatment of heart failure worldwide.

While we announced in December 2016 that Amgen started GALACTIC-HF, a Phase 3 clinical trial of omecamtiv mecarbil, we do not control the development activities being conducted or that may be conducted in the future by Amgen, including, but not limited to, the timing of initiation, termination or completion of clinical trials, the analysis of data arising out of those clinical trials or the timing of release of data concerning those clinical trials, which may impact our ability to report on Amgen's results. Amgen may conduct these activities more slowly or in a different manner than we would if we controlled the development of omecamtiv mecarbil. Amgen is responsible for submitting future applications with the FDA and other regulatory authorities for approval of omecamtiv mecarbil and will be the owner of marketing approvals issued by the FDA or other regulatory authorities for omecamtiv mecarbil, subject to Servier's exclusive rights for the commercialization of omecamtiv mecarbil in Europe, as well as the CIS, including Russia. If the FDA or other regulatory authorities approve omecamtiv mecarbil, Amgen will also be responsible for the marketing and sale of the resulting drug, subject to our right to co-promote omecamtiv mecarbil in North America in connection with the exercise of our option to co-fund Phase 3 development costs of omecamtiv mecarbil under the collaboration and subject to Servier's exclusive rights for the commercialization of omecamtiv mecarbil in Europe, as well as the CIS, including Russia. However, we cannot control whether Amgen will devote sufficient attention and resources to the development of omecamtiv mecarbil or will proceed in an expeditious manner, even with our exercise of our option and co-funding of the Phase 3 development program of omecamtiv mecarbil. Even if the FDA or other regulatory agencies approve omecamtiv mecarbil, Amgen or Servier may elect not to proceed with the commercialization of the resulting drug in one or more countries.

Disputes may arise between us and Amgen, which may delay or cause the termination of any omecamtiv mecarbil clinical trials, result in significant litigation or cause Amgen to act in a manner that is not in our best interest. The costs associated with the continuing development of omecamtiv mecarbil may cause Amgen to reconsider the terms of its investment and seek to amend or terminate our collaboration agreement or to suspend the development of omecamtiv mecarbil. If development of omecamtiv mecarbil does not progress for these or any other reasons, we would not receive further milestone payments or royalties on product sales from Amgen with respect to omecamtiv mecarbil. If the results of one or more clinical trials with omecamtiv mecarbil do not meet Amgen's expectations at any time, Amgen may elect to terminate further development of omecamtiv mecarbil or certain of the potential clinical trials for omecamtiv mecarbil, even if the actual number of patients treated at that time is relatively small. In addition, Amgen generally has discretion to elect whether to pursue or abandon the development of omecamtiv mecarbil and may terminate our strategic alliance for any reason upon six months prior notice. With our consent, Amgen granted Servier an option to commercialize omecamtiv mecarbil in Europe and the CIS, including Russia, which Servier decided to exercise. In August 2016, we entered into a letter agreement with Amgen and Servier, which provides that if Amgen's rights to omecamtiv mecarbil are terminated with respect to the territory subject to Servier's sublicense, the sublicensed rights previously granted by Amgen to Servier with respect to omecamtiv mecarbil, will remain in effect and become a direct license or sublicense of such rights by us to Servier, on substantially the same terms as those in the Option, License and Collaboration Agreement between Amgen and Servier. If Amgen abandons omecamtiv mecarbil, it would result in a delay in or could prevent us from commercializing omecamtiv mecarbil, and would delay and could prevent us from obtaining revenues for this drug candidate. In addition, we would be required to provide Servier with a direct license or sublicense and the rights to commercialize omecamtiv mecarbil in Europe and the CIS, including Russia on terms that were not negotiated by us. There can be no assurance that we would be able to negotiate and enter into a definitive agreement with Servier on terms favorable or acceptable to us, or at all.

If Amgen abandons development of omecamtiv mecarbil prior to regulatory approval or if it elects not to proceed with commercialization of the resulting drug following regulatory approval, we would have to seek a new partner for development or commercialization, curtail or abandon that development or commercialization, or undertake and fund the development of omecamtiv mecarbil or commercialization of the resulting drug ourselves. If we seek a new partner but are unable to do so on acceptable terms, or at all, or do not have sufficient funds to conduct the development or commercialization of omecamtiv mecarbil ourselves, we would have to curtail or abandon that development or commercialization, which could harm our business.

***We depend on Astellas for the conduct and funding of the development and commercialization of CK-2127107.***

In December 2014, we expanded our strategic alliance with Astellas focused on the research, development and commercialization of skeletal muscle activators, other than tirasemtiv and certain related compounds. The primary objective of the strategic alliance is to advance novel therapies for indications associated with muscle weakness.

Under this strategic alliance, we have granted Astellas an exclusive license to co-develop and commercialize CK-2127107 for potential application in certain neuromuscular and non-neuromuscular indications worldwide. We are conducting a Phase 2 clinical trial in patients with SMA and Astellas is conducting a Phase 2 clinical trial in patients with COPD as well as a Phase 1b clinical trial in elderly subjects with limited mobility.

In 2016, we expanded our collaboration with Astellas and granted Astellas an option to enter into a pre-negotiated agreement for a global collaboration for the development and commercialization of tirasemtiv, including worldwide commercialization rights for Astellas outside our commercialization territory in North America, Europe and other select countries. In addition, under this 2016 expansion, we will collaborate with Astellas to develop CK-2127107 in ALS. Astellas will be primarily responsible for the development of CK-2127107 in ALS, and we will conduct the Phase 2 clinical trial of CK-2127107 in ALS, which we commenced in July 2017.

We do not control the development activities that may be conducted by Astellas, including, but not limited to, the timing of initiation, termination or completion of clinical trials, the analysis of data arising out of those clinical trials or the timing of release of data concerning those clinical trials, which may impact our ability to report on Astellas' results. Astellas may conduct these activities more slowly or in a different manner than we would. In general, Astellas is responsible for submitting future applications with the FDA or other regulatory authorities for approval of CK-2127107 and will be the owner of any marketing approvals issued by the FDA or other regulatory authorities for CK-2127107. If the FDA or other regulatory authorities approve CK-2127107, Astellas will also be responsible for the marketing and sale of the resulting drug, subject to our right to co-promote the drug in the United States, Canada and, for neuromuscular indications, Europe. However, we cannot control whether Astellas will devote sufficient attention and resources to the development of CK-2127107 or will proceed in an expeditious manner. Even if the FDA or other regulatory agencies approve CK-2127107, Astellas may elect not to proceed with the commercialization of the resulting drug in one or more countries.

If the results of one or more clinical trials with CK-2127107 do not meet Astellas' expectations at any time, Astellas may elect to terminate further development of CK-2127107 or certain of the potential clinical trials for CK-2127107, even if the actual number of patients treated at that time is relatively small. In addition, Astellas generally has discretion to elect whether to pursue or abandon the development of CK-2127107. Astellas may terminate our strategic alliance in whole or in part for any reason upon six months prior notice at any time following expiration of the strategic alliance's research term, which will expire December 31, 2017. If Astellas abandons CK-2127107, it would result in a delay in or could prevent us from further developing or commercializing CK-2127107, and would delay and could prevent us from obtaining revenues for this drug candidate. Disputes may arise between us and Astellas, which may delay or cause the termination of any CK-2127107 clinical trials, result in significant litigation or cause Astellas to act in a manner that is not in our best interest. If development of CK-2127107 does not progress for these or any other reasons, we would not receive further milestone payments or royalties on product sales from Astellas with respect to CK-2127107. If Astellas abandons development of CK-2127107 prior to regulatory approval or if it elects not to proceed with commercialization of the resulting drug following regulatory approval, we would have to seek a new partner for development or commercialization, curtail or abandon that development or commercialization, or undertake and fund the development of CK-2127107 or commercialization of the resulting drug ourselves. If we seek a new partner but are unable to do so on acceptable terms, or at all, or do not have sufficient funds to conduct the development or commercialization of CK-2127107 ourselves, we would have to curtail or abandon that development or commercialization, which could harm our business.

***The successful development of CK-2127107 in ALS under our expanded collaboration with Astellas could reduce the commercial potential of tirasemtiv, and our share of the costs of developing CK-2127107 in ALS could limit our ability to pay for other programs, including tirasemtiv.***

Tirasemtiv is the lead drug candidate from our skeletal muscle contractility program. We have conducted a Phase 2b clinical trial for tirasemtiv, and started a Phase 3 clinical development program for tirasemtiv in patients with ALS in July 2015. In collaboration with Astellas, we are also developing CK-2127107 for potential indications associated with muscle weakness and in 2016 we expanded our collaboration with Astellas to develop CK-2127107 in ALS. In July 2017, in collaboration with Astellas, we started a Phase 2 clinical trial of CK-2127107 in patients with ALS.

Since we will be developing both tirasemtiv and CK-2127107 for ALS, if both drugs are successfully developed and commercialized, they would potentially compete with one another in the same indication. If approved for commercial sale, the commercial launch of CK-2127107 following the commercial launch of tirasemtiv could negatively affect the sales of tirasemtiv. Successful development of CK-2127107 in ALS, or CK-2127107 data that Astellas views as positive, may reduce the likelihood that Astellas will exercise its option to develop and commercialize tirasemtiv, in which case we would not receive any of the payments from Astellas associated with the option exercise, and our ability to commercially launch tirasemtiv in markets outside of North America and Europe may be diminished.

In addition, Astellas and Cytokinetics will share equally the costs of developing CK-2127107 in ALS for potential registration and marketing authorization in the U.S. and Europe, provided that (i) Astellas has agreed to solely fund Phase 2 development costs of CK-2127107 in ALS subject to a right to recoup our share of such costs plus a 100% premium by reducing future milestone and royalty payments to the Company and (ii) we may defer (but not eliminate) a portion of our co-funding obligation for development activities after Phase 2 for up to 18 months, subject to certain conditions. We will, however, be required to fund one half the cost of any Phase 3 development of CK-2127107 in ALS with limited ability to defer or offset such costs. Our one-half share of the costs of any Phase 3 clinical trial of CK-2127107 in ALS could be significant, and could negatively impact our ability to finance other programs, including potentially limiting our ability to pay for the development and/or commercial launch of tirasemtiv.

***If we do not enter into strategic alliances for our unpartnered drug candidates or research and development programs or fail to successfully maintain our current or future strategic alliances, we may have to reduce, delay or discontinue our advancement of our drug candidates and programs or expand our research and development capabilities and increase our expenditures.***

Drug development is complicated and expensive. We currently have limited financial and operational resources to carry out drug development. Our strategy for developing, manufacturing and commercializing our drug candidates currently requires us to enter into and successfully maintain strategic alliances with pharmaceutical companies or other industry participants to advance our programs and reduce our expenditures on each program. Accordingly, the success of our development activities depends in large part on our current and future strategic partners' performance, over which we have little or no control.

Our ability to commercialize drugs that we develop with our partners and that generate royalties from product sales depends on our partners' abilities to assist us in establishing the safety and efficacy of our drug candidates, obtaining and maintaining regulatory approvals and achieving market acceptance of the drugs once commercialized. Our partners may elect to delay or terminate development of one or more drug candidates, independently develop drugs that could compete with ours or fail to commit sufficient resources to the marketing and distribution of drugs developed through their strategic alliances with us. Our partners may not proceed with the development and commercialization of our drug candidates with the same degree of urgency as we would because of other priorities they face. In addition, new business combinations or changes in a partner's business strategy may adversely affect its willingness or ability to carry out its obligations under a strategic alliance.

If we are not able to successfully maintain our existing strategic alliances or establish and successfully maintain additional strategic alliances, we will have to limit the size or scope of, or delay or discontinue, one or more of our drug development programs or research programs, or undertake and fund these programs ourselves. Alternatively, if we elect to continue to conduct any of these drug development programs or research programs on our own, we will need to expand our capability to conduct clinical development by bringing additional skills, technical expertise and resources into our organization. This would require significant additional funding, which may not be available to us on acceptable terms, or at all.

***To the extent we elect to fund the development of a drug candidate, such as tirasemtiv, CK-2127107, or omecamtiv mecarbil, or the commercialization of a drug at our expense, we will need substantial additional funding.***

The discovery, development and commercialization of new drugs is costly. As a result, to the extent we elect to fund the development of a drug candidate, such as tirasemtiv, CK-2127107 or omecamtiv mecarbil, or the commercialization of a drug, we will need to raise additional capital to:

- fund clinical trials and seek regulatory approvals;
- expand our development capabilities;
- engage third party manufacturers for such drug candidate or drug;
- build or access commercialization capabilities;
- implement additional internal systems and infrastructure;
- maintain, defend and expand the scope of our intellectual property; and
- hire and support additional management and scientific personnel.

Our future funding requirements will depend on many factors, including, but not limited to:

- the rate of progress and costs of our or our partners' clinical trials and other research and development activities;
- the costs and timing of seeking and obtaining regulatory approvals;
- the costs associated with establishing manufacturing and commercialization capabilities;
- the costs of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights;
- the costs of acquiring or investing in businesses, products and technologies;
- the effect of competing technological and market developments; and
- the status of, payment and other terms, and timing of any strategic alliance, licensing or other arrangements that we have entered into or may establish.

Until we can generate a sufficient amount of product revenue to finance our cash requirements, which we may never do, we expect to continue to finance our future cash needs primarily through strategic alliances, public or private equity offerings and debt financings. We cannot be certain that additional funding will be available on acceptable terms, or at all. If we are not able to secure additional funding when needed, we may have to delay, reduce the scope of or eliminate one or more of our clinical trials or research and development programs or future commercialization initiatives.

***We depend on contract research organizations ("CROs") to conduct our clinical trials and have limited control over their performance. If these CROs do not successfully carry out their contractual duties or meet expected deadlines, or if we lose any of our CROs, we may not be able to obtain regulatory approval for or commercialize our product candidates on a timely basis, if at all.***

We have used and intend to continue to use a limited number of CROs within and outside of the United States to conduct clinical trials of our drug candidates, such as tirasemtiv, CK-2127107 and omecamtiv mecarbil, and related activities. We do not have control over many aspects of our CROs' activities, and cannot fully control the amount, timing or quality of resources that they devote to our programs. CROs may not assign as high a priority to our programs or pursue them as diligently as we would if we were undertaking these programs ourselves. The activities conducted by our CROs therefore may not be completed on schedule or in a satisfactory manner. CROs may also give higher priority to relationships with our competitors and potential competitors than to their relationships with us. Outside of the United States, we are particularly dependent on our CROs' expertise in communicating with clinical trial sites and regulatory authorities and ensuring that our clinical trials and related activities and regulatory filings comply with applicable laws.

Our CROs' failure to carry out development activities on our behalf as agreed and in accordance with our and the FDA's or other regulatory agencies' requirements and applicable U.S. and foreign laws, or our failure to properly coordinate and manage these activities, could increase the cost of our operations and delay or prevent the development, approval and commercialization of our drug candidates. For example, in June 2013, we learned from our data management vendor for BENEFIT-ALS that a programming error in the electronic data capture system controlling study drug assignment caused 58 patients initially randomized to and treated with tirasemtiv to receive placebo instead at a certain trial visit and for the remainder of the trial. In order to maintain the originally intended statistical power of the trial, we amended the protocol to permit enrollment of approximately 680 patients, or 180 patients in addition to the 500 patients allowed under the existing protocol. This protocol amendment resulted in additional costs and delays in conducting BENEFIT-ALS. Further, for the quarter ended September 30, 2016, we determined that there was an error in the accounting for the recognition of clinical research and development expenses related to the information received from one of our CROs, which resulted in a restatement of our clinical research and development expenses, related clinical accrual accounts and related financial disclosures as of and for the three and nine month periods ended September 30, 2016. In addition, if a CRO fails to perform as agreed, our ability to collect damages may be contractually limited. If we fail to effectively manage the CROs carrying out the development of our drug candidates or if our CROs fail to perform as agreed, the commercialization of our drug candidates will be delayed or prevented. In many cases, our CROs have the right to terminate their agreements with us in the event of an uncured material breach. Identifying, qualifying and managing performance of third-party service providers can be difficult, time consuming and cause delays in our development programs. In addition, there is a natural transition period when a new CRO commences work and the new CRO may not provide the same type or level of services as the original provider. If any of our relationships with our third-party CROs terminate, we may not be able to enter into arrangements with alternative CROs or to do so timely or on commercially reasonable terms.

***We have no manufacturing capacity and depend on our strategic partners and contract manufacturers to produce our clinical trial materials, including our drug candidates, and anticipate continued reliance on contract manufacturers for the development and commercialization of our potential drugs.***

We do not currently operate manufacturing facilities for clinical or commercial production of our drug candidates. We have limited experience in drug formulation and manufacturing, and we lack the resources and the capabilities to manufacture any of our drug candidates on a clinical or commercial scale. Amgen has assumed responsibility to conduct these activities for the ongoing development of omecamtiv mecarbil worldwide. Following our conduct of the early development of CK-2127107, including the ongoing Phase 2 clinical trial in patients with SMA and ALS, Astellas will assume primary responsibility to conduct the manufacturing for the ongoing development of CK-2127107 worldwide. For tirasemtiv, we rely on a limited number of contract manufacturers. In particular, we rely on single-source contract manufacturers for the active pharmaceutical ingredient and the drug product supply for our clinical trials, as well as other materials required to conduct our clinical trials. We expect to rely on contract manufacturers to supply all future drug candidates for which we conduct development, as well as other materials required to conduct our clinical trials. If any of our existing or future contract manufacturers fail to perform satisfactorily, it could delay development or regulatory approval of our drug candidates or commercialization of our drugs, producing additional losses and depriving us of potential product revenues. In addition, if a contract manufacturer fails to perform as agreed, our ability to collect damages may be contractually limited.

Our drug candidates require precise high-quality manufacturing. The failure to achieve and maintain high manufacturing standards, including failure to detect or control anticipated or unanticipated manufacturing errors or the frequent occurrence of such errors, could result in patient injury or death, discontinuance or delay of ongoing or planned clinical trials, delays or failures in product testing or delivery, cost overruns, product recalls or withdrawals and other problems that could seriously hurt our business. Contract drug manufacturers often encounter difficulties involving production yields, quality control and quality assurance and shortages of

qualified personnel. These manufacturers are subject to stringent regulatory requirements, including the FDA's current good manufacturing practices regulations and similar foreign laws and standards. Each contract manufacturer must pass a pre-approval inspection before we can obtain marketing approval for any of our drug candidates and following approval will be subject to ongoing periodic unannounced inspections by the FDA, the U.S. Drug Enforcement Agency and other regulatory agencies, to ensure strict compliance with current good manufacturing practices and other applicable government regulations and corresponding foreign laws and standards. We seek to ensure that our contract manufacturers comply fully with all applicable regulations, laws and standards. However, we do not have control over our contract manufacturers' compliance with these regulations, laws and standards. If one of our contract manufacturers fails to pass its pre-approval inspection or maintain ongoing compliance at any time, the production of our drug candidates could be interrupted, resulting in delays or discontinuance of our clinical trials, additional costs and potentially lost revenues. In addition, failure of any third party manufacturers or us to comply with applicable regulations, including pre- or post-approval inspections and the current good manufacturing practice requirements of the FDA or other comparable regulatory agencies, could result in sanctions being imposed on us. These sanctions could include fines, injunctions, civil penalties, failure of regulatory authorities to grant marketing approval of our products, delay, suspension or withdrawal of approvals, license revocation, product seizures or recalls, operational restrictions and criminal prosecutions, any of which could significantly and adversely affect our business.

In addition, our existing and future contract manufacturers may not perform as agreed or may not remain in the contract manufacturing business for the time required to successfully produce, store and distribute our drug candidates. If a natural disaster, business failure, strike or other difficulty occurs, we may be unable to replace these contract manufacturers in a timely or cost-effective manner and the production of our drug candidates would be interrupted, resulting in delays and additional costs.

Switching manufacturers or manufacturing sites would be difficult and time-consuming because the number of potential manufacturers is limited. In addition, before a drug from any replacement manufacturer or manufacturing site can be commercialized, the FDA and, in some cases, foreign regulatory agencies, must approve that site. These approvals would require regulatory testing and compliance inspections. A new manufacturer or manufacturing site also would have to be educated in, or develop substantially equivalent processes for, production of our drugs and drug candidates. It may be difficult or impossible to transfer certain elements of a manufacturing process to a new manufacturer or for us to find a replacement manufacturer on acceptable terms quickly, or at all, either of which would delay or prevent our ability to develop drug candidates and commercialize any resulting drugs.

***We may not be able to successfully manufacture our drug candidates in sufficient quality and quantity, which would delay or prevent us from developing our drug candidates and commercializing resulting approved drugs, if any.***

To date, our drug candidates have been manufactured in quantities adequate for preclinical studies and early through late-stage clinical trials. In order to conduct large scale clinical trials for a drug candidate and for commercialization of the resulting drug if that drug candidate is approved for sale, we will need to manufacture some drug candidates in larger quantities. We may not be able to successfully repeat or increase the manufacturing capacity for any of our drug candidates, whether in collaboration with third-party manufacturers or on our own, in a timely or cost-effective manner or at all. If a contract manufacturer makes improvements in the manufacturing process for our drug candidates, we may not own, or may have to share, the intellectual property rights to those improvements. Significant changes or scale-up of manufacturing may require additional validation studies, which are costly and which regulatory authorities must review and approve. In addition, quality issues may arise during those changes or scale-up activities because of the inherent properties of a drug candidate itself or of a drug candidate in combination with other components added during the manufacturing and packaging process, or during shipping and storage of the finished product or active pharmaceutical ingredients. If we are unable to successfully manufacture of any of our drug candidates in sufficient quality and quantity, the development of that drug candidate and regulatory approval or commercial launch for any resulting drugs may be delayed or there may be a shortage in supply, which could significantly harm our business. In addition, data demonstrating the stability of both drug substance and drug product, using the commercial manufacturing process and at commercial scale, are required for marketing applications. Failure to produce drug substance and drug products in a timely manner and obtain stability data could result in delay of submission of marketing applications.

***The mechanisms of action of our drug candidates are unproven, and we do not know whether we will be able to develop any drug of commercial value.***

We have discovered and are currently developing drug candidates that have what we believe are novel mechanisms of action directed against cytoskeletal targets, and intend to continue to do so. Because no currently approved drugs appear to operate via the same biochemical mechanisms as our compounds, we cannot be certain that our drug candidates will result in commercially viable drugs that safely and effectively treat the indications for which we intend to develop them. The results we have seen for our compounds in preclinical models may not translate into similar results in humans, and results of early clinical trials in humans may not be predictive of the results of larger clinical trials that may later be conducted with our drug candidates. Even if we are successful in developing and receiving regulatory approval for a drug candidate for the treatment of a particular disease, we cannot be certain that it

will be accepted by prescribers or be reimbursed by insurers or that we will also be able to develop and receive regulatory approval for that or other drug candidates for the treatment of other diseases. If we or our partners are unable to successfully develop and commercialize our drug candidates, our business will be materially harmed.

***Our success depends substantially upon our ability to obtain and maintain intellectual property protection relating to our drug candidates, compounds and research technologies.***

We own, or hold exclusive licenses to, a number of U.S. and foreign patents and patent applications directed to our drug candidates, compounds and research technologies. Our success depends on our ability to obtain patent protection both in the United States and in other countries for our drug candidates, their methods of manufacture and use, and our technologies. Our ability to protect our drug candidates, compounds and technologies from unauthorized or infringing use by third parties depends substantially on our ability to obtain and enforce our patents. If our issued patents and patent applications, if granted, do not adequately describe, enable or otherwise provide coverage of our technologies and drug candidates, including tirasemtiv, CK-2127107 and omecamtiv mecarbil, we or our licensees would not be able to exclude others from developing or commercializing these drug candidates. Furthermore, the degree of future protection of our proprietary rights is uncertain because legal means may not adequately protect our rights or permit us to gain or keep our competitive advantage.

Due to evolving legal standards relating to the patentability, validity and enforceability of patents covering pharmaceutical inventions and the claim scope of these patents, our ability to enforce our existing patents and to obtain and enforce patents that may issue from any pending or future patent applications is uncertain and involves complex legal, scientific and factual questions. The standards which the U.S. Patent and Trademark Office and its foreign counterparts use to grant patents are not always applied predictably or uniformly and are subject to change. To date, no consistent policy has emerged regarding the breadth of claims allowed in biotechnology and pharmaceutical patents. Thus, we cannot be sure that any patents will issue from any pending or future patent applications owned by or licensed to us. Even if patents do issue, we cannot be sure that the claims of these patents will be held valid or enforceable by a court of law, will provide us with any significant protection against competitive products, or will afford us a commercial advantage over competitive products. In particular:

- we or our licensors might not have been the first to make the inventions covered by each of our pending patent applications and issued patents;
- we or our licensors might not have been the first to file patent applications for the inventions covered by our pending patent applications and issued patents;
- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our intellectual property rights;
- some or all of our or our licensors' pending patent applications may not result in issued patents or the claims that issue may be narrow in scope and not provide us with competitive advantages;
- our and our licensors' issued patents may not provide a basis for commercially viable drugs or therapies or may be challenged and invalidated by third parties;
- our or our licensors' patent applications or patents may be subject to interference, opposition or similar administrative proceedings that may result in a reduction in their scope or their loss altogether;
- we may not develop additional proprietary technologies or drug candidates that are patentable; or
- the patents of others may prevent us or our partners from discovering, developing or commercializing our drug candidates.

Patent protection is afforded on a country-by-country basis. Some foreign jurisdictions do not protect intellectual property rights to the same extent as in the United States. Many companies have encountered significant difficulties in protecting and defending intellectual property rights in foreign jurisdictions. Some of our development efforts are performed in countries outside of the United States through third party contractors. We may not be able to effectively monitor and assess intellectual property developed by these contractors. We therefore may not be able to effectively protect this intellectual property and could lose potentially valuable intellectual property rights. In addition, the legal protection afforded to inventors and owners of intellectual property in countries outside of the United States may not be as protective of intellectual property rights as in the United States. Therefore, we may be unable to acquire and protect intellectual property developed by these contractors to the same extent as if these development activities were being conducted in the United States. If we encounter difficulties in protecting our intellectual property rights in foreign jurisdictions, our business prospects could be substantially harmed.

We rely on intellectual property assignment agreements with our corporate partners, employees, consultants, scientific advisors and other collaborators to grant us ownership of new intellectual property that is developed. These agreements may not result in the effective assignment to us of that intellectual property. As a result, our ownership of key intellectual property could be compromised.

Changes in either the patent laws or their interpretation in the United States or other countries may diminish the value of our intellectual property or our ability to obtain patents. For example, the America Invents Act of 2011 may affect the scope, strength and enforceability of our patent rights in the United States or the nature of proceedings which may be brought by us related to our patent rights in the United States.

If one or more products resulting from our drug candidates is approved for sale by the FDA and we do not have adequate intellectual property protection for those products, competitors could duplicate them for approval and sale in the United States without repeating the extensive testing required of us or our partners to obtain FDA approval. Regardless of any patent protection, under current law, an application for a generic version of a new chemical entity cannot be approved until at least five years after the FDA has approved the original product. When that period expires, or if that period is altered, the FDA could approve a generic version of our product regardless of our patent protection. An applicant for a generic version of our product may only be required to conduct a relatively inexpensive study to show that its product is bioequivalent to our product, and may not have to repeat the lengthy and expensive clinical trials that we or our partners conducted to demonstrate that the product is safe and effective. In the absence of adequate patent protection for our products in other countries, competitors may similarly be able to obtain regulatory approval in those countries of generic versions of our products.

We also rely on trade secrets to protect our technology, particularly where we believe patent protection is not appropriate or obtainable. However, trade secrets are often difficult to protect, especially outside of the United States. While we endeavor to use reasonable efforts to protect our trade secrets, our or our partners' employees, consultants, contractors or scientific and other advisors may unintentionally or willfully disclose our information to competitors. In addition, confidentiality agreements, if any, executed by those individuals may not be enforceable or provide meaningful protection for our trade secrets or other proprietary information in the event of unauthorized use or disclosure. Pursuing a claim that a third party had illegally obtained and was using our trade secrets would be expensive and time-consuming, and the outcome would be unpredictable. Even if we are able to maintain our trade secrets as confidential, if our competitors independently develop information equivalent or similar to our trade secrets, our business could be harmed.

If we are not able to defend the patent or trade secret protection position of our technologies and drug candidates, then we will not be able to exclude competitors from developing or marketing competing drugs, and we may not generate enough revenue from product sales to justify the cost of development of our drugs or to achieve or maintain profitability.

***If we are sued for infringing third party intellectual property rights, it will be costly and time-consuming, and an unfavorable outcome could have a significant adverse effect on our business.***

Our ability to commercialize drugs depends on our ability to use, manufacture and sell those drugs without infringing the patents or other proprietary rights of third parties. Numerous U.S. and foreign issued patents and pending patent applications owned by third parties exist in the therapeutic areas in which we are developing drug candidates and seeking new potential drug candidates. In addition, because patent applications can take several years to issue, there may be currently pending applications, unknown to us, which could later result in issued patents that our activities with our drug candidates could infringe. There may also be existing patents, unknown to us, that our activities with our drug candidates could infringe.

Other future products of ours may be impacted by patents of companies engaged in competitive programs with significantly greater resources. Further development of these products could be impacted by these patents and result in significant legal fees.

If a third party claims that our actions infringe its patents or other proprietary rights, we could face a number of issues that could seriously harm our competitive position, including, but not limited to:

- infringement and other intellectual property claims that, even if meritless, can be costly and time-consuming to litigate, delay the regulatory approval process and divert management's attention from our core business operations;
- substantial damages for past infringement which we may have to pay if a court determines that our drugs or technologies infringe a third party's patent or other proprietary rights;
- a court prohibiting us from selling or licensing our drugs or technologies unless the holder licenses the patent or other proprietary rights to us, which it is not required to do; and

- if a license is available from a holder, we may have to pay substantial royalties or grant cross-licenses to our patents or other proprietary rights.

If any of these events occur, it could significantly harm our business and negatively affect our stock price.

***We may undertake infringement or other legal proceedings against third parties, causing us to spend substantial resources on litigation and exposing our own intellectual property portfolio to challenge.***

Third parties may infringe our patents. To prevent infringement or unauthorized use, we may need to file infringement suits, which are expensive and time-consuming. In an infringement proceeding, a court may decide that one or more of our patents is invalid, unenforceable, or both. In this case, third parties may be able to use our technology without paying licensing fees or royalties. Even if the validity of our patents is upheld, a court may refuse to stop the other party from using the technology at issue on the ground that the other party's activities are not covered by our patents. Policing unauthorized use of our intellectual property is difficult, and we may not be able to prevent misappropriation of our proprietary rights, particularly in countries where the laws may not protect such rights as fully as in the United States. In addition, third parties may affirmatively challenge our rights to, or the scope or validity of, our patent rights.

***We may become involved in disputes with our strategic partners over intellectual property ownership, and publications by our research collaborators and clinical investigators could impair our ability to obtain patent protection or protect our proprietary information, either of which would have a significant impact on our business.***

Inventions discovered under our current or future strategic alliance agreements may become jointly owned by our strategic partners and us in some cases, and the exclusive property of one of us in other cases. Under some circumstances, it may be difficult to determine who owns a particular invention or whether it is jointly owned, and disputes could arise regarding ownership or use of those inventions. These disputes could be costly and time-consuming, and an unfavorable outcome could have a significant adverse effect on our business if we were not able to protect or license rights to these inventions. In addition, our research collaborators and clinical investigators generally have contractual rights to publish data arising from their work. Publications by our research collaborators and clinical investigators relating to our research and development programs, either with or without our consent, could benefit our current or potential competitors and may impair our ability to obtain patent protection or protect our proprietary information, which could significantly harm our business.

***We may be subject to claims that we or our employees have wrongfully used or disclosed trade secrets of their former employers.***

Many of our employees were previously employed at universities or other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although no claims against us are currently pending, we may be subject to claims that these employees or we have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers. Litigation may be necessary to defend against these claims. If we fail in defending these claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. A loss of key research personnel or their work product could hamper or prevent our ability to develop and commercialize certain potential drugs, which could significantly harm our business. Even if we are successful in defending against these claims, litigation could result in substantial costs and distract management.

***Our competitors may develop drugs that are less expensive, safer or more effective than ours, which may diminish or eliminate the commercial success of any drugs that we may commercialize.***

We compete with companies that have developed drugs or are developing drug candidates for cardiovascular diseases, diseases and conditions associated with muscle weakness or wasting and other diseases for which our drug candidates may be useful treatments. For example, if tirasemtiv is approved for marketing by the FDA or other regulatory authorities for the treatment of ALS, it may then compete with other potential new therapies for ALS that are currently being developed by companies including, but not limited to, Neuraltus Pharmaceuticals, Inc., Ionis Pharmaceuticals, Inc. (in collaboration with Biogen Inc.), AB Science, Mitsubishi Tanabe Pharma Corporation and Treeway, Genentech, Inc., and BrainStorm Cell Therapeutics. In addition, in May 2017, the FDA approved Mitsubishi Tanabe Pharma America, Inc.'s RADICAVA™ (edaravone), a free radical scavenger, as an intravenous infusion treatment for ALS, which was the first FDA approved drug for the treatment of ALS since riluzole in 1995.

If CK-2127107 is approved by the FDA or other regulatory authorities for the treatment of SMA, potential competitors include, but are not limited to, Roche (in collaboration with PTC Therapeutics and Trophos SA), AveXis, Inc., and Ionis Pharmaceuticals, Inc. (in collaboration with Biogen Inc.). Drugs that could compete with CK-2127107 could also compete against tirasemtiv in ALS or other neuromuscular diseases, should the appropriate clinical trials be conducted. If CK-2127107 is approved by the FDA for the potential treatment of non-neuromuscular indications associated with muscle weakness, potential competitors include, but are not limited to, Regeneron Pharmaceuticals, Inc. (in collaboration with Sanofi), Eli Lilly and Company, Acceleron Pharma, Stealth Biotherapeutics, and Novartis (in collaboration with Morphosys AG). In addition, in December 2016, the FDA approved SPINRAZA® (nusinersen), a survival motor neuron-2 (SMN2)-directed antisense oligonucleotide indicated for the treatment of spinal muscular atrophy (SMA) in pediatric and adult patients. SPINRAZA is the first FDA approved drug for the treatment of SMA. Biogen Inc. licensed the global rights to develop, manufacture and commercialize SPINRAZA from Ionis Pharmaceuticals, Inc.

If omecamtiv mecarbil is approved for marketing by the FDA or other regulatory authorities for the treatment of heart failure, it would compete against other drugs used for the treatment of acute and chronic heart failure. These include generic drugs, such as milrinone, dobutamine or digoxin and branded drugs such as Natrecor® (nesiritide), Corlanor® (ivabradine), and Entresto® (sacubitril/valsartan). Omecamtiv mecarbil could also potentially compete against other novel drug candidates and therapies in development, such as those being developed by, but not limited to, Novartis; Bayer; Stealth Biotherapeutics; and MyoKardia. In addition, there are a number of medical devices both marketed and in development for the potential treatment of heart failure.

Our competitors may:

- develop drug candidates and market drugs that are less expensive or more effective than our future drugs;
- commercialize competing drugs before we or our partners can launch any drugs developed from our drug candidates;
- hold or obtain proprietary rights that could prevent us from commercializing our products;
- initiate or withstand substantial price competition more successfully than we can;
- more successfully recruit skilled scientific workers and management from the limited pool of available talent;
- more effectively negotiate third-party licenses and strategic alliances;
- take advantage of acquisition or other opportunities more readily than we can;
- develop drug candidates and market drugs that increase the levels of safety or efficacy that our drug candidates will need to show in order to obtain regulatory approval; or
- introduce therapies or market drugs that render the market opportunity for our potential drugs obsolete.

We will compete for market share against large pharmaceutical and biotechnology companies and smaller companies that are collaborating with larger pharmaceutical companies, new companies, academic institutions, government agencies and other public and private research organizations. Many of these competitors, either alone or together with their partners, may develop new drug candidates that will compete with ours. Many of these competitors have larger research and development programs or substantially greater financial resources than we do. Our competitors may also have significantly greater experience in:

- developing drug candidates;
- undertaking preclinical testing and clinical trials;
- building relationships with key customers and opinion-leading physicians;
- obtaining and maintaining FDA and other regulatory approvals of drug candidates;
- formulating and manufacturing drugs; and
- launching, marketing and selling drugs.

If our competitors market drugs that are less expensive, safer or more efficacious than our potential drugs, or that reach the market sooner than our potential drugs, we may not achieve commercial success. In addition, the life sciences industry is characterized by rapid technological change. If we fail to stay at the forefront of technological change, we may be unable to compete effectively. Our competitors may render our technologies obsolete by improving existing technological approaches or developing new or different approaches, potentially eliminating the advantages in our drug discovery process that we believe we derive from our research approach and proprietary technologies.

***We have been granted orphan designations in the U.S. and in the E.U. for tirasemtiv and in the U.S. for CK-2127107; however, there can be no guarantee that we will receive orphan approval for tirasemtiv or CK-2127107, nor that we will be able to prevent third parties from developing and commercializing products that are competitive to tirasemtiv or CK-2127107.***

We have been granted orphan drug designation in the U.S. by the FDA and orphan medicinal product designation by the European Medicines Agency, in each case for tirasemtiv for the potential treatment of ALS. We have been granted orphan drug designation in the U.S. by the FDA for CK-2127107 for the potential treatment of SMA. In the U.S., upon approval from the FDA of an NDA, products granted orphan drug approval are generally provided with seven years of marketing exclusivity in the U.S., meaning the FDA will generally not approve applications for other product candidates for the same orphan indication that contain the same active ingredient. Even if we are the first to obtain approval of an orphan product and are granted exclusivity in the U.S., there are limited circumstances under which a later competitor product may be approved for the same indication during the seven-year period of marketing exclusivity, such as if the later product is shown to be clinically superior to our product or due to an inability to assure a sufficient quantity of the orphan drug.

Orphan medicinal product status in Europe Union can provide up to 10 years of marketing exclusivity, meaning that another application for marketing authorization of a later similar medicinal product for the same therapeutic indication will generally not be approved in the European Union. Although we may have drug candidates that may obtain orphan drug exclusivity in Europe, the orphan approval and associated exclusivity period may be modified for several reasons, including a significant change to the orphan medicinal product designations or approval criteria after-market authorization of the orphan product (e.g., product profitability exceeds the criteria for orphan drug designation), problems with the production or supply of the orphan drug or a competitor drug, although similar, is safer, more effective or otherwise clinically superior than the initial orphan drug.

We are not guaranteed to maintain orphan status for tirasemtiv or CK-2127107 or to receive orphan status for tirasemtiv or CK-2127107 for any other indication or for any of our other drug candidates for any indication. If our drug candidates that are granted orphan status were to lose their status as orphan drugs or the marketing exclusivity provided for them in the U.S. or the European Union, our business and results of operations could be materially adversely affected. While orphan status for any of our products, if granted or maintained, would provide market exclusivity in the U.S. and the European Union for the time periods specified above, we would not be able to exclude other companies from manufacturing and/or selling products using the same active ingredient for the same indication beyond the exclusivity period applicable to our product on the basis of orphan drug status. Moreover, we cannot guarantee that another company will not receive approval before we do of an orphan drug application in the U.S. or the European Union for a product candidate that has the same active ingredient or is a similar medicinal product for the same indication as any of our drug candidates for which we plan to file for orphan designation and status. If that were to happen, our orphan drug applications for our drug candidate for that indication may not be approved until the competing company's period of exclusivity has expired in the U.S. or the European Union, as applicable. Further, application of the orphan drug regulations in the U.S. and Europe is uncertain, and we cannot predict how the respective regulatory bodies will interpret and apply the regulations to our or our competitors' products.

***Our failure to attract and retain skilled personnel could impair our drug development and commercialization activities.***

Our business depends on the performance of our senior management and key scientific and technical personnel. The loss of the services of any member of our senior management or key scientific or technical staff may significantly delay or prevent the achievement of drug development and other business objectives by diverting management's attention to transition matters and identifying suitable replacements. We also rely on consultants and advisors to assist us in formulating our research and development strategy. All of our consultants and advisors are either self-employed or employed by other organizations, and they may have conflicts of interest or other commitments, such as consulting or advisory contracts with other organizations, that may affect their ability to contribute to us. In addition, if and as our business grows, we will need to recruit additional executive management and scientific and technical personnel. There is intense competition for skilled executives and employees with relevant scientific and technical expertise, and this competition is likely to continue. Our inability to attract and retain sufficient scientific, technical and managerial personnel could limit or delay our product development activities, which would adversely affect the development of our drug candidates and commercialization of our potential drugs and growth of our business.

***Any future workforce and expense reductions may have an adverse impact on our internal programs and our ability to hire and retain skilled personnel.***

Our future success will depend in large part upon our ability to attract and retain highly skilled personnel. In light of our continued need for funding and cost control, we may be required to implement future workforce and expense reductions, which could further limit our research and development activities. For example, in October 2011, we reduced our workforce by approximately 18% in order to reduce expenses and to focus resources primarily on our later-stage development programs for tirasemtiv and omecamtiv mecarbil and certain other research and development programs also directed to muscle biology. These headcount reductions and the cost control measures we have implemented may negatively affect our productivity and limit our research and development activities. We may have difficulty retaining and attracting such personnel as a result of a perceived risk of future workforce reductions. In

addition, the implementation of any additional workforce or expense reduction programs may divert the efforts of our management team and other key employees, which could adversely affect our business.

***We may expand our development and clinical research capabilities and, as a result, we may encounter difficulties in managing our growth, which could disrupt our operations.***

We may have growth in our expenditures, the number of our employees and the scope of our operations, in particular with respect to those drug candidates that we elect to develop or commercialize independently or together with a partner. To manage our anticipated future growth, we must continue to implement and improve our managerial, operational and financial systems, expand our facilities and continue to recruit and train additional qualified personnel. Due to our limited resources, we may not be able to effectively manage the expansion of our operations or recruit and train additional qualified personnel. The physical expansion of our operations may lead to significant costs and may divert our management and business development resources. Any inability to manage growth could delay the execution of our business plans or disrupt our operations.

***We currently have no sales or marketing capabilities and, if we are unable to enter into or maintain strategic alliances with marketing partners or to develop our own sales and marketing capabilities, we may not be successful in commercializing our potential drugs.***

We currently have no sales, marketing or distribution capabilities. We plan to commercialize drugs that can be effectively marketed and sold in concentrated markets that do not require a large sales force to be competitive. To achieve this goal, we will need to establish our own specialized sales force and marketing organization with technical expertise and supporting distribution capabilities. Developing such an organization is expensive and time-consuming and could delay a product launch. In addition, we may not be able to develop this capacity efficiently, cost-effectively or at all, which could make us unable to commercialize our drugs. If we determine not to market our drugs on our own, we will depend on strategic alliances with third parties, such as Amgen and Astellas, which have established distribution systems and direct sales forces to commercialize them. If we are unable to enter into such arrangements on acceptable terms, we may not be able to successfully commercialize these drugs. To the extent that we are not successful in commercializing any drugs ourselves or through a strategic alliance, our product revenues and business will suffer and our stock price would decrease.

***Our internal computer systems, or those of our CROs, CMOs, supply chain partners, collaboration partners or other contractors or consultants, may fail or suffer security breaches, which could result in a material disruption of our drug development programs.***

Despite the implementation of security measures, our internal computer systems and those of our CROs, CMOs, supply chain partners, collaboration partners, and other contractors and consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. While we have not experienced any such system failure, accident or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our drug development programs. For example, the loss of clinical study data from completed or ongoing clinical studies for any of our drug candidates could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach were to result in a loss of or damage to our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability and the further development of our product candidates could be delayed.

***We are obligated to develop and maintain proper and effective internal control over financial reporting. In the future, we may not complete our execution of our internal control over financial reporting in a timely manner, or these internal controls may not be determined to be effective, which may result in additional material misstatements in our consolidated financial statements and may adversely affect investor confidence in our company and, as a result, the value of our common stock.***

We are required, pursuant to Section 404 of the Sarbanes-Oxley Act, to furnish a report by management on, among other things, the effectiveness of our internal control over financial reporting.

Complying with Section 404 requires a rigorous compliance program as well as adequate time and resources. We may not be able to complete our internal control evaluation, testing and any required remediation in a timely fashion. Additionally, if we identify one or more material weaknesses in our internal control over financial reporting, we will not be able to assert that our internal controls are effective. For example, our management concluded that our internal controls over financial reporting were not effective as of September 30, 2016, because a material weakness existed in our internal control over financial reporting related to research and development expenses associated with the review of clinical trial expenses incurred under our clinical research organization trial agreements, including in part, our review of information received from third party service providers that is used in the operation of this control. Even though we remediated this material weakness as of December 31, 2016, if other material weaknesses are identified in

the future or we are not able to comply with the requirements of Section 404 in a timely manner, our reported financial results could be materially misstated, we would receive an adverse opinion regarding our internal controls over financial reporting from our independent registered public accounting firm, and we could be subject to investigations or sanctions by regulatory authorities, which would require additional financial and management resources, and the value of our common stock could decline. In addition, because we have concluded that our internal control over financial reporting were not effective as of September 30, 2016, and to the extent we identify future weaknesses or deficiencies, there could be material misstatements in our consolidated financial statements and we could fail to meet our financial reporting obligations. As a result, our ability to obtain additional financing, or obtain additional financing on favorable terms, could be materially and adversely affected which, in turn, could materially and adversely affect our business, our financial condition and the value of our common stock. If we are unable to assert that our internal control over financial reporting is effective in the future, or if our independent registered public accounting firm is unable to express an opinion or expresses an adverse opinion on the effectiveness of our internal controls in the future, investor confidence in the accuracy and completeness of our financial reports could be further eroded, which would have a material adverse effect on the price of our common stock.

***Our reported financial results may be adversely affected by changes in accounting principles generally accepted in the U.S.***

We prepare our financial statements in conformity with accounting principles generally accepted in the U.S. These accounting principles are subject to interpretation by the Financial Accounting Standards Board ("FASB") and the Securities and Exchange Commission. A change in these policies or interpretations could have a significant effect on our reported financial results, may retroactively affect previously reported results, could cause unexpected financial reporting fluctuations, and may require us to make costly changes to our operational processes and accounting systems. In May 2014, the FASB issued ASU 2014-09, Revenue from Contracts with Customers which supersedes nearly all existing U.S. GAAP revenue recognition guidance. The new standard will become effective for us on January 1, 2018. Early application is permitted to the original effective date of January 1, 2017. Although we are continuing to assess all potential impacts of the standard on our financial statements or disclosures, it could change the way we account for certain of our revenue transactions, including the timing of recognition of our license and collaboration revenues. Adoption of the standard could have a significant impact on our financial statements and may retroactively affect the accounting treatment of transactions completed before adoption. See "Note 1 – Recent Accounting Pronouncements" for additional discussion of the accounting changes.

**Risks Related to Our Industry**

***The regulatory approval process is expensive, time-consuming and uncertain and may prevent our partners or us from obtaining approvals to commercialize some or all of our drug candidates.***

The research, testing, manufacturing, selling and marketing of drugs are subject to extensive regulation by the FDA and other regulatory authorities in the United States and other countries, and regulations differ from country to country. Neither we nor our partners are permitted to market our potential drugs in the United States until we receive approval of a new drug application ("NDA") from the FDA. Neither we nor our partners have received NDA or other marketing approval for any of our drug candidates.

Obtaining NDA approval is a lengthy, expensive and uncertain process. In addition, failure to comply with FDA and other applicable foreign and U.S. regulatory requirements may subject us to administrative or judicially imposed sanctions. These include warning letters, civil and criminal penalties, injunctions, product seizure or detention, product recalls, total or partial suspension of production, and refusal to approve pending NDAs or supplements to approved NDAs.

Regulatory approval of an NDA or NDA supplement is never guaranteed, and the approval process typically takes several years and is extremely expensive. The FDA and foreign regulatory agencies also have substantial discretion in the drug approval process, and the guidance and advice issued by such agencies is subject to change at any time. Despite the time and efforts exerted, failure can occur at any stage, and we may encounter problems that cause us to abandon clinical trials or to repeat or perform additional preclinical testing and clinical trials. The number and focus of preclinical studies and clinical trials that will be required for approval by the FDA and foreign regulatory agencies varies depending on the drug candidate, the disease or condition that the drug candidate is designed to address, and the regulations applicable to any particular drug candidate. In addition, the FDA may require that a proposed Risk Evaluation and Mitigation Strategy, also known as a REMS, be submitted as part of an NDA if the FDA determines that it is necessary to ensure that the benefits of the drug outweigh its risks. The FDA and foreign regulatory agencies can delay, limit or deny approval of a drug candidate for many reasons, including, but not limited to:

- they might determine that a drug candidate is not safe or effective;
- they might not find the data from nonclinical testing and clinical trials sufficient and could request that additional trials be performed;
- they might not approve our, our partner's or the contract manufacturer's processes or facilities; or

- they might change their approval policies or adopt new regulations.

Even if we receive regulatory approval to manufacture and sell a drug in a particular regulatory jurisdiction, other jurisdictions' regulatory authorities may not approve that drug for manufacture and sale. If we or our partners fail to receive and maintain regulatory approval for the sale of any drugs resulting from our drug candidates, it would significantly harm our business and negatively affect our stock price.

***If we or our partners receive regulatory approval for our drug candidates, we or they will be subject to ongoing obligations to and continued regulatory review by the FDA and foreign regulatory agencies, and may be subject to additional post-marketing obligations, all of which may result in significant expense and limit commercialization of our potential drugs.***

Any regulatory approvals that we or our partners receive for our drug candidates may be subject to limitations on the indicated uses for which the drug may be marketed or require potentially costly post-marketing follow-up studies or compliance with a REMS. In addition, if the FDA or foreign regulatory agencies approves any of our drug candidates, the labeling, packaging, adverse event reporting, storage, advertising, promotion and record-keeping for the drug will be subject to extensive regulatory requirements. The subsequent discovery of previously unknown problems with the drug, including adverse events of unanticipated severity or frequency, or the discovery that adverse events or toxicities observed in preclinical research or clinical trials that were believed to be minor actually constitute much more serious problems, may result in restrictions on the marketing of the drug or withdrawal of the drug from the market.

The FDA and foreign regulatory agencies may change their policies and additional government regulations may be enacted that could prevent or delay regulatory approval of our drug candidates. We cannot predict the likelihood, nature or extent of adverse government regulation that may arise from future legislation or administrative action, either in the United States or abroad. If we are not able to maintain regulatory compliance, we might not be permitted to market our drugs and our business would suffer.

***If physicians and patients do not accept our drugs, we may be unable to generate significant revenue, if any.***

Even if our drug candidates obtain regulatory approval, the resulting drugs, if any, may not gain market acceptance among physicians, healthcare payors, patients and the medical community. Even if the clinical safety and efficacy of drugs developed from our drug candidates are established for purposes of approval, physicians may elect not to recommend these drugs for a variety of reasons including, but not limited to:

- introduction of competitive drugs to the market;
- clinical safety and efficacy of alternative drugs or treatments;
- cost-effectiveness;
- availability of coverage and reimbursement from health maintenance organizations and other third-party payors;
- convenience and ease of administration;
- prevalence and severity of adverse events;
- other potential disadvantages relative to alternative treatment methods; or
- insufficient marketing and distribution support.

If our drugs fail to achieve market acceptance, we may not be able to generate significant revenue and our business would suffer.

***The coverage, reimbursement status and pricing of newly approved drugs is uncertain and failure to obtain adequate coverage and reimbursement could limit our ability to market any drugs we may develop and decrease our ability to generate revenue.***

Even if one or more of our drug candidates is approved for sale, the commercial success of our drugs in both domestic and international markets will be substantially dependent on whether third-party coverage and reimbursement is available for our drugs by the medical profession for use by their patients, which is highly uncertain. Medicare, Medicaid, health maintenance organizations and other third-party payors are increasingly attempting to contain healthcare costs by limiting both coverage and the level of reimbursement of new drugs. As a result, they may not cover or provide adequate payment for our drugs. They may not view our drugs as cost-effective and reimbursement may not be available to consumers or may be insufficient to allow our drugs to be marketed on a competitive basis. If we are unable to obtain adequate coverage and reimbursement for our drugs, our ability to generate revenue will be adversely affected. Likewise, current and future legislative or regulatory efforts to control or reduce healthcare costs or reform

government healthcare programs could result in lower prices or rejection of coverage and reimbursement for our potential drugs. Changes in coverage and reimbursement policies or healthcare cost containment initiatives that limit or restrict reimbursement for any of our drug candidates that are approved could cause our potential future revenues to decline. In January 2017, Congress voted to adopt a budget resolution for fiscal year 2017, or the Budget Resolution, that authorizes the implementation of legislation that would repeal portions of Affordable Care Act. The Budget Resolution is not a law; however, it is widely viewed as the first step toward the passage of legislation that would repeal certain aspects of Affordable Care Act. Further, on January 20, 2017, President Trump signed an Executive Order directing federal agencies with authorities and responsibilities under Affordable Care Act to waive, defer, grant exemptions from, or delay the implementation of any provision of Affordable Care Act that would impose a fiscal or regulatory burden on states, individuals, healthcare providers, health insurers, or manufacturers of pharmaceuticals or medical devices. Congress also could consider subsequent legislation to replace elements of Affordable Care Act that are repealed.

***We may be subject to costly product liability or other liability claims and may not be able to obtain adequate insurance.***

The use of our drug candidates in clinical trials may result in adverse events. We cannot predict all the possible harms or adverse events that may result from our clinical trials. We currently maintain limited product liability insurance. We may not have sufficient resources to pay for any liabilities resulting from a personal injury or other claim excluded from, or beyond the limit of, our insurance coverage. Our insurance does not cover third parties' negligence or malpractice, and our clinical investigators and sites may have inadequate insurance or none at all. In addition, in order to conduct clinical trials or otherwise carry out our business, we may have to contractually assume liabilities for which we may not be insured. If we are unable to look to our own or a third party's insurance to pay claims against us, we may have to pay any arising costs and damages ourselves, which may be substantial.

In addition, if we commercially launch drugs based on our drug candidates, we will face even greater exposure to product liability claims. This risk exists even with respect to those drugs that are approved for commercial sale by the FDA and foreign regulatory agencies and manufactured in licensed and regulated facilities. We intend to secure additional limited product liability insurance coverage for drugs that we commercialize, but may not be able to obtain such insurance on acceptable terms with adequate coverage, or at reasonable costs. Even if we are ultimately successful in product liability litigation, the litigation would consume substantial amounts of our financial and managerial resources and may create adverse publicity, all of which would impair our ability to generate sales of the affected product and our other potential drugs. Moreover, product recalls may be issued at our discretion or at the direction of the FDA and foreign regulatory agencies, other governmental agencies or other companies having regulatory control for drug sales. Product recalls are generally expensive and often have an adverse effect on the reputation of the drugs being recalled and of the drug's developer or manufacturer.

We may be required to indemnify third parties against damages and other liabilities arising out of our development, commercialization and other business activities, which could be costly and time-consuming and distract management. If third parties that have agreed to indemnify us against damages and other liabilities arising from their activities do not fulfill their obligations, then we may be held responsible for those damages and other liabilities.

***Our relationships with customers, healthcare providers, clinical trial sites and professionals and third-party payors will be subject to applicable anti-kickback, fraud and abuse and other laws and regulations, which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm and diminished profits and future earnings.***

Healthcare providers, physicians and third-party payors play a primary role in the recommendation and prescription of any drug candidates for which we may obtain marketing approval. Our arrangements with customers, healthcare providers and professionals and third-party payors may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we develop, and may market, sell and distribute, our products for which we obtain marketing approval. Restrictions under applicable federal and state healthcare laws and regulations, include, but are not limited to, the following:

- The federal healthcare anti-kickback statute prohibits, among other things, persons from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made under federally funded healthcare programs such as Medicare and Medicaid. This statute has been broadly interpreted to apply to manufacturer arrangements with prescribers, purchasers and formulary managers, among others. Several other countries, including the United Kingdom, have enacted similar anti-kickback, fraud and abuse, and healthcare laws and regulations.

- The federal False Claims Act imposes civil penalties, including civil whistleblower or qui tam actions, against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, claims for payment that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government. The government and qui tam relators have brought False Claims Act actions against pharmaceutical companies on the theory that their practices have caused false claims to be submitted to the government. There is also a separate false claims provision imposing criminal penalties.
- The federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, imposes criminal and civil liability for executing a scheme to defraud any healthcare benefit program. HIPAA also imposes obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information. HIPAA also imposes criminal liability for knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement in connection with the delivery of or payment for healthcare benefits, items or services.
- The federal Physician Payments Sunshine Act requires manufacturers of drugs, devices, biologics and medical supplies to report to the Department of Health and Human Services information related to payments and other transfers of value made to or at the request of covered recipients, such as physicians and teaching hospitals, and physician ownership and investment interests in such manufacturers. Payments made to physicians and research institutions for clinical trials are included within the ambit of this law.
- Analogous state laws and regulations, such as state anti-kickback and false claims laws, may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers, and some state laws require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government in addition to requiring drug manufacturers to report information related to payments to physicians and other health care providers or marketing expenditures.

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, damages, fines, exclusion from government funded healthcare programs, such as Medicare and Medicaid, and the curtailment or restructuring of our operations. Exclusion, suspension and debarment from government funded healthcare programs would significantly impact our ability to commercialize, sell or distribute any drug. If any of the physicians or other providers or entities with whom we expect to do business are found to be not in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from government funded healthcare programs.

In addition, health care providers in the United States, including research institutions from which we or our partners obtain patient information, are subject to privacy rules under HIPAA and state and local privacy laws. In the European Union, these entities are subject to the Directive 95/46-EC of the European Parliament on the protection of individuals with regard to the processing of personal data and individual European Union member states implementing additional legislation. Other countries have similar privacy legislation. We could face substantial penalties if we knowingly receive individually identifiable health information from a health care provider that has not satisfied the applicable privacy laws. In addition, certain privacy laws and genetic testing laws may apply directly to our operations and/or those of our partners and may impose restrictions on the use and dissemination of individuals' health information and use of biological samples.

***Responding to any claims relating to improper handling, storage or disposal of the hazardous chemicals and radioactive and biological materials we use in our business could be time-consuming and costly.***

Our research and development processes involve the controlled use of hazardous materials, including chemicals and radioactive and biological materials. Our operations produce hazardous waste products. We cannot eliminate the risk of accidental contamination or discharge and any resultant injury from those materials. Federal, state and local laws and regulations govern the use, manufacture, storage, handling and disposal of hazardous materials. We may be sued for any injury or contamination that results from our or third parties' use of these materials. Compliance with environmental laws and regulations is expensive, and current or future environmental regulations may impair our research, development and production activities.

***Our facilities in California are located near an earthquake fault, and an earthquake or other types of natural disasters, catastrophic events or resource shortages could disrupt our operations and adversely affect our results.***

All of our facilities and our important documents and records, such as hard and electronic copies of our laboratory books and records for our drug candidates and compounds and our electronic business records, are located in our corporate headquarters at a single location in South San Francisco, California near active earthquake zones. If a natural disaster, such as an earthquake or flood, a catastrophic event such as a disease pandemic or terrorist attack, or a localized extended outage of critical utilities or transportation systems occurs, we could experience a significant business interruption. Our partners and other third parties on which we rely may also be subject to business interruptions from such events. In addition, California from time to time has experienced shortages of water, electric power and natural gas. Future shortages and conservation measures could disrupt our operations and cause expense, thus adversely affecting our business and financial results.

**Risks Related to an Investment in Our Securities**

***We expect that our stock price will fluctuate significantly, and you may not be able to resell your shares at or at or above your investment price.***

The stock market, particularly in recent years, has experienced significant volatility, particularly with respect to pharmaceutical, biotechnology and other life sciences company stocks, which often does not relate to the operating performance of the companies represented by the stock. Factors that could cause volatility in the market price of our common stock include, but are not limited to:

- announcements concerning any of the clinical trials for our drug candidates, such as tirasemtiv for the potential treatment of ALS, CK-2127107 for the potential treatment of SMA, COPD, limited mobility, ALS or other indications associated with muscle weakness and omecamtiv mecarbil for the potential treatment of heart failure (including, but not limited to, the timing of initiation or completion of such trials and the results of such trials, and delays or discontinuations of such trials, including delays resulting from slower than expected or suspended patient enrollment or discontinuations resulting from a failure to meet pre-defined clinical end points);
- announcements concerning our strategic alliance with Amgen or Astellas or future strategic alliances;
- failure or delays in entering additional drug candidates into clinical trials;
- failure or discontinuation of any of our research programs;
- issuance of new or changed securities analysts' reports or recommendations;
- failure or delay in establishing new strategic alliances, or the terms of those alliances;
- market conditions in the pharmaceutical, biotechnology and other healthcare-related sectors;
- actual or anticipated fluctuations in our quarterly financial and operating results;
- developments or disputes concerning our intellectual property or other proprietary rights;
- introduction of technological innovations or new products by us or our competitors;
- issues in manufacturing, packaging, labeling and distribution of our drug candidates or drugs;
- market acceptance of our drugs;
- third-party healthcare coverage and reimbursement policies;
- FDA or other U.S. or foreign regulatory actions affecting us or our industry;
- litigation or public concern about the safety of our drug candidates or drugs;
- additions or departures of key personnel;
- substantial sales of our common stock by our existing stockholders, whether or not related to our performance;
- automated trading activity by algorithmic and high-frequency trading programs; and
- volatility in the stock prices of other companies in our industry or in the stock market generally.

These and other external factors may cause the market price and demand for our common stock to fluctuate substantially, which may limit or prevent investors from readily selling their shares of common stock and may otherwise negatively affect the liquidity of our common stock. In addition, when the market price of a stock has been volatile, holders of that stock have instituted securities class action litigation against the company that issued the stock. If any of our stockholders brought a lawsuit against us, we could incur substantial costs defending the lawsuit. Such a lawsuit could also divert our management's time and attention.

***If the ownership of our common stock continues to be highly concentrated, it may prevent you and other stockholders from influencing significant corporate decisions and may result in conflicts of interest that could cause our stock price to decline.***

As of July 27, 2017, our executive officers, directors and their affiliates beneficially owned or controlled approximately 9.3% of the outstanding shares of our common stock (after giving effect to the exercise of all outstanding vested and unvested options, restricted stock units and warrants). Accordingly, these executive officers, directors and their affiliates, acting as a group, will have substantial influence over the outcome of corporate actions requiring stockholder approval, including the election of directors, any merger, consolidation or sale of all or substantially all of our assets or any other significant corporate transactions. These stockholders may also delay or prevent a change of control of us, even if such a change of control would benefit our other stockholders. The significant concentration of stock ownership may adversely affect the trading price of our common stock due to investors' perception that conflicts of interest may exist or arise.

***Volatility in the stock prices of other companies may contribute to volatility in our stock price.***

The stock market in general, and the NASDAQ stock exchanges and the market for technology companies in particular, have experienced significant price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies. Further, there has been particular volatility in the market prices of securities of early stage and clinical stage life sciences companies. These broad market and industry factors may seriously harm the market price of our common stock, regardless of our operating performance. In the past, following periods of volatility in the market price of a company's securities, securities class action litigation has often been instituted. A securities class action suit against us could result in substantial costs, potential liabilities and the diversion of management's attention and resources, and could harm our reputation and business.

***Our common stock is thinly traded and there may not be an active, liquid trading market for our common stock.***

There is no guarantee that an active trading market for our common stock will be maintained on NASDAQ, or that the volume of trading will be sufficient to allow for timely trades. Investors may not be able to sell their shares quickly or at the latest market price if trading in our stock is not active or if trading volume is limited. In addition, if trading volume in our common stock is limited, trades of relatively small numbers of shares may have a disproportionate effect on the market price of our common stock.

***Our stockholders will experience substantial additional dilution if outstanding options or warrants are exercised for common stock.***

As of July 27, 2017, there were 100,106 shares of common stock issuable upon the exercise of warrants, having a weighted average exercise price of $6.74 per share, and 6,169,105 shares of common stock issuable upon the exercise of stock options outstanding, having a weighted average exercise price of $9.02 per share. The exercise of outstanding options or warrants for common stock would be substantially dilutive to the outstanding shares of common stock. Any dilution or potential dilution may cause our stockholders to sell their shares, which would contribute to a downward movement in the stock price of our common stock.

***Ownership changes may limit our ability to use our net operating losses and tax credits in the future.***

In general, under Section 382 of the Internal Revenue Code ("Section 382"), a corporation that undergoes an 'ownership change' is subject to limitations on its ability to utilize its pre-change net operating losses and tax credits to offset future taxable income. We have performed a Section 382 analysis as of December 31, 2016 and do not believe that we have experienced an ownership change since 2006. A portion of our existing net operating losses and tax credits are subject to limitations arising from previous ownership changes. Future changes in our stock ownership, some of which are outside of our control, could result in an ownership change under Section 382 and result in additional limitations. We intend to continue to monitor public filings made by third parties with the SEC to assess whether an ownership change under Section 382 has occurred. Our ability to accurately assess any such ownership change is limited by the timeliness and accuracy of these public filings.

***Evolving regulation of corporate governance and public disclosure may result in additional expenses, use of resources and continuing uncertainty.***

Changing laws, regulations and standards relating to corporate governance and public disclosure, including the Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 and new SEC regulations and NASDAQ Stock Market LLC rules create uncertainty for public companies. We regularly evaluate and monitor developments with respect to new and proposed laws, regulations and standards. We cannot accurately predict or estimate the amount of the additional costs we may incur in connection with complying with such laws, regulations and standards or the timing of these costs. For example, compliance with the internal control requirements of Section 404 of the Sarbanes-Oxley Act has to date required us to commit significant resources to document and test the adequacy of our internal control over financial reporting. We can provide no assurance as to conclusions of management or by our independent registered public accounting firm with respect to the effectiveness of our internal control over financial reporting in the future. In addition, the SEC has adopted regulations that require us to file corporate financial statement information in an interactive data format known as XBRL. We may incur significant costs and need to invest considerable resources to remain in compliance with these regulations.

These new or changed laws, regulations and standards are subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices.

We intend to maintain high standards of corporate governance and public disclosure. As a result, we intend to invest the resources necessary to comply with evolving laws, regulations and standards, and this investment may result in increased general and administrative expenses and a diversion of management time and attention from revenue-generating activities to compliance activities. If our efforts to comply with new or changed laws, regulations and standards differ from the activities intended by regulatory or governing bodies, due to ambiguities related to practice or otherwise, regulatory authorities may initiate legal proceedings against us, which could be costly and time-consuming, and our reputation and business may be harmed.

***We have never paid dividends on our capital stock, and we do not anticipate paying any cash dividends in the foreseeable future.***

We have paid no cash dividends on any of our classes of capital stock to date and we currently intend to retain our future earnings, if any, to fund the development and growth of our businesses. In addition, the terms of existing or any future debts may preclude us from paying these dividends.

## ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

In February 2017, RPI has agreed to purchase 875,656 shares of our common stock at an aggregate price of $10.0 million pursuant to an executed Common Stock Purchase Agreement. The foregoing securities were issued to an accredited investor and the issuance was deemed to be exempt from the registration requirements of Section 4(a)(2) of the Securities Act of 1933, as amended, including Rule 506 promulgated thereunder as a transaction by an issuer not involving a public offering. RPI acquired the securities for investment only and not with a view to or for sale in connection with any distribution thereof and appropriate legends were affixed to the securities in such transaction.

## ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

## ITEM 4. MINE SAFETY DISCLOSURES

None.

## ITEM 5. OTHER INFORMATION

None.

## ITEM 6. EXHIBITS

A list of exhibits filed with this Quarterly Report on Form 10-Q or incorporated herein by reference is found in the Index to Exhibits immediately following the signature page of this report and is incorporated into this Item 6 by reference.

**SIGNATURES**

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

Dated: August 4, 2017

CYTOKINETICS, INCORPORATED
(Registrant)

/s/ Robert I. Blum
Robert I. Blum
President and Chief Executive Officer
(Principal Executive Officer)

/s/ Ching Jaw
Ching Jaw
Senior Vice President, Chief Financial Officer
(Principal Financial Officer)

/s/ Peter S. Roddy
Peter S. Roddy
Senior Vice President, Chief Accounting Officer
(Principal Accounting Officer)

**EXHIBIT INDEX**

| Exhibit No. | Exhibits | Incorporated by Reference | | | | |
|---|---|---|---|---|---|---|
| | | Form | File No. | Filing Date | Exh. No. | |
| 3.1 | Amended and Restated Certificate of Incorporation. | S-3 | 333-174869 | June 13, 2011 | 3.1 | |
| 3.2 | Certificate of Amendment of Amended and Restated Certificate of Incorporation | 8-K | 000-50633 | May 20, 2016 | 3.1 | |
| 3.3 | Amended and Restated Bylaws. | S-1 | 333-112261 | April 29, 2004 | 3.2 | |
| 4.1 | Specimen Common Stock Certificate. | 10-Q | 000-50633 | May 9, 2007 | 4.1 | |
| 4.2 | Form of Common Stock Warrant Issued Pursuant to that certain Loan and Security Agreement, dated as of October 19, 2015, by and among the Company, Oxford Finance LLC and Silicon Valley Bank | 10-K | 000-50633 | March 3, 2016 | 4.6 | |
| 10.1* | Amendment to Collaboration Agreement between the Company and Astellas Pharma Inc., dated April 11, 2017 | | | | | |
| 31.1 | Certification of Principal Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 | | | | | |
| 31.2 | Certification of Principal Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 | | | | | |
| 31.3 | Certification of Principal Accounting Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 | | | | | |
| 32.1 | Certifications of the Principal Executive Officer, Principal Financial Officer, and Principal Accounting Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (18 U.S.C. Section 1350) (1) | | | | | |
| 101.INS | XBRL Instance Document | | | | | |
| 101.SCH | XBRL Taxonomy Extension Schema Document | | | | | |
| 101.CAL | XBRL Taxonomy Extension Calculation Linkbase Document | | | | | |
| 101.DEF | XBRL Taxonomy Extension Definition Linkbase Document | | | | | |
| 101.LAB | XBRL Taxonomy Extension Label Linkbase Document | | | | | |
| 101.PRE | XBRL Taxonomy Extension Presentation Linkbase Document | | | | | |

* Pursuant to a request for confidential treatment, portions of this Exhibit have been redacted from the publicly filed document and have been furnished separately to the Securities and Exchange Commission as requested by Rule 406 under the Securities Act or Rule 24b-2 under the Exchange Act, as applicable.

(1) This certification accompanies the Form 10-Q to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Registrant under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-Q), irrespective of any general incorporation language contained in such filing.

**[*] = Certain confidential information contained in this document, marked by brackets, has been omitted and filed separately with the Securities and Exchange Commission pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.**

**Exhibit 10.1**

Confidential

April 11, 2017

Masao Kaku
Business Development
Astellas Pharma Inc.
2-5-1, Nihonbashi-Honcho
Chuo-ku, Tokyo 103-8411
Japan

**RE: Amendment to Collaboration Agreement; Payment Mechanism under Section [*]**

Dear Masao:

As you know, Astellas Pharma Inc. ("**Astellas**") and Cytokinetics, Inc. ("**Cytokinetics**") are parties to that certain Amended and Restated License and Collaboration Agreement dated December 22, 2014 (the "**Collaboration Agreement**"), as amended, including the amendment dated July 27, 2016 (the "**2016 Amendment**"). Capitalized terms used in this letter and not otherwise defined will have the meaning ascribed in the Collaboration Agreement. The Parties hereby agree to amend the Collaboration Agreement as follows, effective as of April 1, 2017:

1. To account for the fact that Astellas will also be incurring a portion of the Added Indication Development Costs for ALS as an Added Indication, the text in the attached exhibit shall be added to Section [*] of the Collaboration Agreement.

If the foregoing is acceptable and agreed to by Astellas, please so indicate by having an authorized representative of Astellas sign this Amendment in the appropriate signature line below, and return such signed copy to Elisabeth Schnieders, Ph.D., Sr. Vice President, Business Development, at your earliest convenience. If you have any questions or comments, please do not hesitate to contact Elisabeth at (650) 624-3083 or by e-mail at eschnieders@cytokinetics.com.

**Agreed and accepted:**

**Astellas Pharma Inc.**

By: /s/ Jun Kuno

Name: Jun Kono

Title: VP, Global Head of Business Development

Date: April 19, 2017

Sincerely,

/s/ Robert I. Blum

Robert I. Blum
President & CEO

**Exhibit**

**(d) Sharing of Development Costs for ALS as an Added Indication.** Notwithstanding Section [*] above, for ALS as an Added Indication, the reimbursement of the Development Costs to effect the cost allocation set forth in this Agreement, as amended by the Amendment shall be as follows:

**(i) Advance Payment.** For each calendar quarter in which Cytokinetics is anticipated to conduct Added Indication Development Work for ALS under the Development Plan, Cytokinetics shall submit to Astellas an invoice setting forth Cytokinetics' estimated Cytokinetics ALS Development Reimbursement (defined below) for ALS based on the then-current Added Indication Development Budget for ALS as an Added Indication for the current calendar quarter, no later than [*] Business Days following the first day of such calendar quarter (the "**ALS Development Advance Invoice**").

**(ii) True-Up**. Within [*] days after the end of each such calendar quarter, Cytokinetics shall submit to Astellas a reasonably detailed reconciliation report setting forth the accounting for the actual Cytokinetics ALS Development Reimbursement for such prior calendar quarter and any credits or deficits from the corresponding ALS Development Advance Invoice previously provided for such quarter (the "**ALS Development True-Up Report**"). Then:

**(1)** If the ALS Development True-Up Report shows that the estimated Cytokinetics ALS Development Reimbursement shown on the ALS Development Advance Invoice is less than the actual Cytokinetics ALS Development Reimbursement (the difference thereof, the "**Deficit**"), and such Deficit is greater than the Astellas ALS Development Reimbursement for such prior calendar quarter (as defined below), if any, then Astellas shall pay the amount that is the difference between such Deficit and the Astellas ALS Development Reimbursement to Cytokinetics as described in this Section [*](d)(ii).

**(2)** If the ALS Development True-Up Report shows a Deficit and such Deficit is less than the Astellas ALS Development Reimbursement for such prior calendar quarter, if any, then the difference between such Deficit and the Astellas ALS Development Reimbursement shall be credited toward the ALS Development Advance Invoice for the current calendar quarter (except where such invoice is the final such invoice to be provided by Cytokinetics, in which case the excess shall be refunded by Cytokinetics to Astellas within [*] days after the delivery of such invoice).

**(3)** If the ALS Development True-Up Report shows that the estimated Cytokinetics ALS Development Reimbursement shown on the ALS Development Advance Invoice is greater than the actual Cytokinetics ALS Development Reimbursement (the difference thereof, the "**Credit**"), then the sum of such Credit and the Astellas ALS Development Reimbursement, if any, shall be credited toward the ALS Development Advance Invoice for the current

calendar quarter (except where such invoice is the final such invoice to be provided by Cytokinetics, in which case the excess shall be refunded by Cytokinetics to Astellas within [*] days after the delivery of such invoice).

**(4)** "**Cytokinetics ALS Development Reimbursement**" shall mean, in each case to the extent permitted by the [*] under Section 6.4(d) of the Agreement: (A) the Astellas Portion (as defined below) of the Added Indication Development Costs for ALS incurred by or on account of Cytokinetics; plus (B) 100% of any other Development Costs for ALS (e.g., country-specific development activities for the Astellas Territory and [*]) incurred by or on account of Cytokinetics; minus (C) any portion of the Added Indication Development Costs for ALS incurred by or on account of Cytokinetics prior to Initiation of the Pivotal Registration Study, which Astellas is required to solely fund but Cytokinetics elects to co-fund under Section 1.3(c)(i) of the Amendment; and plus (D) any portion of the Added Indication Development Costs for ALS incurred by or on account of Cytokinetics after Initiation of the Pivotal Registration Study, which Cytokinetics is required to co-fund but makes the deferral election, to the extent permitted by and in accordance with Section 1.3(c)(iv) of the Amendment. The "**Astellas Portion**" means: (aa) prior to the Initiation of the Pivotal Registration Study for the Lead Product (or any Other Collaboration Product, if earlier) in ALS, 100%; and (bb) on and after the Initiation of the Pivotal Registration Study for the Lead Product (or any Other Collaboration Product, if earlier) in ALS, 50%.

**(5)** "**Astellas ALS Development Reimbursement**" shall mean, in each case to the extent permitted by the [*] under Section 6.4(d) of the Agreement: (A) 50% of the Added Indication Development Costs for ALS incurred by or on account of Astellas after Initiation of the Pivotal Registration Study; plus (B) any portion of the Added Indication Development Costs for ALS incurred by or on account of Astellas prior to Initiation of the Pivotal Registration Study, which Astellas is required to solely fund but Cytokinetics elects to co-fund under Section 1.3(c)(i) of the Amendment; and minus (C) any portion of the Added Indication Development Costs for ALS incurred by or on account of Astellas after Initiation of the Pivotal Registration Study, which Cytokinetics is required to co-fund but makes the deferral election, to the extent permitted by and in accordance with Section 1.3(c)(iv) of the Amendment.

**(iii)** **Timing of Payment.** For ease of administration, Astellas shall pay Cytokinetics a single payment reflecting the amount due under the ALS Development Advance Invoice for the current calendar quarter plus any deficits (or less any credits) reflected in the ALS Development True-Up Report for the prior calendar quarter, and submit to Cytokinetics a reasonably detailed report setting forth the accounting for any Astellas Solely Funded Costs as defined in the Amendment (if any) and Astellas ALS Development Reimbursement, all within the later of (1) [*] days of Astellas' receipt of such ALS Development Advance Invoice, or (2) [*] days of Astellas' receipt of such ALS Development True-Up Report. In addition, for accounting purposes, within [*] days after the end of each calendar quarter, Astellas shall submit

a reasonable estimate of Astellas Solely Funded Costs as defined in the Amendment (if any) and Astellas ALS Development Reimbursement for the current calendar quarter.

**(iv)** Within [*] days after the end of each calendar quarter in which Cytokinetics is not anticipated to conduct Added Indication Development Work for ALS under the Development Plan but in which Astellas conducts Added Indication Development Work for ALS under the Development Plan, Astellas shall submit to Cytokinetics a reasonably detailed accounting for the Astellas ALS Development Reimbursement and the Astellas Solely Funded Costs, as well as an invoice for the Astellas ALS Development Reimbursement. Cytokinetics shall either: (aa) pay to Astellas the amount of Astellas ALS Development Reimbursement invoiced within [*] days after the receipt of the invoice, to the extent such amounts do not exceed the applicable then-current Added Indication Development Budget as approved by the JDC by more than [*]; or (bb) elect to defer such payment obligations to the extent permitted by and in accordance with Section 1.3(c)(iv) of the Amendment.

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted and filed separately with the Securities and Exchange Commission pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

**Exhibit 31.1**

CERTIFICATION OF THE CHIEF EXECUTIVE OFFICER
PURSUANT TO SECTION 302 (a) OF THE SARBANES-OXLEY ACT OF 2002

I, Robert I. Blum, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Cytokinetics, Incorporated;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements and other financial information included in this report fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

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

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

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

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

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

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

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

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

Dated: August 4, 2017

By: /s/ Robert I. Blum
Robert I. Blum
President and Chief Executive Officer
(Principal Executive Officer)

**Exhibit 31.2**

CERTIFICATION OF THE CHIEF FINANCIAL OFFICER
PURSUANT TO SECTION 302 (a) OF THE SARBANES-OXLEY ACT OF 2002

I, Ching Jaw, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Cytokinetics, Incorporated;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements and other financial information included in this report fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

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

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

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

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

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

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

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

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

Dated: August 4, 2017

By: /s/ Ching Jaw
Ching Jaw
Senior Vice President, Chief Financial Officer
(Principal Financial Officer)

**Exhibit 31.3**

CERTIFICATION OF THE CHIEF ACCOUNTING OFFICER
PURSUANT TO SECTION 302 (a) OF THE SARBANES-OXLEY ACT OF 2002

I, Peter S. Roddy, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Cytokinetics, Incorporated;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements and other financial information included in this report fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

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

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

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

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

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

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

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

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

Dated: August 4, 2017

By: /s/ Peter S. Roddy
Peter S. Roddy
Senior Vice President, Chief Accounting Officer
(Principal Accounting Officer)

**Exhibit 32.1**

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

I certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Quarterly Report of Cytokinetics, Incorporated on Form 10-Q for the quarterly period ended June 30, 2017 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Form 10-Q fairly presents in all material respects the financial condition and results of operations of Cytokinetics, Incorporated.

Dated: August 4, 2017

/s/ Robert I. Blum
Robert I. Blum
President and Chief Executive Officer
(Principal Executive Officer)

/s/ Ching Jaw
Ching Jaw
Senior Vice President, Chief Financial Officer
(Principal Financial Officer)

/s/ Peter S. Roddy
Peter S. Roddy
Senior Vice President, Chief Accounting Officer
(Principal Accounting Officer)