CYTOKINETICS INC
Form 10-K
March 05, 2018

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-K

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2017

or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
From 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, CA	94080
(Address of principal executive offices)	(Zip Code)

(650) 624-3000

(Registrant's telephone number, including area code)

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

Title of each class	Name of each exchange on which registered
Common Stock, $0.001 par value	The NASDAQ Capital Market

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

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

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 Website, 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 if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of the Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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.

Large accelerated filer	Accelerated filer	Non-accelerated filer	Smaller reporting company	Emerging growth company

(Do not check if a smaller reporting 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

The aggregate market value of the voting and non-voting common equity held by non-affiliates was $630.8 million, computed by reference to the last sales price of $12.10 as reported by the NASDAQ Market as of June 30, 2017. This calculation does not reflect a determination that certain persons are affiliates of the Registrant for any other purpose. The number of shares of common stock held by non-affiliates excluded 452,562 shares of common stock held by directors, officers and affiliates of directors. The number of shares owned by affiliates of directors was determined based upon information supplied by such persons and upon Schedules 13D and 13G, if any, filed with the SEC. Exclusion of shares held by any person should not be construed to indicate that such person possesses the power, direct or indirect, to direct or cause the direction of the management or policies of the Registrant, that such person is controlled by or under common control with the Registrant, or that such persons are affiliates for any other purpose.

The number of shares outstanding of the Registrant’s common stock on February 23, 2018 was 54,008,113 shares.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant’s Proxy Statement for its 2018 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission, no later than 120 days after the end of the fiscal year, are incorporated by reference into Part III of this Annual Report on Form 10-K.

CYTOKINETICS, INCORPORATED

FORM 10-K

Year Ended December 31, 2017

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PART I

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 2018;
- 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 suspended development of tirasemtiv for the potential treatment of amyotrophic lateral sclerosis ("ALS");
- our and our partners' plans or ability to conduct the continued research and development of our drug candidates and other compounds;
- the advancement of omecamtiv mecarbil in Phase 3 clinical development;
- 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:

- Amgen's decisions with respect to the timing, design and conduct of research and development activities for omecamtiv mecarbil and related compounds, including decisions to postpone or discontinue research or

development activities relating to omecamtiv mecarbil and related compounds;

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- Astellas' decisions with respect to the timing, design and conduct of research and development activities for CK-2127107 (now referred to by the generic name, reldesemtiv) and other skeletal muscle activators, including decisions to postpone or discontinue research or development activities relating to reldesemtiv 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 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.

Item 1. Business

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 development of first-in-class muscle activators as potential treatments 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 cardiac muscle or skeletal 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 omecamtiv mecarbil, a novel cardiac myosin activator, and reldesemtiv, a next-generation fast skeletal muscle troponin activator ("FSTA") with orphan drug designation from FDA for the potential treatment of spinal muscular atrophy ("SMA"). In November 2017, we announced that VITALITY-ALS (Ventilatory Investigation of Tirasemtiv and Assessment of Longitudinal Indices after Treatment for a Year in ALS), the international Phase 3 clinical trial of our first-generation FSTA, tirasemtiv, in patients with ALS, did not meet its primary endpoint or secondary endpoints and that we decided to suspend development of tirasemtiv. We believe that VITALITY-ALS demonstrated pharmacologic activity for the mechanism of action and that limitations of tirasemtiv may be addressed with our next-generation FSTA, reldesemtiv.

Omecamtiv mecarbil is being evaluated for the potential treatment of heart failure under a strategic alliance with Amgen established in 2006 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"). Amgen, in collaboration with Cytokinetics, is conducting GALACTIC-HF (Global Approach to Lowering Adverse Cardiac Outcomes Through Improving Contractility in Heart Failure), a Phase 3 cardiovascular outcomes clinical trial of omecamtiv mecarbil in heart failure. Cytokinetics and Amgen are also planning a second Phase 3 clinical trial intended to evaluate its potential to increase exercise performance, a trial to be conducted by Cytokinetics.

Reldesemtiv is structurally distinct from tirasemtiv and selectively activates the fast skeletal muscle troponin complex in the sarcomere by increasing its sensitivity to calcium, leading to an increase in skeletal muscle contractility. Cytokinetics and Astellas are developing reldesemtiv under the Amended and Restated License and Collaboration Agreement dated December 22, 2014, as further amended in 2016 and 2017 (the "Astellas Agreement"). Astellas holds an exclusive license to develop and commercialize reldesemtiv worldwide, subject to our development and commercialization participation rights. We conducted five Phase 1 clinical trials of reldesemtiv. In collaboration with Astellas, we are conducting two Phase 2 clinical trials of reldesemtiv, one in patients with spinal muscular atrophy ("SMA") and one in patients with amyotrophic lateral sclerosis ("ALS"), called FORTITUDE-ALS (Functional Outcomes in a Randomized Trial of Investigational Treatment with CK-2127107 to Understand Decline in Endpoints – in ALS). Astellas, in collaboration with Cytokinetics, is conducting a Phase 2 clinical trial of reldesemtiv in patients with chronic obstructive pulmonary disease ("COPD") and a Phase 1b clinical trial of reldesemtiv in elderly subjects with limited mobility. We and Astellas are continuing to conduct a joint research program through 2019 focused on next-generation skeletal muscle activators. In 2016, we granted Astellas an option to enter into a pre-negotiated agreement for a global collaboration for the development and commercialization of tirasemtiv (the "Option on Tirasemtiv").

All of our drug candidates have demonstrated evidence of potentially clinically relevant pharmacodynamic activity in humans. We expect to continue to focus on translating the observed pharmacodynamic activity of these compounds into potentially meaningful clinical benefits for patients. All of our drug candidates have arisen from our cytoskeletal

research activities. Our focus on the biology of the cytoskeleton distinguishes us from other biopharmaceutical companies, and potentially positions us to discover and develop novel therapeutics that may be useful for the treatment of severe diseases and medical conditions. Each of our drug candidates has a novel mechanism of action compared to currently marketed drugs, which we believe validates our focus on the cytoskeleton as a productive area for drug discovery and development. We intend to leverage our experience in muscle contractility in order to expand our current pipeline, and expect to identify additional potential drug candidates that may be suitable for clinical development.

As we mark our 20th anniversary, our research continues to drive innovation and leadership in muscle biology, evidenced by three novel mechanistic compounds that have recently advanced in development: a next-generation cardiac muscle activator under our collaboration with Amgen, a next-generation skeletal muscle activator under our collaboration with Astellas, and an unpartnered cardiac sarcomere-directed compound. We and Astellas have recently agreed to extend our joint research program through 2019 while our scientists continue independent research activities directed to our other muscle biology programs.

Corporate Strategy

We are a late-stage biopharmaceutical company focused on discovering, developing and commercializing first-in-class muscle activators as potential treatments for debilitating diseases in which muscle performance is compromised and/or declining. As a leader in muscle biology and the mechanics of muscle performance, we are developing small molecule drug candidates specifically engineered to increase muscle function and contractility. Our goal is to discover, develop and commercialize novel drug products that modulate muscle function that may benefit people living with serious diseases or medical conditions, with the intent of establishing a fully-integrated biopharmaceutical company.

The key components of our Corporate Strategy, "Vision 2020: Empowering Our Future," are:

- Progress proprietary research programs focused on muscle into development under new collaborations. We believe that our extensive understanding of muscle biology and our proprietary research technologies should enable us to discover and potentially to develop drug candidates with novel mechanisms of action that may offer potential benefits not provided by existing drugs and which may have application across a broad array of diseases and medical conditions. We expect that we may be able to leverage our expertise in muscle contractility to expand programs related to other areas of muscle function and which may extend to the potential treatment of other serious medical diseases and conditions under new collaborations. Progressing related programs in parallel may afford us an opportunity to build a broader business that could benefit from multiple products that serve related clinical and commercial needs associated with impaired muscle function, muscle weakness and fatigue. In addition, this strategy may enable us to diversify certain technical, financial and operating risks by advancing several drug candidates in parallel.
- Advance next-generation skeletal and cardiac muscle activator compounds into clinical development by leveraging existing research collaborations. We take a purpose-driven approach by leveraging our extensive muscle biology expertise to engineer compounds with specific characteristics aimed at treating diseases that impact muscle function. By increasing muscle strength and performance, our drug candidates may preserve and extend independence and self-reliance in people suffering from debilitating diseases. We have established select strategic alliances to support our drug development programs while preserving significant development and commercialization rights. We believe that such alliances may allow us to obtain financial support and to capitalize on the therapeutic area expertise and resources of our partners that can potentially accelerate the development and commercialization of our drug candidates. Where we deem appropriate, we plan to retain certain rights to participate in the development and commercialization of drug candidates arising from our programs and alliances, so that we can expand and capitalize on our own internal development capabilities and build our commercialization capabilities.
- Conduct late-stage clinical development of novel, first-in-class muscle activators for the potential treatment of ALS, SMA, heart failure and other diseases impacting muscle function. Our portfolio consists of products that are in mid to late stage clinical development in three therapeutic areas, namely ALS, SMA, heart failure and other diseases impacting muscle function. We believe that by focusing on these disease areas characterized by well-organized physician-investigator groups, significant unmet clinical needs, and strong patient and disease advocacy, we may enhance our effectiveness in enrolling and conducting clinical trials to answer important questions about the dosing, tolerability, pharmacokinetics and pharmacodynamics as well as the potential safety and efficacy of our drug candidates. We believe that our considered clinical trial designs and well-executed development programs can improve our ability to realize value from our and our partners' clinical development activities. As we advance our drug candidates into later-stage clinical development, we extensively evaluate previous clinical trial designs and results to assess key learnings that may be applied to our late-stage clinical development activities. We believe this may result in more successful later-stage clinical development activities that may increase the likelihood of developing effective therapies that can address the needs of people living with these devastating diseases.
- Collaborate with patient communities to support the urgent development of new medicines for diseases of impaired muscle function with pressing unmet medical needs. Central to our corporate strategy are the people living with a

disease or medical condition characterized by impaired muscle function. We focus our development and commercialization activities on diseases that lack effective therapies and, in some cases, those with no approved medicines. We recognize that by applying our extensive knowledge of muscle biology towards the development of novel therapies for the people living with these diseases, we aim to improve lives of not only patients but also their caregivers and families. We collaborate with these individuals and their communities to ensure our potential drugs address their urgent needs and that we understand and appreciate the issues associated with these diseases and conditions. We work collaboratively with entities, such as patient advocacy groups, that focus on policies, guidelines and practices to accelerate development and commercialization of novel therapies, when possible and appropriate, and on ensuring that the voice of their constituencies are heard.

- Mature our company's operations to enable development, registration and commercialization of muscle biology drug candidates across North America and Europe. With a focus on disease areas for which there are serious unmet medical needs, we direct our activities to potential commercial opportunities in concentrated and tractable customer segments, such as hospital specialists and disease-specific centers of excellence, which may be addressed by smaller, targeted sales forces. In preparing for the potential commercialization of our drug candidates directed to these markets, we are focusing our activities on a broad range of issues facing patients and payors, including the principal drivers of clinical and economic burdens associated with these diseases. We also focus on opportunities that the multiple constituencies and stakeholders for these markets may recognize as creating value. Accordingly, targeting unmet medical needs in these areas may provide us competitive opportunities and support development of a franchise in diseases involving muscle weakness, wasting and fatigue. In these markets, we believe that a company with limited resources may be able to compete effectively against larger, more established companies with greater financial and commercial resources. For these opportunities, we intend to develop clinical development and sales and marketing capabilities in North America and Europe with the goal of becoming a fully-integrated biopharmaceutical company.

Research and Development Programs

Our long-standing interest in the cytoskeleton has led us to focus our research and development activities on the biology of muscle function and, in particular, small molecule modulation of muscle contractility. We believe that our expertise in the modulation of muscle contractility is an important differentiator for us. Our preclinical and clinical experience in muscle contractility may position us to discover and develop additional novel therapies that have the potential to improve the health of patients with severe and debilitating diseases or medical conditions.

Small molecules that affect muscle contractility may have several applications for a variety of serious diseases and medical conditions. For example, heart failure is a disease often characterized by impaired cardiac muscle contractility which may be treated by modulating the contractility of cardiac muscle. Similarly, certain diseases and medical conditions associated with muscle weakness may be amenable to treatment by enhancing the contractility of skeletal muscle. Because the modulation of the contractility of different types of muscle, such as cardiac and skeletal muscle, may be relevant to multiple diseases or medical conditions, we believe we can leverage our expertise in these areas to more efficiently discover and develop potential drug candidates that modulate the applicable muscle type for multiple indications.

We segment our research and development activities related to muscle contractility by our cardiac muscle contractility program and our skeletal muscle contractility program. We also conduct research and development on novel treatments for disorders involving muscle function beyond muscle contractility.

Our research and development expenses were $90.3 million, $59.9 million and $46.4 million for 2017, 2016 and 2015, respectively.

Cardiac Muscle Contractility Program

Our cardiac muscle contractility program is focused on the cardiac sarcomere, the basic unit of muscle contraction in the heart. The cardiac sarcomere is a highly ordered cytoskeletal structure composed of cardiac myosin, actin and a set of regulatory proteins. Cardiac myosin is the cytoskeletal motor protein in the cardiac muscle cell. It is directly responsible for converting chemical energy into the mechanical force, resulting in cardiac muscle contraction. This program is based on the hypothesis that activators of cardiac myosin may address certain adverse properties of existing positive inotropic agents. Current positive inotropic agents, such as beta-adrenergic receptor agonists or inhibitors of phosphodiesterase activity, increase the concentration of intracellular calcium, thereby increasing cardiac

sarcomere contractility. The effect on calcium levels, however, also has been linked to potentially life-threatening side effects. In contrast, our novel cardiac myosin activators work by a mechanism that directly stimulates the activity of the cardiac myosin motor protein, without increasing the intracellular calcium concentration. They accelerate the rate-limiting step of the myosin enzymatic cycle and shift it in favor of the force-producing state. Rather than increasing the velocity of cardiac contraction, this mechanism instead lengthens the systolic ejection time, which results in increased cardiac function in a potentially more oxygen-efficient manner.

Omecamtiv mecarbil

Our lead drug candidate from our cardiac contractility program is omecamtiv mecarbil, a novel cardiac 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.

Amgen Strategic Alliance

Our strategic alliance 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 is governed by 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 Laboratoires ("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 program for omecamtiv mecarbil and other drug candidates under the collaboration.

We have exercised our option under the Amgen Agreement 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 and 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 day-to-day management of the commercialization program of omecamtiv mecarbil.

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.

Omecamtiv Mecarbil: Clinical Development

GALACTIC-HF: GALACTIC-HF (Global Approach to Lowering Adverse Cardiac Outcomes Through Improving Contractility in Heart Failure) is a Phase 3 cardiovascular outcomes clinical trial of omecamtiv mecarbil which is being conducted by Amgen, in collaboration with Cytokinetics. Coincident with the start of the trial, Amgen made a $26.7 million milestone payment to 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 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 900 sites in 35 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 planning a second Phase 3 trial of omecamtiv mecarbil which is intended to evaluate its potential to increase exercise performance in patients with heart failure.

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. In September 2017, we announced the first dosing of a patient in Japan in GALACTIC-HF for which Amgen has paid us a $10.0 million milestone payment.

Omecamtiv Mecarbil: Heart Failure Commercial Market

Heart failure is a widespread and debilitating syndrome affecting millions of people in the United States. The high and rapidly growing prevalence of heart failure translates into significant hospitalization rates and associated societal costs. About 6.4 million people in the United States have heart failure, resulting in nearly one million hospital discharges with the primary diagnosis of heart failure and approximately 300,000 deaths each year. For people over 65 years of age, heart failure incidences approach 10 per 1000 and approximately 50% of people diagnosed with heart failure will die within 5 years of diagnosis. These numbers are increasing due to the aging of the U.S. population and an increased likelihood of survival following acute myocardial infarctions.

The costs to society attributable to the prevalence of heart failure are high, especially as many chronic heart failure patients suffer repeated acute episodes. Despite currently available therapies, readmission rates for heart failure patients remain high. In general, the mortality following hospitalization for patients with heart failure is 10.4% at 30 days, 22% at one year and 42.3% at 5 years, despite the availability of therapeutic alternatives for treatment of these patients. These poor outcomes in the setting of current therapies points to the need for novel therapeutics that may offer further reductions in morbidity and mortality. The annual cost of heart failure to the U.S. health care system is estimated to be $32 billion and is predicted to grow 120% to almost $70 billion by the year 2030. Today, a portion of that cost is attributable to drugs used to treat each of chronic and acute heart failure. Approximately 70% of those costs are due to hospitalization, home health and physician care. In the U.S., Medicare is one of the largest payors for heart failure related costs. Approximately 50% of Medicare beneficiaries with heart failure are concentrated in the top 20% of the hospital referral regions in the U.S. New drug therapies that could reduce the number of hospitalizations could decrease the cost to the health care system.

Ongoing Research in Cardiac Muscle Contractility

In January 2018, we announced that, under our strategic alliance with Amgen, a next-generation cardiac muscle activator was nominated as a development candidate by the Joint Research Committee. This milestone triggered a $1 million payment from Amgen to Cytokinetics.

Skeletal Muscle Contractility Program

Our skeletal muscle contractility program is focused on the activation of the skeletal sarcomere, the basic unit of skeletal muscle contraction. The skeletal sarcomere is a highly ordered cytoskeletal structure composed of skeletal muscle myosin, actin, and a set of regulatory proteins, which include the troponins and tropomyosin. This program leverages our expertise developed in our ongoing discovery and development of cardiac sarcomere activators, including the cardiac myosin activator, omecamtiv mecarbil.

We believe that our skeletal sarcomere activators may lead to new therapeutic options for diseases and medical conditions associated with aging, muscle weakness and wasting and neuromuscular dysfunction. The clinical effects

of muscle weakness and wasting, fatigue and loss of mobility can range from decreased quality of life to, in some instances, life-threatening complications. By directly improving skeletal muscle function, a small molecule activator of the skeletal sarcomere potentially could enhance functional performance and quality of life in patients suffering from diseases or medical conditions associated with skeletal muscle weakness or wasting, such as ALS, SMA, COPD or sarcopenia (general frailty associated with aging).

Reldesemtiv

CK-2127107 is our next-generation FSTA. It is structurally distinct from tirasemtiv and selectively activates the fast skeletal muscle troponin complex in the sarcomere by increasing its sensitivity to calcium, leading to an increase in skeletal muscle contractility. CK-2127107 has demonstrated pharmacological activity in preclinical models and evidence of potentially clinically relevant pharmacodynamic effects in humans. The FDA has granted CK-2127107 orphan drug designation for the potential treatment of SMA. We recently gained approval for use of reldesemtiv as the International Nonproprietary Name from the World Health Organization and the United States Adopted Name Council and now refer to CK-2127107 by this generic name.

Astellas Strategic Alliance

Our strategic alliance with Astellas to advance novel therapies for diseases and medical conditions associated with muscle impairment and weakness is governed by the Astellas Agreement. We initially exclusively licensed to Astellas rights to co-develop and potentially co-commercialize reldesemtiv in non-neuromuscular indications. Subsequently, we and Astellas expanded the strategic alliance to include certain neuromuscular indications, including SMA, and to advance reldesemtiv into Phase 2 clinical development, initially in SMA. In 2016, we and Astellas further expanded the strategic alliance to include the development of reldesemtiv for the potential treatment of ALS, as well as the possible development in ALS of other FSTAs previously licensed by us to Astellas, and granted Astellas an option for a global collaboration for the development and commercialization of tirasemtiv (the “Option on Tirasemtiv”).

The strategic alliance with Astellas includes a joint research program focused on the discovery of additional next-generation skeletal muscle activators, including sponsored research at Cytokinetics. This research program has been extended through 2019.

We have options to conduct early-stage development for certain agreed indications at our initial expense, subject to reimbursement if development continues under the strategic alliance; to co-promote collaboration products containing FSTAs for neuromuscular indications in the U.S., Canada and Europe; and to co-promote other collaboration products in the U.S. and Canada. Astellas will reimburse us for certain expenses associated with our co-promotion activities.

Astellas is primarily responsible for the development of reldesemtiv in ALS, but we conduct FORTITUDE-ALS and will share in the operational responsibility for later clinical trials. Subject to specified guiding principles, decision making will be by consensus, subject to escalation and, if necessary, Astellas' final decision making authority on the development (including regulatory affairs), manufacturing, medical affairs and commercialization of reldesemtiv and other fast skeletal troponin activators in ALS. We and Astellas share equally the costs of developing reldesemtiv 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 reldesemtiv 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 us 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 have the right to co-fund our share of such Phase 2 development costs on a current basis, in which case there would not be a premium due to Astellas. Cytokinetics will also receive additional development funding which includes Astellas' funding of our conduct of the Phase 2 clinical development of reldesemtiv in ALS.

Based on the achievement of pre-specified criteria, we 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 we have received $17.0 million) relating to early development of reldesemtiv and for later-stage development and commercial launch milestones for reldesemtiv in non-neuromuscular indications, and over $100.0 million in development and commercial launch milestones for reldesemtiv in each of SMA and other neuromuscular indications. We 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.

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 reldesemtiv. We can co-fund certain development costs for reldesemtiv 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, we may also receive payments for the achievement of pre-specified milestones relating to the joint research program.

Astellas generally has discretion to elect whether to pursue or abandon the development of reldesemtiv. 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, 2019.

Astellas' Option on Tirasemtiv: If Astellas were to exercise the Option on Tirasemtiv, we would grant Astellas an exclusive license to develop and commercialize tirasemtiv outside our commercialization territory of North America, Europe and other select countries under a license and collaboration agreement for tirasemtiv and each party would then 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 would receive an option exercise payment ranging from $25.0 million to $80.0 million and a milestone payment of $30.0 million from Astellas associated with the initiation of the open-label extension trial for tirasemtiv, VIGOR-ALS (Ventilatory Investigations in Global Open-Label Research in ALS). If Astellas were to exercise the option after the defined review period

following receipt of data from VITALITY-ALS, Astellas would 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 would 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 were to be commercialized, Astellas would pay us royalties (at rates ranging from the mid-teens to twenty percent) on sales of tirasemtiv in Astellas' territory, and we would 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.

Reldesemtiv: Clinical Development

SMA: We, in collaboration with Astellas, are conducting a Phase 2 double-blind, randomized, placebo-controlled clinical trial of reldesemtiv in patients with SMA designed to assess effects of reldesemtiv on multiple measures of muscle function in both ambulatory and non-ambulatory patients with SMA. The primary objective of this clinical trial is to determine the potential pharmacodynamic effects of a suspension formulation of reldesemtiv 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 reldesemtiv. Our objective was to 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, which completed enrollment in March 2017, received 150 mg of reldesemtiv dosed twice daily for eight weeks. The second cohort of patients receives 450 mg of reldesemtiv dosed twice daily. 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. Based on a blinded analysis of variability for the change from baseline of several of our efficacy measures, the clinical trial appears to have sufficient statistical power to detect differences versus placebo in the efficacy endpoints that are less than that which represents generally accepted “clinically meaningful” differences. Therefore, in consultation with Astellas we have elected to conclude enrollment in the first quarter of 2018 and expect results from this trial in the second quarter of 2018.

COPD: Astellas, in collaboration with Cytokinetics, is conducting a Phase 2 randomized, double-blind, placebo controlled, two period crossover clinical trial of reldesemtiv in patients with COPD designed to assess the effect of reldesemtiv 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 reldesemtiv compared to placebo on exercise tolerance. Additionally, the trial will assess the cardiopulmonary and neuromuscular effect of reldesemtiv relative to placebo and the effect of reldesemtiv on resting spirometry relative to placebo. The safety, tolerability and pharmacokinetics of reldesemtiv also will be assessed. We expect results from a Phase 2 clinical trial of reldesemtiv in patients with COPD in the second half of 2018.

Frailty: In June 2017, Astellas, in collaboration with Cytokinetics, started a Phase 1b clinical trial of reldesemtiv in elderly subjects with limited mobility. This trial is expected to enroll at least 60 elderly adults with limited mobility. Patients will be randomized to one of two treatment sequences in a 1:1 ratio to receive both reldesemtiv and placebo over two 14-day treatment periods, separated by a 14-day washout period. During treatment periods, patients will receive 500 mg of reldesemtiv or placebo twice daily, except on days 1 and 14, when they receive 500 mg of reldesemtiv once daily. The total study duration including the screening period and follow-up visit will be approximately 12 weeks for each patient. The trial is designed to assess the effect of reldesemtiv on skeletal muscle fatigue assessed as change from baseline versus 14 days of treatment in sum of peak torque during isokinetic knee extensions. The trial will also assess the effects of reldesemtiv on physical performance via a short physical performance battery, stair-climb test and 6-minute walk test as well as the safety, tolerability and pharmacokinetics of reldesemtiv. We expect results from a Phase 1b clinical trial of reldesemtiv in adults with limited mobility in the second half of 2018.

ALS: In July 2017, in collaboration with Astellas, we started FORTITUDE-ALS. Approximately 450 eligible ALS patients will be randomized (1:1:1:1) to receive either 150 mg, 300 mg or 450 mg of reldesemtiv dosed orally twice daily or placebo for 12 weeks. The primary efficacy endpoint is the change from baseline in the percent predicted slow vital capacity (“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 reldesemtiv; 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 reldesemtiv at the sampled time points during the study. Exploratory endpoints will be measured including the effect of reldesemtiv 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 reldesemtiv. We expect results from a Phase 2 clinical trial of reldesemtiv in patients with ALS in second half of 2018.

The clinical trials program for reldesemtiv may proceed for several years, and we may not 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 predict if or when this may occur.

Our expenditures will increase if Astellas terminates development of reldesemtiv 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 program with Astellas has been extended through 2019. 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 FSTAs 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.

Tirasemtiv

We were awarded a $1.5 million grant from The ALS Association 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 collected plasma samples 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. In 2017, we achieved all remaining milestones and received all $1.5 million available to us under this grant.

In March 2017, in collaboration with Origent Data Sciences, Inc. (“Origent”) 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.

In November 2017, we announced that VITALITY-ALS did not meet its primary endpoint of change from baseline in slow vital capacity which was evaluated at 24 weeks following randomization or any of the secondary endpoints in the trial which were evaluated at 48 weeks and we suspended development of tirasemtiv. No new safety or tolerability findings related to tirasemtiv were identified in VITALITY-ALS. Serious adverse events were similar between patients who received tirasemtiv or placebo but more patients discontinued double-blind treatment on tirasemtiv than on placebo primarily due to non-serious adverse events related to tolerability. The decline in SVC from baseline to 24 weeks was smaller in patients who received any dose of tirasemtiv in VITALITY-ALS compared to the decline in patients receiving placebo. The largest differences from placebo were observed in patients randomized to the mid- and high-dose groups of tirasemtiv who could tolerate and remain on their target dose, although those differences were not statistically significant.

Notwithstanding suspension of development of tirasemtiv, we currently continue to conduct VIGOR-ALS (Ventilatory Investigations in Global Open-Label Research 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. We plan to continue to consult with regulatory authorities and patient advocacy groups and others regarding future plans for VIGOR-ALS.

Commercial Market for ALS: Limited options exist for the treatment of patients with ALS, which affects as many as 30,000 Americans, with an estimated 5,600 new cases diagnosed each year in the U.S. Based on our primary market research, the per capita prevalence and incidence appears similar in the major European markets. ALS is 20% more common in men than women; however, with increasing age, the prevalence becomes more equal between men and women. The life expectancy of an ALS patient averages two to five years from the time of diagnosis, mostly due to

respiratory issues. Of the patients diagnosed with ALS, 5 to 10% have a family history of the disease (familial ALS) and remaining 90 to 95% have the sporadic form. The majority of patients with ALS in the U.S. and Europe receive treatment at a concentrated number of multidisciplinary centers that specialize in the unique needs of these patients. In the U.S., there are approximately 150 ALS multidisciplinary clinics, according to either the ALS Association or the Muscular Dystrophy Association. For most patients with ALS, death is usually due to respiratory failure because of diminished strength in the skeletal muscles responsible for breathing. We believe that there is an urgent need for novel therapies to address the unmet medical issues of this patient population which could be addressed by a small, targeted sales force.

Commercial Market for SMA: SMA is a severe neuromuscular disease that occurs in 1 in every 6,000 to 10,000 live births each year resulting in a prevalence of 10,000 to 25,000 patients in the U.S., and is one of the most common fatal genetic disorders. SMA manifests in various degrees of severity as progressive muscle weakness resulting in respiratory and mobility impairment. There are four types of SMA, distinguished by the time of the initial onset of muscle weakness and the severity of related symptoms: Type I (severe), Type II (intermediate), Type III (juvenile) and Type IV (adult onset). Life expectancy and disease severity varies by type of SMA from Type I, who have the worst prognosis and a life expectancy of approximately two years from birth, to Type IV, who have a normal life span but with gradual weakness in the proximal muscles of the extremities resulting in mobility issues. Type II, III and IV patients are often characterized by their ambulatory status as it is an important driver of clinical decisions and care, and constitute 50% of the incident patient population but as much as 90% of the prevalent patient population. Few treatment options exist for these patients, resulting in a high unmet need for new therapeutic options to ameliorate symptoms, improve muscle function and modify disease progression.

Other Commercial Markets for Skeletal Muscle Activators: We are continuing to evaluate the potential commercial markets for other potential indications for skeletal muscle activators, including COPD and frailty.

Beyond Muscle Contractility

We 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.

Intellectual Property

Our policy is to seek patent protection for the technologies, inventions and improvements that we develop that we consider important to the advancement of our business. As of December 31, 2017, we owned or co-owned or licensed 88 issued U.S. patents, over 330 issued patents in various foreign jurisdictions, and over 200 additional pending U.S. and foreign patent applications. We also rely on trade secrets, technical know-how and continuing innovation to develop and maintain our competitive position. Our commercial success will depend on obtaining and maintaining patent protection and trade secret protection for our drug candidates and technologies and our successfully defending these patents against third-party challenges. We will only be able to protect our technologies from unauthorized use by third parties to the extent that valid and enforceable patents cover them or we maintain them as trade secrets.

With regard to our drug candidates directed to muscle biology targets, we have a U.S. patent covering omecamtiv mecarbil and U.S. patents covering our skeletal muscle sarcomere activators including, but not limited to, tirasemtiv and reldesemtiv, which expire in 2027, 2027 and 2031, respectively, unless extended or otherwise adjusted. We also have issued patents in various foreign jurisdictions and additional U.S. and foreign patent applications pending for each of our drug candidates. It is not known or determinable whether other patents will issue from any of our other pending applications or what the expiration dates would be for any other patents that do issue.

Our drug candidates omecamtiv mecarbil and reldesemtiv are still in clinical development and have not yet been approved by the FDA, and development of tirasemtiv has been suspended. If either of these drug candidates is approved, then pursuant to federal law, we may apply for an extension of the U.S. patent term for one patent covering the approved drug, which could extend the term of the applicable patent by up to a maximum of five additional years.

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 that 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. For

example:

- 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, post-grant proceedings, 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.

The defense and prosecution of intellectual property infringement suits, interferences, post-grant proceedings, oppositions and related legal and administrative proceedings are costly, time-consuming to pursue and divert resources. The outcome of these types of proceedings is uncertain and could significantly harm 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. U.S. and foreign issued patents and pending patent applications owned by third parties exist that may be relevant to the therapeutic areas and chemical compositions of our drug candidates. While we are aware of certain relevant patents and patent applications owned by third parties, there may be issued patents or pending applications of which we are not aware that could cover our drug candidates. Because patent applications are often not published immediately after filing, 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.

The development of our drug candidates and the commercialization of any resulting drugs may be impacted by patents of companies engaged in competitive programs with significantly greater resources. This could result in the expenditure of significant legal fees and management resources.

We also rely on trade secrets to protect our technology, especially where we do not believe patent protection is appropriate or obtainable. However, trade secrets are often difficult to protect, especially outside of the United States. While we believe that we use reasonable efforts to protect our trade secrets, our employees, consultants, contractors, partners and other advisors may unintentionally or willfully disclose our trade secrets to competitors. Enforcing a claim that a third party illegally obtained and is 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, our competitors may independently develop information that is equivalent or similar to our trade secrets.

We seek to protect our intellectual property by requiring our employees, consultants, contractors and other advisors to execute nondisclosure and invention assignment agreements upon commencement of their employment or engagement, through which we seek to protect our intellectual property. Agreements with our employees also preclude them from bringing the proprietary information or materials of third parties to us. We also require confidentiality agreements or material transfer agreements from third parties that receive our confidential information or materials.

For further details on the risks relating to our intellectual property, please see the risk factors under Item 1A of this report, including, but not limited to, the risk factors entitled "Our success depends substantially upon our ability to obtain and maintain intellectual property protection relating to our drug candidates and research technologies" and "If we are sued for infringing third party intellectual property rights, it will be costly and time-consuming, and an unfavorable outcome would have a significant adverse effect on our business."

Government Regulation

The FDA and comparable regulatory agencies in state and local jurisdictions and in foreign countries impose substantial requirements upon the clinical development, manufacture, marketing and distribution of drugs. These agencies and other federal, state and local entities regulate research and development activities and the testing,

manufacture, quality control, labeling, storage, record keeping, approval, advertising and promotion of our drug candidates and drugs.

In the United States, the FDA regulates drugs under the Federal Food, Drug and Cosmetic Act and implementing regulations. The process required by the FDA before our drug candidates may be marketed in the United States generally involves the following:

- completion of extensive preclinical laboratory tests, preclinical animal studies and formulation studies, all performed in accordance with the FDA's good laboratory practice regulations;
- submission to the FDA of an investigational new drug application ("IND"), which must become effective before clinical trials may begin;

- performance of adequate and well-controlled clinical trials to establish the safety and efficacy of the drug candidate for each proposed indication in accordance with good clinical practices;
- submission of a new drug application ("NDA") to the FDA, which must usually be accompanied by payment of a substantial user fee;
- satisfactory completion of an FDA preapproval inspection of the manufacturing facilities at which the product is produced to assess compliance with current good manufacturing practice ("cGMP") regulations and FDA audits of select clinical investigator sites to assess compliance with good clinical practices ("GCP"); and
- FDA review and approval of the NDA prior to any commercial marketing, sale or shipment of the drug.

Similar regulatory procedures generally apply in countries outside of the United States. This testing and approval process requires substantial time, effort and financial resources, and we cannot be certain that any approvals for our drug candidates will be granted on a timely basis, if at all.

Nonclinical tests include laboratory evaluation of product chemistry, formulation and stability, and studies to evaluate toxicity and pharmacokinetics in animals. The results of nonclinical tests, together with manufacturing information and analytical data, are submitted as part of an IND application to the FDA. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA, within the 30-day period, raises concerns or questions about the conduct of the clinical trial, including concerns that human research subjects may be exposed to unreasonable health risks. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. Our submission of an IND or a foreign equivalent, or those of our collaborators, may not result in authorization from the FDA or its foreign equivalent to commence a clinical trial. A separate submission to an existing IND must also be made for each successive clinical trial conducted during product development. Further, an independent institutional review board ("IRB") or its foreign equivalent for each medical center proposing to conduct the clinical trial must review and approve the plan for any clinical trial before it commences at that center and it must monitor the clinical trial until completed. The FDA, the IRB or their foreign equivalents, or the clinical trial sponsor may suspend a clinical trial at any time on various grounds, including a finding that the subjects or patients are being exposed to an unacceptable health risk.

Clinical Trials. For purposes of an NDA or equivalent submission and approval, clinical trials are typically conducted in the following three sequential phases, which may overlap:

- Phase 1: Phase 1 includes the initial introduction of a drug candidate into humans. These studies may be conducted in patients, but are usually conducted in healthy volunteer subjects. These studies are designed to determine the metabolic and pharmacologic actions of the drug candidate in humans, the side effects associated with increasing doses, and, if possible, to gain early evidence on effectiveness. During Phase 1, sufficient information about the drug candidate's pharmacokinetics and pharmacological effects should be obtained to permit the design of well-controlled, scientifically valid, Phase 2 trials.
- Phase 2: Phase 2 includes the early controlled clinical studies conducted to obtain some preliminary data on the effectiveness of the drug candidate for a particular indication or indications in patients with the disease or condition. This phase of testing also helps determine the common short-term side effects and risks associated with the drug candidate. These clinical trials are generally conducted in a limited patient population to identify possible adverse effects and safety risks, to make an initial determination of potential efficacy of the drug candidate for specific targeted indications and to determine dose tolerance and optimal dosage. Multiple Phase 2 clinical trials may be conducted by the sponsor to obtain information prior to beginning larger and more expensive Phase 3 clinical trials. Phase 2a clinical trials generally are designed to study the pharmacokinetic or pharmacodynamic properties and to conduct a preliminary assessment of safety of the drug candidate over a measured dose response range. In some cases, a sponsor may decide to conduct a Phase 2b clinical trial, which is a second, typically larger, confirmatory Phase 2 trial that could, if positive and accepted by a regulatory authority, support approval of a drug candidate.
- Phase 3: If the Phase 2 clinical trials demonstrate that a dose range of the drug candidate is potentially effective and has an acceptable safety profile, Phase 3 clinical trials are then undertaken in large patient populations to further

evaluate dosage, to provide substantial evidence of clinical efficacy and to further test for safety in an expanded and diverse patient population at multiple, geographically dispersed clinical trial sites. Phase 3 trials are also intended to provide an adequate basis for extrapolating the results to the general population and transmitting that information in the drug labeling. Phase 3 studies usually include several hundred to several thousand people, and are usually longer in duration than Phase 2 trials.

At any time during the conduct of a clinical trial, the FDA or a foreign equivalent can impose a clinical hold on the trial if it believes the trial is unsafe or that the protocol is clearly deficient in design in meeting its stated objectives, which requires the conduct of the trial to cease until the clinical hold is removed. In some cases, the FDA or foreign equivalent may condition approval of marketing approval for a drug candidate on the sponsor's agreement to conduct additional clinical trials to further assess the drug's safety and effectiveness after marketing approval, known as Phase 4 clinical trials.

The clinical trials we conduct for our drug candidates, both before and after approval, and the results of those trials, are generally required to be included in a clinical trials registry database that is available and accessible to the public via the internet. A failure by us to properly participate in the clinical trial database registry could subject us to significant civil monetary penalties.

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 the Health Insurance Portability and Accountability Act of 1996 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.

New Drug/Marketing Approval Application. The results of drug candidate development, preclinical testing and clinical trials are submitted to the FDA as part of an NDA. The NDA also must contain extensive manufacturing information. In addition, the FDA may require that a proposed Risk Evaluation and Mitigation Strategy, also known as a REMS, be submitted as part of the NDA if the FDA determines that it is necessary to ensure that the benefits of the drug outweigh its risks. Similar, and in some cases additional, requirements apply in foreign jurisdictions for marketing approval applications for drugs in those jurisdictions. The FDA may refer the NDA to an advisory committee for review, evaluation and recommendation as to whether the application should be approved. The FDA often, but not always, follows the advisory committee's recommendations. The FDA may deny approval of an NDA by issuing a complete response letter if the applicable regulatory criteria are not satisfied, or it may require additional clinical data, including data in a pediatric population, or an additional Phase 3 clinical trial or impose other conditions that must be met in order to secure final approval for an NDA.

Even if such data are submitted, the FDA may ultimately decide that the NDA does not satisfy the criteria for approval. Data from clinical trials are not always conclusive and the FDA may interpret data differently than we or our partners do. Once issued, the FDA or foreign equivalent may withdraw a drug approval if ongoing regulatory requirements are not met or if safety problems occur after the drug reaches the market. In addition, the FDA or its foreign counterparts may require further testing, including Phase 4 clinical trials, and surveillance or restrictive distribution programs to monitor the effect of approved drugs which have been commercialized. The FDA and its foreign counterparts have the power to prevent or limit further marketing of a drug based on the results of these post-marketing programs. Drugs may be marketed only for the approved indications and in accordance with the provisions of the approved label. Further, if there are any modifications to a drug, including changes in indications, labeling or manufacturing processes or facilities, we may be required to submit and obtain prior FDA approval of a new NDA or NDA supplement, or the foreign equivalent, which may require us to develop additional data or conduct additional preclinical studies and clinical trials.

Satisfaction of FDA regulations and requirements or similar requirements of state, local and foreign regulatory agencies typically takes several years. The actual time required may vary substantially based upon the type, complexity and novelty of the drug candidate or disease. Typically, if a drug candidate is intended to treat a chronic disease, as is the case with some of our drug candidates, safety and efficacy data must be gathered over an extended period of time. Government regulation may delay or prevent marketing of drug candidates for a considerable period of time and impose costly procedures upon our activities. The FDA or any other regulatory agency may not grant approvals for new indications for our drug candidates on a timely basis, if at all. Even if a drug candidate receives regulatory approval, the approval may be significantly limited to specific disease states, patient populations and dosages or restrictive distribution programs. Further, even after regulatory approval is obtained, later discovery of

previously unknown problems with a drug may result in restrictions on the drug or even complete withdrawal of the drug from the market. Delays in obtaining, or failures to obtain, regulatory approvals for any of our drug candidates would harm our business. In addition, we cannot predict what future U.S. or foreign governmental regulations may be implemented.

Orphan Drug Designation. Some jurisdictions, including the United States, may designate drugs for relatively small patient populations as orphan drugs. The FDA grants orphan drug designation to drugs intended to treat a rare disease or condition, which is generally a disease or condition that affects fewer than 200,000 individuals in the United States. For example, the FDA has granted tirasemtiv an orphan drug designation for the treatment of ALS. In addition, the European Medicines Agency has granted tirasemtiv orphan medicinal product status for the treatment of ALS. We have been granted orphan drug designation in the U.S. by the FDA for reldesemtiv for the potential treatment of SMA.

An FDA orphan drug designation does not shorten the duration of the regulatory review and approval process. If a drug candidate that has an orphan drug designation receives the first FDA marketing approval for the indication for which the designation was granted, then the approved drug is entitled to orphan drug exclusivity. This means that the FDA may not approve another company’s application to market the same drug for the same indication for a period of seven years, except in certain circumstances, such as a showing of clinical superiority to the drug with orphan exclusivity or if the holder of the orphan drug designation cannot assure the availability of sufficient

quantities of the orphan drug to meet the needs of patients with the disease or condition for which the designation was granted. Competitors may receive approval of different drugs or biologics for the indications for which the orphan drug has exclusivity.

Fast Track Designation. Fast track is a process designed by the FDA to facilitate the development and expedite the review of drugs to treat serious diseases and fill an unmet medical need. Tirasemtiv has been granted fast track designation by the FDA for the treatment of ALS. Although fast track designation does not affect the standards for approval, the benefits of this designation include scheduled meetings to seek FDA input into development plans, the option of submitting an NDA in sections rather than all components simultaneously, and the potential eligibility for priority review if supported by clinical data.

Other Regulatory Requirements. Any drugs manufactured or distributed by us or our partners pursuant to FDA approvals or their foreign counterparts are subject to continuing regulation by the applicable regulatory authority, including recordkeeping requirements and reporting of adverse experiences associated with the drug. Drug manufacturers and their subcontractors are required to register their establishments with the FDA and other applicable regulatory authorities, and are subject to periodic unannounced inspections by these regulatory authorities for compliance with ongoing regulatory requirements, including cGMPs, which impose certain procedural and documentation requirements upon us and our third-party manufacturers. Failure to comply with the statutory and regulatory requirements can subject a manufacturer to possible legal or regulatory action, such as warning letters, suspension of manufacturing, seizure of product, injunctive action or possible civil penalties. We cannot be certain that we or our present or future third-party manufacturers or suppliers will be able to comply with the cGMP regulations and other ongoing FDA and other regulatory requirements. If our present or future third-party manufacturers or suppliers are not able to comply with these requirements, the FDA or its foreign counterparts may halt our or our partners' clinical trials, require us to recall a drug from distribution, or withdraw approval of the NDA for that drug.

For further details on the risks relating to government regulation of our business, please see the risk factors under Item 1A of this report, including, but not limited to, the risk factor entitled "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."

Competition

We compete in the segments of the pharmaceutical, biotechnology and other related markets that address neuromuscular and cardiovascular diseases and other diseases relating to muscle dysfunction, each of which is highly competitive. We face significant competition from most pharmaceutical companies and biotechnology companies that are also researching and selling products designed to address cardiovascular diseases and diseases and medical conditions associated with skeletal muscle weakness and wasting. Many of our competitors have significantly greater financial, manufacturing, marketing and drug development resources than we do. Large pharmaceutical companies in particular have extensive experience in clinical testing and in obtaining regulatory approvals for drugs. These companies also have significantly greater research capabilities than we do. In addition, many universities and private and public research institutes are active in research of neuromuscular and cardiovascular diseases and other diseases where there is muscle dysfunction, some in direct competition with us.

We believe that our ability to successfully compete will depend on, among other things:

- our drug candidates' efficacy, safety and tolerability;
- the speed and cost-effectiveness with which we develop our drug candidates;
- the selection of suitable indications for which to develop our drug candidates;

- the successful completion of clinical development and laboratory testing of our drug candidates;
- the timing and scope of any regulatory approvals we or our partners obtain for our drug candidates;
- our or our partners' ability to manufacture and sell commercial quantities of our approved drugs to meet market demand;
- acceptance of our drugs by physicians and other health care providers;
- the willingness of third party payors to provide reimbursement for the use of our drugs;
- our ability to protect our intellectual property and avoid infringing the intellectual property of others;
- the quality and breadth of our technology;
- our employees' skills and our ability to recruit and retain skilled employees;

- our cash flows under existing and potential future arrangements with licensees, partners and other parties; and
- the availability of substantial capital resources to fund development and commercialization activities.

Our competitors may develop drug candidates and market drugs that are less expensive and more effective than our future drugs or that may render our drugs obsolete. Our current or future competitors may also commercialize competing drugs before we or our partners can launch any drugs developed from our drug candidates. These organizations also compete with us to attract qualified personnel and potential parties for acquisitions, joint ventures or other strategic alliances.

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 chronic heart failure. These include generic drugs, such as milrinone, dobutamine or digoxin and branded drugs such as Corlanor (ivabradine), and Entresto (LCZ696). Omecamtiv mecarbil could also potentially compete against other novel drug candidates and therapies in development, such as those being developed by ARCA biopharma, Inc., Novartis, Bayer, Merck, Theravance Biopharma, Capricor, Cardiorentis AG, Ono Pharmaceutical Company, ARMGO Pharma, Inc, Stealth Biotherapeutics, Bristol-Myers Squibb Company, Zensun Sci & Tech, Ltd., and Tenax Therapeutics (formerly known as Oxygen Biotherapeutics, Inc.). In addition, there are a number of medical devices both marketed and in development for the potential treatment of heart failure.

If reldesemtiv is approved by the FDA or other regulatory authorities for the treatment of ALS, it may then compete with other drugs used for the treatment of ALS including Radicava (edaravone) and potential new therapies for ALS that are currently being developed by companies such as Neuraltus Pharmaceuticals, Inc., Ionis Pharmaceuticals, Inc. (in collaboration with Biogen), Genervon Biopharmaceuticals, LLC, Orion Pharmaceuticals, Orphazyme, Eisai Co., Ltd., Genentech, Inc. Edison Pharma, Q Therapeutics, AB Science, VM Biopharm, Mallinckrodt Pharmaceuticals, Chronos Therapeutics, and MediciNova, Inc. In addition, BrainStorm Cell Therapeutics and Neuralstem, Inc. are each conducting clinical development of stem cell therapies for the potential treatment of ALS. If reldesemtiv is approved by the FDA or other regulatory authorities for the potential treatment of SMA, potential competitors include Roche (in collaboration with PTC Therapeutics), AveXis, Inc., Biogen, Inc. (in collaboration with Ionis Pharmaceuticals, Inc.) Novartis AG, and Bioblast Pharma, Ltd. Drugs that could compete with reldesemtiv could also compete against tirasemtiv in ALS or other neuromuscular diseases, should the appropriate clinical trials be conducted. If reldesemtiv is approved by the FDA for the potential treatment of non-neuromuscular indications associated with muscle weakness, potential competitors include Ligand Pharmaceuticals, Inc., GTx, Inc., Regeneron Pharmaceuticals, Inc. (in collaboration with Sanofi), Eli Lilly & Company, Acceleron Pharma, Stealth Biotherapeutics, Scholar Rock, Summit Therapeutics, Pfizer Inc., and Novartis (in collaboration with Morphosys AG).

Employees

As of December 31, 2017, we had 137 full-time employees.

We have no collective bargaining agreements with our employees, and we have not experienced any work stoppages. We believe that our relations with our employees are good.

Investor Information

We file electronically with the SEC our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K pursuant to Section 13 or 15(d) of the Exchange Act. The public may read or copy any materials we file with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information

regarding issuers that file electronically with the SEC. The address of that site is www.sec.gov.

You may obtain a free copy of our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K and amendments to those reports on the day of filing with the SEC on our website at www.cytokinetics.com or by contacting the Investor Relations Department at our corporate offices by calling 650-624-3060. The information found on our website is not part of this or any other report filed with or furnished to the SEC.

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 our product candidates. 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, and 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 provides for up to $50.0 million in term loans due on October 1, 2022, of which $32.0 million in term loans has been borrowed to date. 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. Our ability to draw a second tranche of $8.0 million under the loan and security agreement was subject to our ability to achieve certain conditions related to the outcome of the VITALITY-ALS trial, which conditions we did not satisfy. Our ability to access the remaining $10.0 million under the loan and security agreement is subject to our ability to achieve certain conditions related to Phase 2 data for reldesemtiv in SMA, which conditions we may not be able to meet. In addition, although we expect to borrow additional funds under the loan and security agreement, before we do so, we must first satisfy ourselves that we will have access to future alternate sources of capital, including cash flow from our own operations, equity capital markets or debt capital markets in order to repay any principal borrowed, which we may be unable to do, in which case, our liquidity and ability to fund our operations may be substantially impaired.

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 omecamtiv mecarbil for the potential treatment of heart failure and reldesemtiv for the potential treatment of SMA, COPD, limited mobility, ALS and potentially other neuromuscular and non-neuromuscular indications associated with muscle weakness. 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, and in November 2017, we announced that VITALITY-ALS, a Phase 3 clinical trial of tirasemtiv in patients with ALS, did not achieve its primary endpoint or secondary endpoints. Following the results of VITALITY-ALS, we suspended development of tirasemtiv.

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 SVC, may be appropriate as a clinical endpoint for reldesemtiv; however, regulatory authorities may not accept these effects as a clinical endpoint to support registration of reldesemtiv 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. 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 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 reldesemtiv 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 clinical development program of reldesemtiv 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 our trial of tirasemtiv known as VITALITY-ALS, 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. Reldesemtiv, like these compounds, may fail in 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 Astellas' planned clinical development program of reldesemtiv are promising and should support approval, the FDA or other regulatory authorities may not deem these data to be sufficient to support approval.

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;
- slower than expected rates of patient recruitment and enrollment;
- 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.

If we encounter difficulties enrolling patients in our clinical trials, our clinical development activities could be delayed or otherwise adversely affected.

The timely completion of clinical trials in accordance with their protocols depends, among other things, on our ability to enroll a sufficient number of patients who remain in the study until its conclusion. We may experience difficulties in patient enrollment in clinical trials for a variety of reasons. The enrollment of patients depends on many factors, including:

- the patient eligibility criteria defined in the protocol;
- the size of the patient population required for analysis of the trial's primary endpoints;
- the proximity of patients to study sites;
- the design of the trial;
- the ability to recruit clinical trial investigators with the appropriate competencies and experience;
- clinicians' and patients' perceptions as to the potential advantages of the product candidate being studied in relation to other available therapies or clinical trials, including any new drugs that may be approved for the indications we are investigating or clinical trial results;
- the ability to obtain and maintain patient consents; and
- the risk that patients enrolled in clinical trials will drop out of the trials before completion.

In addition, our and our partners' clinical trials will compete with other clinical trials for product candidates that are in the same therapeutic areas as our and our partners' product candidates, and this competition will reduce the number and types of patients available to us, because some patients who might have opted to enroll in our or our partners' trials may instead opt to enroll in a trial being conducted by one of our competitors. Since the number of qualified clinical investigators is limited, we expect to conduct some of our or our partners' clinical trials at the same clinical trial sites that some of our competitors use, which will reduce the number of patients who are available for our clinical trials in such clinical trial site.

Delays in patient enrollment may result in increased costs or may affect the timing or outcome of the planned clinical trials, which could prevent completion of these trials and adversely affect our and our partners' ability to advance the development of product candidates.

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 clinical trials of omecamtiv mecarbil, 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 reldesemtiv.

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 reldesemtiv 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 of reldesemtiv 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 reldesemtiv in ALS. Astellas will be primarily responsible for the development of reldesemtiv in ALS, and we are responsible for conducting the Phase 2 clinical trial of reldesemtiv 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 reldesemtiv and will be the owner of any marketing approvals issued by the FDA or other regulatory authorities for reldesemtiv. If the FDA or other regulatory authorities approve reldesemtiv, 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 reldesemtiv or will proceed in an expeditious manner. Even if the FDA or other regulatory agencies approve reldesemtiv, 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 reldesemtiv do not meet Astellas' expectations at any time, Astellas may elect to terminate further development of reldesemtiv or certain of the potential clinical trials for reldesemtiv, 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 reldesemtiv. 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, 2019. If Astellas abandons reldesemtiv, it would result in a delay in or could prevent us from further developing or commercializing reldesemtiv, 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 reldesemtiv clinical trials, result in significant litigation or cause Astellas to act in a manner that is not in our best interest. If development of reldesemtiv 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 reldesemtiv. If Astellas abandons development of reldesemtiv 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 reldesemtiv 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 reldesemtiv ourselves, we would have to curtail or abandon that development or commercialization, which could harm our business.

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 reldesemtiv, 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 reldesemtiv 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 reldesemtiv 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 reldesemtiv, 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 reldesemtiv worldwide. 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 reldesemtiv 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 reldesemtiv 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 reldesemtiv 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.). If reldesemtiv 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 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. for reldesemtiv; however, there can be no guarantee that we will receive orphan approval for reldesemtiv, nor that we will be able to prevent third parties from developing and commercializing products that are competitive to reldesemtiv.

We have been granted orphan drug designation in the U.S. by the FDA for reldesemtiv 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 reldesemtiv or to receive orphan status for reldesemtiv 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 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.

Significant disruptions of information technology systems or breaches of data security could adversely affect our business.

Our business is increasingly dependent on complex and interdependent information technology systems, including internet-based systems, databases and programs, to support our business processes as well as internal and external communications. As use of information technology systems has increased, deliberate attacks and attempts to gain unauthorized access to computer systems and networks have increased in frequency and sophistication. Our information technology, systems and networks are potentially vulnerable to breakdown, malicious intrusion and computer viruses which may result in the impairment of production and key business processes or loss of data or

information. We are also potentially vulnerable to data security breaches—whether by employees or others—which may expose sensitive data to unauthorized persons. We have in the past and may in the future be subject to security breaches. For example, in February 2018, we discovered that our e-mail server suffered unauthorized intrusions in which proprietary business information was accessed. Although we do not believe that we have experienced any material losses related to security breaches, including recent cybersecurity incidents, there can be no assurance that we will not suffer such losses in the future. Breaches and other inappropriate access can be difficult to detect and any delay in identifying them could increase their harm. While we have implemented security measures to protect our data security and information technology systems, such measures may not prevent such events. Any such breaches of security and inappropriate access could disrupt our operations, harm our reputation or otherwise have a material adverse effect on our business, financial condition and results of operations.

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 SEC. 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.

Our revenue to date has been primarily derived from our research and license agreements, which can result in significant fluctuation in our revenue from period to period, and our past revenue is therefore not necessarily indicative of our future revenue.

Our revenue is primarily derived from our research and license agreements, from which we receive upfront fees, contract research payments, milestone and other contingent payments based on clinical progress, regulatory progress or net sales achievements and royalties. Significant variations in the timing of receipt of cash payments and our recognition of revenue can result from significant payments based on the execution of new research and license agreements, the timing of clinical outcomes, regulatory approval, commercial launch or the achievement of certain annual sales thresholds. The amount of our revenue derived from research and license agreements in any given period will depend on a number of unpredictable factors, including our ability to find and maintain suitable collaboration partners, the timing of the negotiation and conclusion of collaboration agreements with such partners, whether and when we or our collaboration partners achieve clinical, regulatory and sales milestones, the timing of regulatory approvals in one or more major markets, reimbursement levels by private and government payers, and the market introduction of new drugs or generic versions of the approved drug, as well as other factors. The application of ASC 606, Revenue from Contracts with Customers, which applies beginning in the first quarter of 2018, may have a material impact on revenue recognition under our research and license agreements. Our past revenue generated from these agreements is not necessarily indicative of our future revenue. If any of our existing or future collaboration partners fails to develop, obtain regulatory approval for, manufacture or ultimately commercialize any product candidate under our collaboration agreement, our business, financial condition, and results of operations could be materially and adversely affected.

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 ("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.

Recently enacted and future legislation, including potentially unfavorable pricing regulations or other healthcare reform initiatives, may increase the difficulty and cost for us to obtain regulatory approval of and commercialize our product candidates and affect the prices we may obtain.

The regulations that govern, among other things, regulatory approvals, coverage, pricing and reimbursement for new drug products vary widely from country to country. In the United States and some foreign jurisdictions, there have

been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay regulatory approval of our product candidates, restrict or regulate post-approval activities and affect our ability to successfully sell any product candidates for which we obtain regulatory approval. In particular, in March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, collectively, the Affordable Care Act, was enacted, which substantially changes the way health care is financed by both governmental and private insurers, and significantly impacts the U.S. pharmaceutical industry. The Affordable Care Act and its implementing regulations, among other things, addressed a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for certain drugs and biologics, including our product candidates, that are inhaled, infused, instilled, implanted or injected, increased the minimum Medicaid rebates owed by manufacturers under the Medicaid Drug Rebate Program, extended the Medicaid Drug Rebate Program to utilization of prescriptions of individuals enrolled in Medicaid

managed care organizations, subjected manufacturers to new annual fees and taxes for certain branded prescription drugs, provided incentives to programs that increase the federal government's comparative effectiveness research and established a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D.

Other legislative changes have been proposed and adopted in the United States since the Affordable Care Act was enacted. In August 2011, the Budget Control Act of 2011, among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions of Medicare payments to providers of 2% per fiscal year, which went into effect in April 2013, and will remain in effect through 2025 unless additional Congressional action is taken. In January 2013, President Obama signed into law the American Taxpayer Relief Act of 2012, or the ATRA, which, among other things, further reduced Medicare payments to several providers, including hospitals and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

There have been, and likely will continue to be, legislative and regulatory proposals at the foreign, federal and state levels directed at broadening the availability of healthcare and containing or lowering the cost of healthcare. We cannot predict the initiatives that may be adopted in the future. The continuing efforts of the government, insurance companies, managed care organizations and other payors of healthcare services to contain or reduce costs of healthcare and/or impose price controls may adversely affect:

- the demand for our product candidates, if we obtain regulatory approval;
- our ability to set a price that we believe is fair for our products;
- our ability to generate revenue and achieve or maintain profitability;
- the level of taxes that we are required to pay; and
- the availability of capital.

Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors, which may adversely affect our future profitability.

Since its enactment, there have been judicial and Congressional challenges to numerous provisions of the Affordable Care Act, as well as recent efforts by the Trump administration to repeal or replace certain aspects of the Affordable Care Act. Since January 2017, President Trump has signed two Executive Orders designed to delay the implementation of certain provisions of the Affordable Care Act or otherwise circumvent some of the requirements for health insurance mandated by the Affordable Care Act. Concurrently, Congress has considered legislation that would repeal or repeal and replace all or part of the Affordable Care Act. While Congress has not passed comprehensive repeal legislation, two bills affecting the implementation of certain taxes under the Affordable Care Act have been enacted. The Tax Cuts and Jobs Act of 2017 includes a provision repealing, effective January 1, 2019, the tax-based shared responsibility payment imposed by the Affordable Care Act on certain individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the "individual mandate". Additionally, on January 22, 2018, President Trump signed a continuing resolution on appropriations for fiscal year 2018 that delayed the implementation of certain mandated fees under the Affordable Care Act, including the so-called "Cadillac" tax on certain high cost employer-sponsored insurance plans, the annual fee imposed on certain health insurance providers based on market share, and the medical device excise tax on non-exempt medical devices. Congress may consider other legislation to repeal and replace elements of the Affordable Care Act. Any repeal and replace legislation may have the effect of limiting the amounts that government agencies will pay for healthcare products and services, which could result in reduced demand for our products or additional pricing pressure, or may lead to significant deregulation, which could make the introduction of competing products and technologies much

easier. Policy changes, including potential modification or repeal of all or parts of the Affordable Care Act or the implementation of new health care legislation could result in significant changes to the health care system, which could have a material adverse effect on our business, results of operations and financial condition.

Legislative and regulatory proposals have been made to expand post-approval requirements and restrict sales and promotional activities for pharmaceutical products. We cannot be sure whether additional legislative changes will be enacted, or whether the FDA regulations, guidance or interpretations will be changed, or what the impact of such changes on the regulatory approvals of our product candidates, if any, may be.

In the United States, the European Union and other potentially significant markets for our product candidates, government authorities and third-party payors are increasingly attempting to limit or regulate the price of medical products and services, particularly for new and innovative products and therapies, which has resulted in lower average selling prices. For example, in the United States, there have been several recent Congressional inquiries and proposed bills designed to, among other things, bring more transparency to

drug pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drugs. Further, Congress and the Trump administration have each indicated that it will continue to seek new legislative and/or administrative measures to control drug costs. At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, to encourage importation from other countries and bulk purchasing. Furthermore, the increased emphasis on managed healthcare in the United States and on country and regional pricing and reimbursement controls in the European Union will put additional pressure on product pricing, reimbursement and usage, which may adversely affect our future product sales and results of operations. These pressures can arise from rules and practices of managed care groups, judicial decisions and governmental laws and regulations related to Medicare, Medicaid and healthcare reform, pharmaceutical reimbursement policies and pricing in general.

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, fire 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 reldesemtiv 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 securities or industry analysts publish inaccurate or unfavorable research about our business, our stock price and trading volume could decline.

The trading market for our common stock depends in part on the research and reports that securities or industry analysts publish about us or our business. If one or more of the analysts who covers us downgrades our stock or publishes inaccurate or unfavorable research about our business, our stock price may decline. If one or more of these analysts ceases coverage of our company or fails to publish reports on us regularly, demand for our stock could decrease, which might cause our stock price and trading volume to decline.

In addition, as required by the new revenue recognition standards under ASC 606, Revenue from Contracts with Customers, which applies beginning in the first quarter of 2018, we will disclose the aggregate amount of transaction price allocated to performance obligations that are unsatisfied (or partially unsatisfied) as of the end of the reporting period. Market practices surrounding the calculation of this measure are still evolving. It is possible that analysts and investors could misinterpret our disclosure or that the terms of our research or license agreements or other circumstances could cause our methods for preparing this disclosure to differ significantly from others, which could lead to inaccurate or unfavorable forecasts by analysts and investors.

Regardless of accuracy, unfavorable interpretations of our financial information and other public disclosures could have a negative impact on our stock price. If our financial performance fails to meet analyst estimates, for any of the reasons discussed above or otherwise, or one or more of the analysts who cover us downgrade our common stock or change their opinion of our common stock, our stock price would likely decline.

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 February 23, 2018, our executive officers, directors and their affiliates beneficially owned or controlled approximately 8.4% 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 equity awards are exercised or settled for common stock.

The exercise of stock options or settlement of equity awards 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.

The recently passed comprehensive tax reform bill could adversely affect our business and financial condition.

On December 22, 2017, President Trump signed into law new tax legislation, or the Tax Act, which significantly reforms the Internal Revenue Code of 1986, as amended (the “Code”). The Tax Act, among other things, contains significant changes to corporate taxation, including reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%; limitation of the tax deduction for interest expense to 30% of adjusted earnings (except for certain small businesses); limitation of the deduction for net operating losses generated after 2017 to 80% of current year taxable income, indefinite carryforward of net operating losses and elimination of net operating loss carrybacks; changes in the treatment of offshore earnings regardless of whether they are repatriated; mandatory capitalization of research and development expenses beginning in 2022; immediate deductions for certain new investments instead of deductions for depreciation expense over time; further deduction limits on executive compensation; and modifying, repealing and creating many other business deductions and credits, including the reduction in the orphan drug credit from 50% to 25% of qualifying

expenditures. Federal net operating loss carryovers generated after 2017 will be carried forward indefinitely pursuant to the Tax Act. We continue to examine the impact this tax reform legislation may have on our business. Notwithstanding the reduction in the corporate income tax rate, the overall impact of the Tax Act is uncertain and our business and financial condition could be adversely affected. The impact of this tax reform on holders of our common stock is also uncertain and could be adverse. This periodic report does not discuss any such tax legislation or the manner in which it might affect us or our stockholders in the future. We urge our stockholders to consult with their legal and tax advisors with respect to such legislation.

Our ability to use net operating loss carryforwards to offset future taxable income, and our ability to use tax credit carryforwards, may be subject to certain limitations, and Ownership changes may limit our ability to use our net operating losses and tax credits in the future.

Our ability to use our federal and state net operating losses, or NOLs, to offset potential future taxable income and related income taxes that would otherwise be due is dependent upon our generation of future taxable income, and we cannot predict with certainty when, or whether, we will generate sufficient taxable income to use all of our NOLs.

As of December 31, 2017, we reported U.S. federal and state NOLs of approximately $382.8 million, $244.8 million, respectively. These federal NOLs generated prior to 2018 will continue to be governed by the NOL tax rules as they existed prior to the adoption of the new Tax Act, which means that generally they will expire 20 years after they were generated if not used prior thereto. Many states have similar laws. Accordingly, these federal and state NOLs could expire unused and be unavailable to offset future income tax liabilities. Under the newly enacted Tax Act, federal NOLs incurred in 2018 and in future years may be carried forward indefinitely, but the deductibility of such federal NOLs is limited to 80% of current year taxable income. It is uncertain if and to what extent various states will conform to the newly enacted federal tax law.

In addition, under the Code, our ability to utilize these NOLs and other tax attributes, such as federal tax credits, in any taxable year may be limited if we have experienced an “ownership change.” Generally, a Section 382 ownership change occurs if one or more stockholders or groups of stockholders who owns at least 5% of a corporation’s stock increases its ownership by more than 50 percentage points over its lowest ownership percentage within a three-year testing period. Similar rules may apply under state tax laws. We do not believe that we have experienced an ownership change that we believe under Section 382 of the Code will result in limitations in our ability to use certain of our NOLs and credits since 2006. However, we may experience future ownership changes as a result of future offerings or other changes in the ownership of our stock, some of which are beyond our control. As a result, the amount of the NOLs and tax credit carryforwards presented in our financial statements could be limited and, in the case of NOLs generated in 2017 and before, may expire unused. Any such material limitation or expiration of our NOLs may harm our future operating results by effectively increasing our future tax obligations.

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 1B. Unresolved Staff Comments
None.

Item 2. Properties
Our facilities consist of approximately 81,587 square feet of leased research and office space in South San Francisco, California. Our lease expires in June 2021. We believe that these facilities are suitable and adequate for our current needs.

Item 3. Legal Proceedings
We are not currently subject to any material legal proceedings.

Item 4. Mine Safety Disclosures
Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

The following table sets forth the high and low closing sales price per share of our common stock as reported on the NASDAQ Capital Market for the periods indicated.

	Closing Sale Price	
	High	Low
2016:		
First Quarter	$ 10.60	$ 6.17
Second Quarter	$ 9.49	$ 7.18
Third Quarter	$ 12.26	$ 8.55
Fourth Quarter	$ 12.55	$ 8.83
2017:		
First Quarter	$ 13.65	$ 10.05
Second Quarter	$ 17.00	$ 11.20
Third Quarter	$ 15.00	$ 12.00
Fourth Quarter	$ 15.65	$ 7.25

On February 23, 2018, the last reported sale price for our common stock on the NASDAQ Capital Market was $7.90 per share. We currently expect to retain future earnings, if any, for use in the operation and expansion of our business and have not paid and do not in the foreseeable future anticipate paying any cash dividends. As of February 23, 2018, there were 56 holders of record of our common stock.

Equity Compensation Information

Information regarding our equity compensation plans and the securities authorized for issuance thereunder is set forth in Part III, Item 12.

Comparison of Historical Cumulative Total Return Among Cytokinetics, Incorporated, the NASDAQ Stock Market (U.S.) Index and the NASDAQ Biotechnology Index (*)

(*) The above graph shows the cumulative total stockholder return of an investment of $100 in cash from December 31, 2012 through December 31, 2017 for: (i) our common stock; (ii) the NASDAQ Stock Market (U.S.) Index; and (iii) the NASDAQ Biotechnology Index. All values assume reinvestment of the full amount of all dividends. Stockholder returns over the indicated period should not be considered indicative of future stockholder returns.

	12/31/12	12/31/13	12/31/14	12/31/15	12/31/16	12/31/17
Cytokinetics, Incorporated	$100.00	$164.15	$202.28	$264.15	$306.83	$205.81
NASDAQ Composite Index	$100.00	$138.32	$156.85	$165.84	$178.28	$228.63
NASDAQ Biotechnology Index	$100.00	$165.61	$222.08	$247.44	$193.79	$234.60

The information contained under this caption “Comparison of Historical Cumulative Total Return Among Cytokinetics, Incorporated, the NASDAQ Stock Market (U.S.) Index and the NASDAQ Biotechnology Index” shall not be deemed to be soliciting material or to be filed with the SEC, nor shall such information be incorporated by reference into any future filing under the Securities Act or the Exchange Act, except to the extent that we specifically incorporate it by reference into such filing.

Item 6. Selected Financial Data

The following selected financial data should be read in conjunction with Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Item 8, "Financial Statements and Supplemental Data" of this report on Form 10-K.

	Year Ended December 31,				
	2017	2016	2015	2014	2013
	(In thousands, except per share amounts)				
Statement of Operations Data:					
Revenues:					
Research and development, grant and other revenues, net	$4,569	$44,236	$14,740	$37,104	$9,566
License revenues	8,799	62,171	13,918	9,836	21,082
Total revenues	13,368	106,407	28,658	46,940	30,648
Operating expenses:					
Research and development	90,296	59,897	46,398	44,426	49,450
General and administrative	36,468	27,823	19,667	17,268	15,092
Total operating expenses	126,764	87,720	66,065	61,694	64,542
Operating (loss) income	(113,396)	18,687	(37,407)	(14,754)	(33,894)
Interest expense	(3,016)	(2,698)	(268)	—	—
Non-cash interest expense on liability related to sale of future royalties	(13,980)	—	—	—	—
Interest and other income, net	2,602	464	174	108	177
Net (loss) income	$(127,790)	$16,453	$(37,501)	$(14,646)	$(33,717)
Net (loss) income per share:					
Basic	$(2.59)	$0.41	$(0.97)	$(0.41)	$(1.24)
Diluted	$(2.59)	$0.39	$(0.97)	$(0.41)	$(1.24)
Weighted average shares used in computing net (loss) income per share:					
Basic	49,404	39,943	38,814	35,709	27,275
Diluted	49,404	42,561	38,814	35,709	27,275

	As of December 31,				
	2017	2016	2015	2014	2013
	(In thousands)				
Balance Sheet Data:					
Cash and cash equivalents, and investments	$285,409	$163,921	$111,621	$83,228	$80,230
Working capital	241,850	125,375	81,458	107,276	52,634
Total assets	294,810	170,142	115,237	132,968	83,188
Long-term debt	31,777	27,381	14,639	—	—
Liability related to the sale of future royalties, net	104,650	—	—	—	—
Accumulated deficit	(646,081)	(518,291)	(534,744)	(497,243)	(482,597)
Total stockholders' equity	109,842	94,361	68,590	92,064	54,442

Item 7. 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.

Overview

We were incorporated in Delaware in August 1997 as Cytokinetics, Incorporated. We are a late-stage biopharmaceutical company focused on the discovery and development of first-in-class muscle activators as potential treatments 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 cardiac muscle or skeletal 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 omecamtiv mecarbil, a novel cardiac myosin activator, and reldesemtiv, a next-generation fast skeletal muscle troponin activator ("FSTA") with orphan drug designation from FDA for the potential treatment of spinal muscular atrophy ("SMA"). In November 2017, we announced that VITALITY-ALS (Ventilatory Investigation of Tirasemtiv and Assessment of Longitudinal Indices after Treatment for a Year in ALS), the international Phase 3 clinical trial of our first-generation FSTA, tirasemtiv, in patients with ALS, did not meet its primary endpoint or secondary endpoints and that we decided to suspend development of tirasemtiv. We believe that VITALITY-ALS demonstrated pharmacologic activity for the mechanism of action and that limitations of tirasemtiv may be addressed with our next-generation FSTA, reldesemtiv.

Omecamtiv mecarbil is being evaluated for the potential treatment of heart failure under a strategic alliance with Amgen established in 2006 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"). Amgen, in collaboration with Cytokinetics, is conducting GALACTIC-HF (Global Approach to Lowering Adverse Cardiac Outcomes Through Improving Contractility in Heart Failure), a Phase 3 cardiovascular outcomes clinical trial of omecamtiv mecarbil in heart failure. Cytokinetics and Amgen are also planning a second Phase 3 clinical trial intended to evaluate its potential to increase exercise performance, a trial to be conducted by Cytokinetics.

Reldesemtiv is structurally distinct from tirasemtiv and selectively activates the fast skeletal muscle troponin complex in the sarcomere by increasing its sensitivity to calcium, leading to an increase in skeletal muscle contractility. Cytokinetics and Astellas are developing reldesemtiv under the Amended and Restated License and Collaboration Agreement dated December 22, 2014, as further amended in 2016 and 2017 (the "Astellas Agreement"). Astellas holds an exclusive license to develop and commercialize reldesemtiv worldwide, subject to our development and commercialization participation rights. We conducted five Phase 1 clinical trials of reldesemtiv. In collaboration with Astellas, we are conducting two Phase 2 clinical trials of reldesemtiv, one in patients with spinal muscular atrophy ("SMA") and one in patients with amyotrophic lateral sclerosis ("ALS"), called FORTITUDE-ALS (Functional Outcomes in a Randomized Trial of Investigational Treatment with CK-2127107 to Understand Decline in Endpoints – in ALS). Astellas, in collaboration with Cytokinetics, is conducting a Phase 2 clinical trial of reldesemtiv in patients with chronic obstructive pulmonary disease ("COPD") and a Phase 1b clinical trial of reldesemtiv in elderly subjects with limited mobility. We and Astellas are continuing to conduct a joint research program through 2019 focused on next-generation skeletal muscle activators. In 2016, we granted Astellas an option to enter into a pre-negotiated agreement for a global collaboration for the development and commercialization of tirasemtiv (the "Option on Tirasemtiv").

All of our drug candidates have demonstrated evidence of potentially clinically relevant pharmacodynamic activity in humans. We expect to continue to focus on translating the observed pharmacodynamic activity of these compounds into potentially meaningful clinical benefits for patients. All of our drug candidates have arisen from our cytoskeletal

research activities. Our focus on the biology of the cytoskeleton distinguishes us from other biopharmaceutical companies, and potentially positions us to discover and develop novel therapeutics that may be useful for the treatment of severe diseases and medical conditions. Each of our drug candidates has a novel mechanism of action compared to currently marketed drugs, which we believe validates our focus on the cytoskeleton as a productive area for drug discovery and development. We intend to leverage our experience in muscle contractility in order to expand our current pipeline, and expect to identify additional potential drug candidates that may be suitable for clinical development.

As we mark our 20th anniversary, our research continues to drive innovation and leadership in muscle biology, evidenced by three novel mechanistic compounds that have recently advanced in development: a next-generation cardiac muscle activator under our collaboration with Amgen, a next-generation skeletal muscle activator under our collaboration with Astellas, and an unpartnered cardiac sarcomere-directed compound. We and Astellas have recently agreed to extend our joint research program through 2019 while our scientists continue independent research activities directed to our other muscle biology programs.

Critical Accounting Polices and Significant Estimates

Our discussion and analysis of our financial condition and results of operations are based on our financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities and expenses and related disclosure of contingent assets and liabilities. We review our estimates on an ongoing basis. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances. Actual results may differ from these estimates under different assumptions or conditions. While our significant accounting policies are described in more detail in the

notes to our financial statements included in this Annual Report on Form 10-K, we believe the following accounting policies to be critical to the judgments and estimates used in the preparation of our financial statements.

Revenue Recognition

We recognize revenue when the following criteria have been met: persuasive evidence of an arrangement exists; delivery has occurred or services have been rendered; the fee is fixed or determinable; and collectability is reasonably assured. Determination of whether persuasive evidence of an arrangement exists and whether delivery has occurred or services have been rendered are based on management's judgments regarding the fixed nature of the fee charged for research performed and milestones met, and the collectability of those fees. Should changes in conditions cause management to determine these criteria are not met for certain future transactions, revenue recognized for any reporting period could be adversely affected.

Revenue under our license and collaboration arrangements is recognized based on the performance requirements of the contract. Research and development revenues, which are earned under agreements with third parties for agreed research and development activities, may include non-refundable license fees, research and development funding, cost reimbursements and contingent milestones and royalties. Our license and collaboration arrangements with multiple elements were evaluated to determine whether the delivered elements under these arrangements have value to our collaboration partner on a stand-alone basis and whether objective and reliable evidence of fair value of the undelivered item exists. If we determine that multiple deliverables exist, the consideration is allocated to one or more units of accounting based upon the best estimate of the selling price of each deliverable. The selling price used for each deliverable will be based on vendor-specific objective evidence, if available, third-party evidence if vendor-specific objective evidence is not available, or estimated selling price if neither vendor-specific or third-party evidence is available. A delivered item or items that do not qualify as a separate unit of accounting within the arrangement shall be combined with the other applicable undelivered items within the arrangement. The allocation of arrangement consideration and the recognition of revenue then shall be determined for those combined deliverables as a single unit of accounting. A delivered item or items that do not have stand-alone value to our collaboration partner shall be combined with the other applicable undelivered items within the arrangement. The allocation of arrangement consideration and the recognition of revenue then shall be determined for those combined deliverables as a single unit of accounting. For a combined unit of accounting, non-refundable upfront fees and milestones are recognized in a manner consistent with the final deliverable, which has generally been ratably over the period of the research and development obligation. For certain arrangements, the period of time over which certain deliverables will be provided is not contractually defined. Accordingly, management is required to make estimates and assumptions that affect the amounts reported in the consolidated financial statements and accompanying notes.

Upfront, non-refundable licensing payments are assessed to determine whether or not the licensee is able to obtain stand-alone value from the license. Where the license does not have stand-alone value, non-refundable license fees are recognized as revenue as we perform under the applicable agreement. Where the level of effort is relatively consistent over the performance period, we recognize total fixed or determined revenue on a straight-line basis over the estimated period of expected performance. Where the license has stand-alone value, we recognize total license revenue at the time all revenue recognition criteria have been met.

We account for milestone payments under the provisions of ASC 605-28. We consider an event to be a milestone if there is substantive uncertainty at the date the arrangement is entered into that the event will be achieved, if the event can only be achieved with our performance, and if the achievement of the event results in payment to us. If we determine a milestone is substantive, we recognize revenue when payment is earned and becomes payable. For a milestone to be considered substantive, it must be achieved with our performance, be reasonable relative to the terms of the arrangement and be commensurate with our effort to achieve the milestone or commensurate with the enhanced value of the delivered item(s) as a result of the milestone achievement. If we determine a milestone is not substantive,

we defer the payment and recognize revenue over the estimated period of performance as we complete our performance obligations, if any.

Research and development revenues and cost reimbursements are based upon negotiated rates for our FTEs and actual out-of-pocket costs. FTE rates are negotiated rates that are based upon our costs, and which we believe approximate fair value. Any amounts received in advance of performance are recorded as deferred revenue. None of the revenues recognized to date are refundable if the relevant research effort is not successful. In revenue arrangements in which both parties make payments to each other, we evaluate the payments to determine whether payments made by us will be recognized as a reduction of revenue or as expense. Revenue we recognize may be reduced by payments made to the other party under the arrangement unless we receive a separate and identifiable benefit in exchange for the payments and we can reasonably estimate the fair value of the benefit received. In arrangements in which we are the primary obligor, we record expense reimbursements from the other party as research and development revenue. If we are not the primary obligor, we record payments as a reduction of revenue.

Funds received from third parties under grant arrangements are recorded as revenue if we are deemed to be the principal participant in the grant arrangement as the activities under the grant are part of our development programs. If we are not the principal participant, the grant funds are recorded as a reduction to research and development expense. Grant funds received are not refundable and are

recognized when the related qualified research and development costs are incurred and when there is reasonable assurance that the funds will be received. Funds received in advance are recorded as deferred revenue.

Preclinical Study and Clinical Trial Accruals

We use third-party contract research organizations ("CROs") and other vendors to conduct a substantial portion of our preclinical studies and all of our clinical trials. For preclinical studies, the significant factors used in estimating accruals include the percentage of work completed to date and contract milestones achieved. For clinical trial expenses, the significant factors used in estimating accruals include the number of patients enrolled, duration of enrollment and percentage of work completed to date. We monitor patient enrollment levels and related activities to the extent possible through internal reviews, correspondence and status meetings with CROs and review of contractual terms. Our estimates are dependent on the timeliness and accuracy of data provided by our CROs and other vendors. If we have incomplete or inaccurate data, we may under- or overestimate activity levels associated with various studies or clinical trials at a given point in time. In this event, we could record adjustments to research and development expenses in future periods when the actual activity levels become known.

Stock-Based Compensation

We account for share-based awards made to employees and directors, including employee stock options and employee stock awards. We measure stock-based compensation cost at the grant date based on the calculated fair value of the award, and recognize this compensation as a non-cash expense on a straight-line basis over the requisite service period, generally the vesting period of the award.

We measure the fair value of share-based awards to non-employees each period until the award is fully vested.

We measure compensation for restricted stock awards that contain performance conditions on the grant date fair value of the award and recognize this compensation as non-cash expense over the implicit or explicit requisite service period based on our best estimate as to whether it is probable that the award is expected to vest.

We review our valuation assumptions at each grant date and the valuation assumptions we use to value share based awards granted in future periods may differ from those used for grants made in prior periods. The assumptions used in calculating stock-based compensation are based on management estimates and judgment and involve inherent uncertainties. For example, we estimate an expected forfeiture rate for stock options and restricted stock awards and recognize expense only for those shares we expect to vest. If we use different assumptions in a future period, future stock-based compensation expense could be materially different that the expense we have recognized to date.

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

We account for the Liability related to sale of future royalties as a debt financing. We have a significant continuing involvement in the generation of related royalty streams. We accrete this liability and recognize non-cash interest expense using the effective interest rate method over the life of the related royalty stream, based on our current estimates of future royalty payments. These estimates include projections we make and projections from outside the Company and involve significant judgement and involve inherent uncertainties. We periodically re-assess the projections and, to the extent our 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, we will adjust

the Liability related to sale of future royalties and prospectively recognize related non-cash interest expense.

Income Taxes

We account for income taxes under the asset and liability method and determine deferred tax assets and liabilities based on the difference between the financial statement and tax basis of assets and liabilities using enacted tax rates for the year in which the differences are expected to be realized. We did not record an income tax provision in the years ended December 31, 2017, 2016, and 2015 because the Company either had net taxable losses or was able to utilize tax attributes to offset taxable income

We establish valuation allowances when necessary to reduce the deferred tax assets to the amounts expected to be realized. Based upon the weight of available evidence, which includes our historical operating performance, reported cumulative net losses, and expected future losses we recognized a valuation allowance to fully offset net deferred tax assets as of December 31, 2017, 2016 and 2015. We assessed both positive and negative evidence to determine whether it is more likely than not our deferred tax assets are recoverable. We intend to maintain a full valuation allowance on the U.S. deferred tax assets until sufficient positive evidence exists to support reversal of the valuation allowance.

Results of Operations

Revenues

Our revenue since inception has been generated primarily from our strategic alliances, including with Amgen and Astellas, and grant revenues from the ALS Association (the "ALSA"). We have not generated any revenue from commercial product sales to date. Under our agreements with Amgen and Astellas, we received payments including non-refundable upfront license fees, reimbursements of internal costs of certain full-time employee equivalents and costs to support research and development programs, and milestone payments.

We may also be entitled to additional milestone payments and other contingent payments upon the occurrence of specific events. Due to the nature of these collaboration agreements and the nonlinearity of the earnings process associated with certain payments and milestones, we expect that our revenue will continue to fluctuate in future periods.

	Years Ended December 31,			Increase (Decrease)	
	2017	2016	2015	2017	2016
	(In millions)				
Research and development, grant and other revenues, net	$4.6	$44.2	$14.8	$ (39.6)	$ 29.4
License revenues	8.8	62.2	13.9	(53.4)	48.3
Total revenues	$13.4	$106.4	$28.7	$ (93.0)	$ 77.7

Our revenues are primarily from our strategic alliances with Astellas and Amgen. Research and development revenues from Astellas were $11.9 million, $15.1 million, and $12.2 million for years ended December 31, 2017, 2016 and 2015, respectively, and consisted of reimbursements of internal costs for certain full-time employee equivalents, and other research and development expenses. Revenues from Astellas in 2016 included $2.0 million in milestone revenues. Research and development revenues from Amgen during the year ended December 31, 2017 included $11.0 million in milestones earned as well as $1.3 million of research and development revenues. These revenues were offset by $20.0 million (out of the total $40.0 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. Research and development revenues related to Amgen in 2016 and 2015 were $27.9 million and $2.5 million, respectively. Revenues from Amgen in 2016 included $26.7 million in milestone revenues.

License revenues come from our strategic alliances with Astellas and Amgen. License revenues from Astellas were $8.8 million, $62.2 million, and $13.9 million for the years ended December 31, 2017, 2016, and 2015, respectively. License revenue from Astellas in 2016 consisted of the recognition of the $50.0 million upfront license fee received from Astellas under the 2016 Astellas Amendment, and the recognition of a portion of the $30.0 million upfront license fee received from Astellas in January 2015. License revenue from Astellas in 2015 consisted of the recognition of a portion of the $30.0 million upfront license fee received from Astellas in January 2015 and the recognition of a portion of the $16.0 million upfront license fee received from Astellas in July 2013. The upfront license fees were recognized using the proportional performance model and continued to be recognized through December 31, 2017.

Prior to April 1, 2017, we considered Astellas and Amgen to be a related party, due in part to their equity ownership percentage, and reported revenue under the Astellas Agreement and the Amgen Agreement to be revenues from a

related party. Effective April 1, 2017, in part due to a decrease in each of Astellas' and Amgen's equity ownership percentage, the Company no longer considers either Astellas or Amgen to be a related party.

Research and development expenses

We incur research and development expenses associated with both partnered and our own research activities.

Research and development expenses related to any development we elect to fund consist primarily of employee compensation, supplies and materials, costs for consultants and contract research and manufacturing, facilities costs and depreciation of equipment.

	Years Ended December 31,			Increase (Decrease)	
	2017	2016	2015	2017	2016
	(In millions)				
Research and development expenses	$90.3	$59.9	$46.4	$ 30.4	$ 13.5

The increase in research and development expenses in 2017 as compared to 2016 was 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, increased clinical trials activity for reldesemtiv, as well as increased personnel.

The increase in research and development expenses in 2016 compared to 2015 was primarily due to an increase in outsourced clinical and research costs, personnel related expenses and non-cash stock compensation expense, partially offset by a decrease in outsourced preclinical costs mainly associated with clinical manufacturing activities.

Research and development expenses by program for the years ended December 31, 2017, 2016, and 2015 were:

	Years Ended December 31,			Increase (Decrease)	
	2017	2016	2015	2017	2016
	(In millions)				
Cardiac muscle contractility	$10.6	$8.1	$5.8	$ 2.5	$ 2.3
Skeletal muscle contractility	75.4	49.2	36.3	26.2	12.9
Smooth muscle contractility	—	—	0.2	—	(0.2)
All other research programs	4.3	2.6	4.1	1.7	(1.5)
Total research and development expenses	$90.3	$59.9	$46.4	$ 30.4	$ 13.5

From a program perspective, the increase in research and development expenses for the year ended December 31, 2017, compared to the same periods in each of 2016 and 2015 was primarily due to increased activity for our skeletal muscle contractility program, which included our skeletal muscle contractility program for tirasemtiv for the treatment of ALS and the clinical program for reldesemtiv under our collaboration with Astellas.

We expect our research and development expenditures to decrease in 2018 compared to 2017 primarily because in November 2017 we suspended development of tirasemtiv. Under our strategic alliance with Astellas, we expect to continue development of our drug candidate reldesemtiv for the potential treatment of SMA and ALS 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.

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.

General and administrative expenses

General and administrative expenses consist primarily of compensation for employees in executive and administrative functions, including, but not limited to, finance, human resources, legal, business and commercial development and strategic planning. Other significant costs include facilities costs, consulting costs and professional fees for accounting and legal services, including legal services associated with obtaining and maintaining patents and regulatory compliance.

General and administrative expenses for the years ended December 31, 2017 were:

	Years Ended December 31,			Increase (Decrease)	
	2017	2016	2015	2017	2016
	(In millions)				
General and administrative expenses	$36.5	$27.8	$19.7	$ 8.7	$ 8.1

The increase in general and administrative expenses in 2017 as compared to 2016 was primarily due to increased personnel, non-cash stock compensation expense, increased commercial readiness activities, and accounting and finance and recruitment related costs.

General and administrative expenses increased 2016 compared to 2015 primarily due to increased spending in personnel-related expenses due to increased headcount and non-cash stock compensation expense, an increase in corporate and patent legal fees, and an increase in outsourced costs related to commercial development, grants and sponsorships, and accounting and finance and recruitment related costs.

We expect that general and administrative expenses in 2018 will decrease compared to 2017, primarily because we expect lower commercial development expenses in 2018 as compared to 2017 following suspension of commercial development of tirasemtiv.

Interest expense

Interest expense for 2015, 2016 and 2017 primarily consisted of interest expense related to the loan and security agreement with the Loan and Security Agreement, dated as of October 19, 2015 and amended on October 27, 2017 by and among the Company, Oxford Finance LLC and Silicon Valley Bank, as amended (the “Loan Agreement”). Interest expense increased in 2017 compared to 2016 primarily due to higher average loan balances outstanding in 2017 compared to 2016. Interest expense increased in 2016 compared to 2015 due to interest expense related to the long-term debt obligations which commenced in fourth quarter 2015.

Non-cash interest expense on liability related to sale of future royalties

Non-cash interest expense related to Liability related to sale of future royalties in 2017 results from accretion of the liability related to sale of future royalties in 2017. We anticipate that this non-cash interest expense will increase in the future primarily due to accretion of the liability over time.

Interest and Other Income, net

Interest and other income, net for the years ended December 31, 2017, 2016 and 2015, primarily consisted of interest income generated from our cash, cash equivalents and investments. Other income consisted of net gains on upon disposal of certain equipment.

Liquidity and Capital Resources

At December 31, 2017, our cash, cash equivalents and marketable securities totaled $285.4 million.

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.

In February 2017, we entered into the Royalty Agreement by and between the Company and RPI Finance Trust ("RPI"), dated February 1, 2017 (the "Royalty Agreement"). 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.

In June 2017, we completed a public offering of our common stock and issued 6,049,000 shares for net proceeds of $82.8 million, before expenses.

Net cash used in operating activities was $101.8 million in the year ended December 31, 2017 and was largely due to our net loss of $127.8 million less noncash charges such as stock-based compensation expense and non-cash interest expense on liability related to sale of future royalties of $9.0 million and $14.0 million, respectively.

Net cash provided by operating activities was $37.0 million in the year ended December 31, 2016 and was largely due to the receipt of $65.0 million from Astellas in October 2016, the receipt of a $26.7 million milestone payment from Amgen in December 2016, partially offset by cash used by operations due to the ongoing research and development activities, and general and administrative spend to support those activities. Net income for the year ended December 31, 2016 included non-cash stock based compensation of $7.1 million. At December 31, 2016, deferred revenue of $23.1 million related primarily to the deferral of revenue for Astellas' Option on Tirasemtiv.

Net cash provided by operating activities was $4.9 million in the year ended December 31, 2015 and was largely due to the receipt of $45.0 million from Astellas in January 2015, partially offset by cash used by operations due to the ongoing research and development activities. The net loss for the year ended December 31, 2015 included non-cash stock based compensation of $4.6 million. At December 31, 2015, deferred revenue of $20.9 million related primarily to the deferral of revenue for Astellas based on the proportional performance model.

Net cash used in investing activities of $65.8 million in the year ended December 31, 2017 was primarily due to purchases of investments of $240.4 million and purchases of property and equipment of $2.9 million, partially offset by cash proceeds from the maturities of investments of $177.5 million.

Net cash used in investing activities of $52.1 million in the year ended December 31, 2016 was primarily due to purchases of investments of $145.2 million and purchases of property and equipment of $1.6 million, partially offset by cash proceeds from the maturities of investments of $94.6 million. Net cash provided by investing activities of $16.1 million in the year ended December 31, 2015 was primarily due to proceeds from the maturity of investments of $132.2 million which exceeded purchases of investments by $16.6 million, partially offset by cash used by investing activities for purchases of property and equipment.

Net cash provided by financing activities was $226.0 million in the year ended December 31, 2017 was primarily due to net proceeds from the public offering of our Common Stock with net proceeds to us of $82.4 million, net proceeds from the liability related to sales of future royalties of $90.6 million, net proceeds pursuant to the Committed Equity Offering (“CE Offering”) of $29.9 million, net proceeds from the issuance of common stock to RPI of $7.6 million, and proceeds from common stock issuances from warrant exercises of $14.3 million.

Net cash provided by financing activities was $16.9 million in the year ended December 31, 2016 was primarily due to net proceeds from the Loan Agreement of $14.9 million, proceeds from common stock purchases under our employee stock purchase plan of $0.9 million, proceeds from common stock issuances from warrant exercises of $0.6 million, and net proceeds from issuances of restricted stock to employees and employee stock option exercises of $0.4 million. Net cash provided by financing activities was $23.9 million in the year ended December 31, 2015 was primarily due to net proceeds from the Loan Agreement of $14.9 million, net proceeds pursuant to the CE Offering of $8.7 million, and net proceeds from issuances of restricted stock to employees and employee stock option exercises of $0.4 million.

Contractual Obligations and Commitments

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

	Payments Due by Period						
	2018	2019	2020	2021	2022	Beyond	Total
Long-term debt	$—	$5,463	$9,366	$9,366	$7,805	$—	$32,000
Interest obligation on long-term debt	$2,615	$2,500	$1,821	$1,051	$2,371	$—	$10,358
Operating lease obligations (1)	$3,789	$4,682	$4,846	$2,465	$—	$—	$15,782
Co-investment option (2)	$18,750	$—	$—	$—	$—	$—	$18,750
Liability related to sale of future royalties (3)	$—	$—	$—	$—	$—	$104,650	$104,650
Total obligations	$25,154	$12,645	$16,033	$12,882	$10,176	$104,650	$181,540

(1) Operating lease obligations relates to future payments under our facility lease in South San Francisco, California, which expires in 2021.
(2) Payments for our co-invest option in the Phase 3 development program of omecamtiv mecarbil under the Amgen Agreement.
(3) Liability related to sale of future royalties 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 and commercialized. For further discussion regarding the liability related to the sale of future royalties, see Note 9 – Liability Related to Sale of Future Royalties 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 activities. We expect to incur significant research and development expenses as we advance the research and development of compounds from our other muscle biology programs through research to candidate selection to clinical development.

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 the Amgen Agreement;
- Astellas' decisions with regard to funding of development and commercialization of reldesemtiv or other skeletal muscle activators under the Astellas Agreement;
- 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 $646.1 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 strategic collaborations, additional sales of equity securities, grants and debt financings. 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 by entering into new strategic collaborations and/or through equity or debt financings, 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.

Based on the current status of our development plans, we believe that our existing cash and cash equivalents, investments and interest earned on investments will be sufficient to meet our projected operating requirements for at least the next 12 months. If, at any time, our prospects for internally financing our research and development programs decline, we may decide to reduce research and development expenses 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.

Recent Accounting Pronouncements

See “Recent Accounting Pronouncements” in Note 1, “Organization and Significant Accounting Policies” in the Notes to 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.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk
Interest Rate and Market Risk

Cash, Cash Equivalents and Investments

As of December 31, 2017, we had cash, cash equivalents and investments of $285.4 million, which consisted of bank deposits, money market funds, agency bonds, U.S. government bonds and equity. Such interest-earning instruments carry a degree of interest rate risk.

We do not invest for trading or speculative purposes. We do not have any derivative financial instruments to manage our interest rate risk exposure. The average duration of all of our investments held as of December 31, 2017 was less than 12 months. We believe there is no material exposure to interest rate risk or market, arising from our financial instruments at December 31, 2017. A hypothetical 10% change in interest rates at December 31, 2017 would not result in a significant change in the fair market value of our portfolio.

Long Term Debt

At December 31, 2017, our long-term debt was $31.8 million, which approximated the fair value of the debt. Principal payments on our debt are made in 41 equal monthly installments beginning on June 2019. Our debt carries a fixed interest rate of 8.05% per year. Changes in market interest rates may affect the fair value of the debt, but will not impact earnings or cash flows.

The following are future payments for our long-term debt (in thousands):

2018	$2,615
2019	7,964
2020	11,187
2021	10,416
2022	10,176
Total minimum payments	42,358
Less: Interest and final payment	(10,358)

Future payments	$32,000

Item 8. Financial Statements and Supplementary Data

CYTOKINETICS, INCORPORATED

INDEX TO FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of Cytokinetics, Incorporated:

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Cytokinetics, Incorporated and its subsidiary as of December 31, 2017 and 2016, and the related consolidated statements of operations and comprehensive (loss) income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2017, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2017, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2017 and 2016, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2017 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2017, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ PricewaterhouseCoopers LLP

San Jose, California

March 5, 2018

We have served as the Company's auditor since 1999.

CYTOKINETICS, INCORPORATED

CONSOLIDATED BALANCE SHEETS

	December 31,	
	2017	2016
	(In thousands, except share and per share data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$125,206	$66,874
Short-term investments	143,685	89,375
Accounts receivable	1,112	24
Prepaid and other current assets	4,292	2,360
Total current assets	274,295	158,633
Long-term investments	16,518	7,672
Property and equipment, net	3,568	3,637
Other assets	429	200
Total assets	$294,810	$170,142
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$5,253	$4,236
Accrued liabilities	17,392	18,047
Deferred revenue, current	9,572	8,060
Current portion of long-term debt	—	2,500
Other current liabilities	227	415
Total current liabilities	32,444	33,258
Long-term debt	31,777	27,381
Liability related to the sale of future royalties, net	104,650	—
Deferred revenue, non-current	15,000	15,000
Other long-term liabilities	1,097	142
Total liabilities	184,968	75,781
Commitments and contingencies (Note 10)		
Stockholders' equity:		
Preferred stock, $0.001 par value:		
Authorized: 10,000,000 shares; Issued and outstanding: none	—	—
Common stock, $0.001 par value:		
Authorized: 163,000,000		
Issued and outstanding: 53,960,832 shares at December 31, 2017 and 40,646,595 shares at December 31, 2016	54	41
Additional paid-in capital	755,526	612,474
Accumulated other comprehensive income	343	137
Accumulated deficit	(646,081)	(518,291)
Total stockholders' equity	109,842	94,361

Total liabilities and stockholders' equity	$294,810	$170,142

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

CYTOKINETICS, INCORPORATED

CONSOLIDATED STATEMENT OF OPERATIONS AND COMPREHENSIVE (LOSS) INCOME

	Years Ended December 31,		
	2017	2016	2015
	(In thousands, except per share data)		
Revenues:			
Research and development, grant and other revenues, net	$4,569	$44,236	$14,740
License revenues	8,799	62,171	13,918
Total revenues	13,368	106,407	28,658
Operating expenses:			
Research and development	90,296	59,897	46,398
General and administrative	36,468	27,823	19,667
Total operating expenses	126,764	87,720	66,065
Operating (loss) income	(113,396)	18,687	(37,407)
Interest expense	(3,016)	(2,698)	(268)
Non-cash interest expense on liability related to sale of future royalties	(13,980)	—	—
Interest and other income, net	2,602	464	174
Net (loss) income	$(127,790)	$16,453	$(37,501)
Net (loss) income per share — basic	$(2.59)	$0.41	$(0.97)
Net (loss) income per share — diluted	$(2.59)	$0.39	$(0.97)
Weighted-average number of shares used in computing net (loss) income per share — basic	49,404	39,943	38,814
Weighted-average number of shares used in computing net (loss) income per share — diluted	49,404	42,561	38,814
Other comprehensive (loss) income:			
Unrealized (losses) gains on available-for-sale securities, net	206	(12)	153
Comprehensive (loss) income	$(127,584)	$16,441	$(37,348)

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

CYTOKINETICS, INCORPORATED

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

	Common Stock Shares	Amount	Additional Paid-In Capital	Accumulated Other Comprehensive (Loss) Income	Accumulated Deficit	Total Stockholders' Equity
	(In thousands, except share and per share data)					
Balance, December 31, 2014	38,659,738	$ 39	$ 589,272	$ (4)	$ (497,243)	$ 92,064
Exercise of stock options	68,635	—	427	—	—	427
Issuance of common stock under Employee Stock Purchase Plan	21,167	—	69	—	—	69
Vesting of restricted stock units, net of taxes withheld	23,725	—	(144)	—	—	(144)
Exercise of warrants	234	—	—	—	—	—
Issuance of common stock under CE Offering at net of commission and issuance costs of $205	808,193	1	8,672	—	—	8,673
Issuance of warrants	—	—	282	—	—	282
Stock-based compensation	—	—	4,567	—	—	4,567
Other comprehensive income	—	—	—	153	—	153
Net loss	—	—	—	—	(37,501)	(37,501)
Balance, December 31, 2015	39,581,692	$ 40	$ 603,145	$ 149	$ (534,744)	$ 68,590
Exercise of stock options	74,556	—	503	—	—	503
Issuance of common stock under Employee Stock Purchase Plan	129,604	—	917	—	—	917
Vesting of restricted stock units, net of taxes withheld	25,745	—	(135)	—	—	(135)
Exercise of warrants	834,998	1	610	—	—	611
Issuance of warrants	—	—	288	—	—	288
Stock-based compensation	—	—	7,146	—	—	7,146
Other comprehensive loss	—	—	—	(12)	—	(12)
Net income	—	—	—	—	16,453	16,453
Balance, December 31, 2016	40,646,595	$ 41	$ 612,474	$ 137	$ (518,291)	$ 94,361

Exercise of stock options	264,164	—	1,918	—	—	1,918
Issuance of common stock under Employee Stock Purchase Plan	120,959	—	1,167	—	—	1,167
Vesting of restricted stock units, net of taxes withheld	128,711	—	(904)	—	—	(904)
Exercise of warrants	3,450,122	3	12,068	—	—	12,071
Issuance of common stock under secondary offering net of issuance costs of $3,400	6,049,000	6	82,364	—	—	82,370
Issuance of common stock under CE Offering at net of commission and issuance costs of $992	2,425,625	3	29,852	—	—	29,855
Issuance of common stock pursuant to Royalty Purchase Agreement	875,656	1	7,559	—	—	7,560
Stock-based compensation	—	—	9,028	—	—	9,028
Other comprehensive loss	—	—	—	206	—	206
Net loss	—	—	—	—	(127,790)	(127,790)
Balance, December 31, 2017	53,960,832	$ 54	$ 755,526	$ 343	$ (646,081)	$ 109,842

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

CYTOKINETICS, INCORPORATED

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2017	2016	2015
	(In thousands)		
Cash flows from operating activities:			
Net (loss) income	$(127,790)	$16,453	$(37,501)
Adjustments to reconcile net (loss) income to net cash provided by (used in) operating activities:			
Depreciation and amortization of property and equipment	1,920	741	589
Net gain on disposal of equipment	(67)	(18)	(18)
Non-cash interest expense related to long-term debt	635	534	3
Non-cash interest expense on liability related to sale of future royalties	14,028	—	—
Non-cash stock-based compensation	9,028	7,146	4,567
Gain on sale of investments	—	—	(3)
Changes in operating assets and liabilities:			
Accounts receivable	(1,088)	(12)	46,634
Prepaid and other assets	(2,161)	(707)	(396)
Accounts payable	1,457	1,698	755
Accrued and other liabilities	766	8,945	2,995
Deferred revenue	1,513	2,202	(12,742)
Net cash (used in) provided by operating activities	(101,759)	36,982	4,883
Cash flows from investing activities:			
Purchases of investments	(240,413)	(145,158)	(115,566)
Sales and maturities of investments	177,462	94,645	132,190
Purchases of property and equipment	(2,877)	(1,596)	(562)
Sales of property and equipment	—	33	1
Net cash (used in) provided by investing activities	(65,828)	(52,076)	16,063
Cash flows from financing activities:			
Proceeds from public offerings of common stock, net of issuance costs	112,224	—	8,673
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	—	—
Net proceeds from long term debt, net of debt discount and issuance costs	1,261	14,996	14,890
Proceeds from stock based award activities and warrants, net	14,253	1,896	352
Net cash provided by financing activities	225,919	16,892	23,915
Net increase in cash and cash equivalents	58,332	1,798	44,861
Cash and cash equivalents, beginning of period	66,874	65,076	20,215
Cash and cash equivalents, end of period	$125,206	$66,874	$65,076

Supplemental disclosure of cash flow information			
Cash paid for interest	2,128	1,899	94
Cash paid for taxes	1	1	1

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

CYTOKINETICS, INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1 — Organization and Significant Accounting Policies

Organization

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 $646.1 million since inception and there can be no assurance that the Company will attain profitability. The Company had a net loss of $127.8 million and net cash used in operations of $101.8 million for the year ended December 31, 2017. Cash, cash equivalents and investments increased to $285.4 million at December 31, 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 and convertible preferred stock, contract payments under its collaboration agreements, sale of future royalties, debt financing arrangements, 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 after the issuance of the consolidated financial statements. 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 consolidated financial statements include the accounts of Cytokinetics and its wholly owned subsidiary and have been prepared in accordance with U.S. generally accepted accounting principles (“US GAAP”). Intercompany transactions and balances have been eliminated in consolidation.

Concentration of Credit Risk and Other Risks and Uncertainties

Financial instruments that potentially subject the Company to concentrations of risk consist principally of cash and cash equivalents, investments, long term debt and accounts receivable.

The Company’s cash, cash equivalents and investments are invested in deposits with three major financial institutions in the United States. Deposits in these banks may exceed the amount of insurance provided on such deposits.

CYTOKINETICS, INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)

The Company's exposure to credit risk associated with non-payment is limited to its strategic partners Amgen Inc., ("Amgen") and Astellas Pharma Inc., ("Astellas") and any material non-payment from our partners would result in a material breach of the agreements underlying the strategic partnerships.

Drug candidates developed by the Company may require approvals or clearances from the U.S. Food and Drug Administration ("FDA") or other regulatory agencies prior to commercial sales. There can be no assurance that the Company's drug candidates will receive any of the required approvals or clearances. If the Company was to be denied approval or clearance or any such approval or clearance was to be delayed, it would have a material adverse impact on the Company.

Cash and Cash Equivalents

The Company considers all highly liquid investments with a maturity of three months or less at the time of purchase to be cash equivalents.

Investments

Available-for-sale investments. The Company's investments consist of U.S. Treasury securities, agency bonds, and money market funds. The Company designates all investments as available-for-sale and therefore reports them at fair value, based on quoted marked prices, with unrealized gains and losses recorded in accumulated other comprehensive loss. The cost of securities sold is based on the specific-identification method. Investments with original maturities greater than three months and remaining maturities of one year or less are classified as short-term investments. Investments with remaining maturities greater than one year are classified as long-term investments. The amortized cost of debt securities in this category is adjusted for amortization of premiums and accretion of discounts to maturity. Such amortization is included in interest income. Recognized gains and losses and declines in value judged to be other-than-temporary, if any, on available-for-sale securities are included in other income or expense. Interest and dividends on securities classified as available-for-sale are included in Interest and other, net.

Other-than-temporary impairment. All of the Company's available-for-sale investments are subject to a periodic impairment review. The Company recognizes an impairment charge when a decline in the fair value of its investments below the cost basis is judged to be other-than-temporary. Factors considered by management in assessing whether an other-than-temporary impairment has occurred include: the nature of the investment; whether the decline in fair value is attributable to specific adverse conditions affecting the investment; the financial condition of the investee; the severity and the duration of the impairment; and whether the Company has the intent and ability to hold the investment to maturity. When the Company determines that an other-than-temporary impairment has occurred, the investment is written down to its market value at the end of the period in which it is determined that an other-than-temporary decline has occurred.

Property and Equipment, net

Property and equipment are stated at cost less accumulated depreciation and are depreciated on a straight-line basis over the estimated useful lives of the related assets, which are generally three years for computer equipment and software, five years for laboratory equipment and office equipment, and seven years for furniture and fixtures. Amortization of leasehold improvements is computed using the straight-line method over the shorter of the remaining lease term or the estimated useful life of the related assets, typically ranging from three to seven years. Upon sale or retirement of assets, the costs and related accumulated depreciation and amortization are removed from the balance sheet and the resulting gain or loss is reflected in operations.

Impairment of Long-lived Assets

Long-lived assets, the Company reviews long-lived assets, including property and equipment, are reviewed for impairment whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable. Impairment is measured as the amount by which the carrying amount of a long-lived asset exceeds its fair value. The Company would recognize an impairment loss when estimated undiscounted future cash flows expected to result from the use of the asset and its eventual disposition are materially less than its carrying amount.

CYTOKINETICS, INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)

Revenue Recognition

The Company recognizes revenue after the following criteria are met: (i) persuasive evidence of an arrangement exists; (ii) delivery has occurred or services have been rendered; (iii) the fee is fixed or determinable; and (iv) collectability is reasonably assured. Determination of whether persuasive evidence of an arrangement exists and whether delivery has occurred or services have been rendered are based on management's judgments regarding the fixed nature of the fee charged for research performed and milestones met, and the collectability of those fees. Should changes in conditions cause management to determine these criteria are not met for certain future transactions, revenue recognized for any reporting period could be adversely affected.

Revenue under the Company's strategic alliances are recognized based on the performance requirements of the alliance. Revenues may include research and development revenues earned for research and development activities, non-refundable license fees, milestones and royalties.

In order to account for multiple element arrangements, we identify the deliverables at the inception of the arrangement and each deliverable within a multiple deliverable revenue arrangement is accounted for as a separate unit of accounting if both of the following criteria are met: (1) the delivered item or items have value to the customer on a standalone basis and (2) for an arrangement that includes a general right of return relative to the delivered items, delivery or performance of the undelivered items is considered probable and substantially in our control. A delivered item or items that do not qualify as a separate unit of accounting within the arrangement is combined with the other applicable undelivered items within the arrangement. For a combined unit of accounting, non-refundable upfront payments are recognized in a manner consistent with the final deliverable, generally ratably over the period we provide research and development services. If we determine that multiple deliverables exist for consideration received, the consideration is allocated to one or more units of accounting based upon the best estimate of the selling price ("BESP"), third-party evidence ("TPE"), or vendors specific objective evidence ("VSOE") of each deliverable. The selling price used for each deliverable is based on vendor-specific objective evidence, if available, third-party evidence if vendor-specific objective evidence is not available, or estimated selling price if neither vendor-specific or third-party evidence is available.

Amounts received in advance of our service performance are recorded as deferred revenue and are recognized as revenue as we perform services over estimated performance period. We review the estimated periods of performance. Our estimates of our performance period may change over the course of the collaboration term. Such a change in a current period could have a material impact on the amount of revenue we recognize in current and future periods.

Payments that are contingent upon achievement of a substantive event that can only be achieved based on our performance and there is substantive uncertainty about whether the event will be achieved at the inception of the arrangement, commonly referred to as a milestone, are recognized as revenue in their entirety in the period in which the milestone is achieved. Payments for a milestone must relate solely to prior performance, be reasonable relative to all of the deliverables and payment terms within the agreement and commensurate with our performance to achieve the milestone after commencement of the agreement. Payments contingent upon achievement of events that are not considered substantive milestones are allocated to the respective arrangements unit of accounting when received and recognized as revenue based on the revenue recognition policy for that unit of accounting. Other contingent event-based payments received for which payments are the result of a collaborative partner's performance are not considered milestones and recognized when the four criteria are met.

Research and development revenues and cost reimbursements are based upon negotiated rates for the Company's full-time employee equivalents ("FTE") and actual out-of-pocket costs. FTE rates are set based upon the Company's costs, and which the Company believes approximate fair value. None of the revenues recognized to date are refundable if the relevant research effort is not successful. In arrangements in which both parties make payments to each other, the Company evaluates the payments for arrangements under which consideration is given to determine whether payments made by us will be recognized as a reduction of revenue or as expense. Revenue may be reduced by payments made by us to another party unless the Company receives a separate and identifiable benefit in exchange for the payments and the Company can reasonably estimate the fair value of the benefit received. In arrangements in which the Company is the primary obligor, the Company records payments from the other party as research and development revenue. If the Company is not the primary obligor, the Company records payments as a reduction of revenue.

Funds received from third parties under grant arrangements may be treated as revenue if the Company is deemed to be the principal participant in the grant arrangement where the activities under the grant are part of the Company's development program. Otherwise, the funds received are recognized as a reduction to research and development expense. Non-refundable grant funds received are recognized when the related qualified research and development costs are incurred. Funds received in advance are deferred revenue.

CYTOKINETICS, INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)

Preclinical Studies and Clinical Trial Accruals

A substantial portion of the Company's preclinical studies and all of the Company's clinical trials have been performed by third-party contract research organizations ("CROs") and other vendors and our accruals for expenses for preclinical studies and clinical trials may be significant. For preclinical studies, the significant factors used in estimating accruals include the percentage of work completed to date and contract milestones achieved. For clinical trial expenses, the significant factors used in estimating accruals include the number of patients enrolled, duration of enrollment, milestones achieved and percentage of work completed to date. The Company monitors patient enrollment levels and related activities to the extent practicable through internal reviews, correspondence and status meetings with CROs, and review of contractual terms. The Company depends on the timeliness and accuracy of data provided by its CROs and other vendors to accrue expenses. If the Company receives and relies on incomplete or inaccurate data accruals and expenses may be too high or too low at a given point in time and corresponding adjustments to accruals and expenses would be made in future periods when the actual expense becomes known.

Research and Development Expenditures

Research and development costs are charged to operations as incurred. Research and development expenses consist primarily of clinical manufacturing costs, preclinical study expenses, consulting and other third party costs, employee compensation, supplies and materials, allocation of overhead and occupancy costs, facilities costs and depreciation of equipment.

Income Taxes

The Company accounts for income taxes under the asset and liability method. Under this method, deferred tax assets and liabilities are determined based on the difference between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to affect taxable income. Valuation allowances are established when necessary to reduce deferred tax assets to the amounts expected to be realized.

The Company recognizes uncertain tax positions taken or expected to be taken on a tax return. Tax positions are initially recognized when it is more likely than not that the position will be sustained upon examination by the tax authorities. Such tax positions are initially and subsequently measured as the largest amount of tax benefit that is more likely than not of being realized upon ultimate settlement with the tax authority assuming full knowledge of the position and relevant facts.

The Company recognizes interest accrued related to unrecognized tax benefits and penalties as income tax expense.

Stock-Based Compensation

The Company calculates non-cash stock-based compensation for stock-based awards made to employees and directors, at the grant date based on the calculated fair value of the award, and recognizes expense on a straight-line basis over the 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, assumptions used to value awards in one period may differ significantly from another period. The assumptions used in estimating the fair value of share-based payment awards involve inherent uncertainties and the application of management judgment and represent management's best estimates at the time the Company estimates the expected forfeiture rate and recognizes expense only for those shares expected to vest. If the actual forfeiture rate in the future is materially different from our estimate, stock-based compensation expense could be significantly different from what has been recorded in the current period.

During 2017, the Company adopted ASU No. 2016-09, Stock Compensation on a modified retrospective approach. the Company recognizes all excess tax benefits and tax deficiencies as income tax expense or benefit in the income statement and recognizes previously unrecognized excess tax benefits upon adoption as a cumulative-effect adjustment in retained earnings. As of January 1, 2017, the Company recognized excess tax benefit of $0.7 million as an increase to deferred tax assets. This increase was fully offset by a valuation allowance. Accordingly, no cumulative-effect adjustment to retained earnings was recorded as of December 31, 2017. The Company estimates 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.

CYTOKINETICS, INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)

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

The Company treated the Liability related to sale of future royalties as a debt financing, to be amortized under the effective interest rate method over the life of the related royalty stream.

The Liability 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 Liability 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 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 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 March 2016, the FASB issued ASU 2016-09, Stock compensation (Topic 718). ASU 2016-09 simplifies various aspects of accounting for share-based payments and presentation in the financial statements. 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 December 31, 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 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. The new standard will become effective and the Company will adopt the standard on January 1, 2018. The standard permits the use of either the modified retrospective

CYTOKINETICS, INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)

method or full retrospective approach for all periods presented. The Company currently anticipates adopting the standard using the modified retrospective method. The Company has performed a preliminary assessment and continues to evaluate the impact of the pending adoption of the new revenue standard on its consolidated financial statements and has determined that the collaborations with both Amgen and Astellas are within its scope. Upon completion of the Company's analysis, the Company will determine the cumulative effect of initially applying the new standard, including areas we expect to be impacted such as license-related revenue and payments in connection with the Co-invest Option. The Company is also currently updating its accounting policy and designing and implementing the necessary changes to processes and controls to account for revenue under the new standard and anticipates completing its implementation in connection with its first quarter 2018 interim financial statements.

Note 2 — Net (Loss) Income Per Share

Basic net (loss) income per share is computed by dividing net (loss) income by the weighted average number of vested common shares outstanding during the period. Diluted net (loss) income per share is computed by giving effect to all potentially dilutive common shares, including outstanding stock options, unvested restricted stock, warrants, convertible preferred stock and shares issuable under the Company's Employee Stock Purchase Plan ("ESPP"), by applying the treasury stock method. The following is the calculation of basic and diluted net (loss) income per share (in thousands, except per share data):

	Years Ended December 31,		
	2017	2016	2015
Net (loss) income	$(127,790)	$16,453	$(37,501)
Weighted-average shares used in computing net (loss) income per share — basic	49,404	39,943	38,814
Effect of dilutive securities:			
Warrants to purchase common stock	—	2,019	—
Options to purchase common stock	—	409	—
Restricted stock units	—	181	—
Shares issuable related to the ESPP	—	9	—
Dilutive potential common shares	—	2,618	—
Weighted-average shares used in computing net (loss) income per share — diluted	49,404	42,561	38,814
Net (loss) income per share — basic	$(2.59)	$0.41	$(0.97)
Net (loss) income per share — diluted	$(2.59)	$0.39	$(0.97)

The following instruments were excluded from the computation of diluted net (loss) income per share for the periods presented because their effect would have been antidilutive (in thousands):

	December 31,		
	2017	2016	2015
Options to purchase common stock	5,957	3,688	4,835
Warrants to purchase common stock	100	—	5,641
Restricted and Performance stock units	457	—	757
Shares issuable related to the ESPP	20	—	16
Total shares	6,534	3,688	11,249

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Note 3 — 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 December 31, 2017 and 2016 were as follows (in thousands):

	December 31, 2017			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Cash equivalents —				
U. S. Treasury securities and money market funds	$111,501	$ —	$ —	$111,501
Short-term investments —				
U.S. Treasury securities and Agency bonds	$143,895	$ —	$ (210)	$143,685
Long-term investments — Equity and U.S. Treasury securities	$16,538	$ —	$ (20)	$16,518

	December 31, 2016			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
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
Long-term investments — Equity and U.S. Treasury securities	$7,513	$ 176	$ (17)	$7,672

As of December 31, 2017, the Company's long-term investments in U.S. Treasury securities have maturity dates less than 1.5 years. As of December 31, 2017, none of the investments were other-than temporarily impaired, no investment was in a continuous unrealized loss position for more than one year, unrealized losses were not due to change in credit risk and the Company believes investments with an unrealized loss would be held until maturity.

Note 4 — Fair Value Measurements

The Company values its financial assets and liabilities at fair value, 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

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

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

	December 31, 2017 Fair Value Measurements Using			Assets
	Level 1	Level 2	Level 3	At Fair Value
Assets:				
Money market funds	$51,001	$—	$ —	$ 51,001
U.S. Treasury securities	165,801	—	—	165,801
Agency bonds	—	54,329		54,329
Equity securities	573	—	—	573
Total	$217,375	$54,329	$ —	$ 271,704
Amounts included in:				