ALDER BIOPHARMACEUTICALS INC
Form 10-K
February 23, 2017

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, 2016

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 FOR THE TRANSITION PERIOD FROM TO

Commission File Number 001-36431

Alder BioPharmaceuticals, Inc.

(Exact name of Registrant as specified in its Charter)

| | |
|---|---|
| Delaware<br>(State or other jurisdiction of<br><br>incorporation or organization) | 90-0134860<br>(I.R.S. Employer<br>Identification No.) |
| 11804 North Creek Parkway South<br><br>Bothell, WA<br>(Address of principal executive offices) | <br><br>98011<br>(Zip Code) |

Registrant's telephone number, including area code: (425) 205-2900

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

| Title of Each Class | Name of Exchange on Which Registered |
|---|---|
| Common Stock, $0.0001 par value per share | The NASDAQ Stock Market LLC<br>(The NASDAQ Global 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 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 Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the Registrant was required to submit and post such files). YES NO

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405) is not contained herein, and will not be contained, to the best of 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 definition of "large accelerated filer", "accelerated filer", and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

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

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 of the Registrant, based on the closing price of the Registrant's common stock on The NASDAQ Stock Market on June 30, 2016, the last business day of its most recently completed second fiscal quarter, was $1,129,662,202. Excludes an aggregate of 4,919,109 shares of the Registrant's common stock held as of such date by officers, directors and stockholders that the Registrant has concluded are or were affiliates of the Registrant. Exclusion of such shares should not be construed to indicate that the holder of any such shares possesses the power, direct or indirect, to direct or cause the direction of the management or policies of the Registrant or that such person is controlled by or under common control with the Registrant.

The number of shares of Registrant's Common Stock outstanding as of February 22, 2017 was 50,409,220.

DOCUMENTS INCORPORATED BY REFERENCE

Part III incorporates information by reference from the Registrant's definitive proxy statement to be filed with the Securities and Exchange Commission pursuant to Regulation 14A, not later than 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K, in connection with the Registrant's 2017 Annual Meeting of Stockholders (the "2017 Proxy Statement").

Alder BioPharmaceuticals, Inc.

Annual Report on Form 10-K

For the Year Ended December 31, 2016

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In this Annual Report on Form 10-K, “we,” “our,” “us,” “Alder,” and “the Company” refer to Alder BioPharmaceuticals, Inc. and, where appropriate, its consolidated subsidiaries. “Alder,” “Alder BioPharmaceuticals” and the Alder logo are the property of Alder BioPharmaceuticals, Inc. This report contains references to our trademarks and to trademarks belonging to other entities. Solely for convenience, trademarks and trade names referred to in this report may appear without the ® or ™ symbols, but such references are not intended to indicate, in any way, that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend our use or display of other companies’ trade names or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

PART I

Forward-Looking Information

This Annual Report on Form 10-K contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements are based on our management's beliefs and assumptions and on information currently available to our management. All statements other than statements of historical facts are "forward-looking statements" for purposes of these provisions, including those relating to future events or our future financial performance and financial guidance. In some cases, you can identify forward-looking statements by terminology such as "may," "might," "will," "should," "expect," "plan," "anticipate," "project," "believe," "estimate," "predict," "potential," "intend" or "continue," terms like these or other comparable terminology, and other words or terms of similar meaning in connection with any discussion of future operating or financial performance. These statements are only predictions. All forward-looking statements included in this Annual Report on Form 10-K are based on information available to us on the date hereof, and we assume no obligation to update any such forward-looking statements. Any or all of our forward-looking statements in this document may turn out to be wrong. Actual events or results may differ materially. Our forward-looking statements can be affected by inaccurate assumptions we might make or by known or unknown risks, uncertainties and other factors. We discuss many of these risks, uncertainties and other factors in this Annual Report on Form 10-K in greater detail under the heading "Item 1A—Risk Factors." We caution investors that our business and financial performance are subject to substantial risks and uncertainties.

Item 1. Business

Company Overview

We are a clinical-stage biopharmaceutical company that discovers, develops and seeks to commercialize therapeutic antibodies with the potential to meaningfully transform current treatment paradigms. All of our product candidates were discovered and developed by Alder scientists using our proprietary antibody technology platform coupled with a deliberate approach to design and select candidates with properties that we believe optimize the therapeutic potential for patients and commercial competitiveness.

We are focusing our resources and development efforts principally on eptinezumab (ALD403), our most advanced solely-owned product candidate, in order to maximize its therapeutic and commercial potential. Eptinezumab is being evaluated in a pivotal trial program for the prevention of migraine, with a Biologics License Application (BLA) submission to the U.S. Food and Drug Administration (FDA) planned for the second half of 2018. Migraine is a serious neurological disease affecting about 36 million people in the United States. Of that number, approximately 13

million adults in the U.S. are estimated to be candidates for a migraine prevention therapeutic, including three million people that live with chronic migraine, the most serious form of the disease.

Eptinezumab is a genetically engineered monoclonal antibody inhibiting calcitonin gene-related peptide (CGRP), a validated target that is understood to drive migraine initiation, maintenance and chronification. Designed to deliver a competitively differentiated approach to migraine prevention, we believe eptinezumab holds the potential to be a transformative therapeutic and meet a profound medical need, changing the migraine prevention treatment paradigm for physicians and patients living with migraine.

Our deliberate approach to engineering and developing eptinezumab is designed to provide a unique clinical profile that, after a single administration via an in-office infusion procedure, provides rapid and persistent migraine relief, and facilitates patient adherence. We believe that this clinical profile, as supported by data from our clinical trials, will present a potentially compelling value proposition for patients, physicians, payors and our stakeholders. In Phase 2 clinical trials for the prevention of migraine, eptinezumab has demonstrated robust efficacy, rapid reduction in migraine days and a persistent response.

The pivotal trial program for our infusion formulation of eptinezumab in support of a BLA submission consists of two Phase 3 pivotal trials and a single open-label Phase 3 clinical trial. Our first pivotal trial, PRevention Of Migraine via Intravenous ALD403 Safety and Efficacy 1 (PROMISE 1), commenced in October 2015 and is evaluating the safety and efficacy of eptinezumab administered via infusion once every 12 weeks for one year in approximately 800 patients with frequent episodic migraine, defined as five to 14 migraine days per month. Our second pivotal trial, PRevention Of Migraine via Intravenous ALD403 Safety and Efficacy 2 (PROMISE 2), commenced in November 2016 and is evaluating the safety and efficacy of eptinezumab administered via infusion once every 12 weeks for six months in approximately 1,050 patients with chronic migraine, defined as 15 or more migraine days per month, with features of migraine on at least eight days per month. The open-label trial commenced in December 2016 and is evaluating the long-term safety and tolerability of eptinezumab administered via infusion once every 12 weeks for one year in approximately 120 patients with chronic migraine. We expect top-line data from PROMISE 1 to be available in the first half of 2017, top-line data from PROMISE 2 to be available in the first half of 2018 and top-line data from the open-label trial to be available in the first half of 2018. Our objective is to submit a BLA to the FDA based on the results of these three trials in the second half of 2018.

We intend to investigate opportunities to maximize the differentiated therapeutic and commercial profile of eptinezumab based on preclinical and clinical data observed to date, through the initiation of one or more additional clinical studies of our infusion formulation. Based on the data from our eptinezumab clinical trials and feedback we have received from investigators and key opinion leaders around the clinical value of rapid onset, effectiveness and persistence of relief from our infusion formulation of eptinezumab, we believe that further studies focused on these characteristics have the potential to add value and represent the best use of our resources in the near term. We are also committed to investigating additional routes of administration, such as a potential subcutaneous and/or intramuscular formulation. We expect to have further insight regarding our plans and timing following the availability of top-line data from PROMISE 1, which we believe will expand our understanding of eptinezumab's profile and potential commercial dose.

Assuming eptinezumab is approved by the FDA, we plan to focus our initial commercialization efforts on high-prescribing neurologists and headache centers in the United States employing a specialty sales force. To maximize the potential commercial opportunity of eptinezumab while we focus on the U.S. specialty market, we may explore strategic arrangements that provide additional capabilities and infrastructure, while improving access for physicians and patients. We also intend to seek approval for eptinezumab in the European Union and other jurisdictions outside the United States.

Our product candidate pipeline also includes ALD1910, a preclinical wholly-owned monoclonal antibody that targets pituitary adenylate cyclase-activating polypeptide-38 (PACAP-38). ALD1910 is undergoing investigational new drug (IND)-enabling studies for the prevention of migraine. PACAP-38 is a protein that is active in mediating the initiation of migraine, and we believe that ALD1910 holds potential as a treatment for migraineurs who have an inadequate response to therapeutics directed at CGRP or its receptor. Our third pipeline candidate is clazakizumab, designed to block the pro-inflammatory cytokine IL-6. In May 2016, we licensed the exclusive worldwide rights to clazakizumab to Vitaeris, Inc., or Vitaeris, based in Vancouver, British Columbia, that will pursue innovative therapeutic indications in chronic inflammatory diseases. Prior to the license to Vitaeris, clazakizumab completed two positive Phase 2b clinical trials establishing proof-of-concept in patients with rheumatoid arthritis.

Our Strategic Priorities

Our goal is to build an enduring biopharmaceutical company that discovers and selects monoclonal antibodies for development and commercialization that hold the potential to meaningfully transform current treatment paradigms and offer patients innovative therapies in indications with profound medical needs. Key strategic priorities for us to achieve that goal include:

- Continue to prioritize the clinical development activities of eptinezumab for the prevention of migraine. Our primary priority is continuing to efficiently progress the clinical development of eptinezumab as a preventative treatment for migraine, supporting our objective of regulatory approval of eptinezumab at the earliest opportunity.
    - Enhance the value of eptinezumab by maximizing its differentiating properties and clinical profile. We may explore the initiation of one or more additional clinical trials of our infusion formulation to maximize the differentiated therapeutic and commercial profile of eptinezumab. We are also committed to investigating additional routes of administration, such as a potential subcutaneous and/or intramuscular formulation. We expect to have further insight regarding our plans and timing following the availability of top-line data from PROMISE 1, which we believe will expand our understanding of eptinezumab's profile and likely commercial dose.
- Optimize the commercial potential of eptinezumab by independently commercializing it for the prevention of migraine in the United States. We intend to continue commercial readiness activities to support independent commercialization of eptinezumab in the United States as a migraine prevention therapy, subject to FDA approval. We initially plan to build a specialty sales force targeting high-prescribing neurologists and headache centers in the

United States. To maximize the potential commercial opportunity of eptinezumab while we focus on the U.S. specialty market, we may explore strategic arrangements that provide additional capabilities and infrastructure, while improving access for physicians and patients. We also intend to seek approval for eptinezumab in the European Union and other jurisdictions outside the United States.

- Progress the development of ALD1910 as an additional treatment option for migraine prevention. In 2016, we designated ALD1910 as a candidate to advance to IND-enabling studies for the prevention of migraine. We believe that ALD1910 holds potential as a treatment for migraineurs who have an inadequate response to therapeutics directed at CGRP or its receptor and plan to advance ALD1910 through IND-enabling toxicology studies to support an IND with the FDA.
- Leverage our proprietary antibody technology platform and deliberate design approach. We have brought together a group of world class scientists and drug developers that, when coupled with our proprietary technologies, allow us to discover, develop and commercialize antibody-based therapeutics that have the potential to change the lives of patients suffering from many types of disease. We intend to establish targeted commercialization and marketing capabilities for our products in the United States, and to discover and select candidates addressing areas of profound medical need and hold properties that we believe optimize the therapeutic potential for patients and commercial competitiveness.

Our Pipeline

Our product candidate pipeline is composed of candidates discovered and developed by Alder scientists using our proprietary antibody technology platform and a deliberate approach to design and select candidates to have properties that we believe optimize the therapeutic potential for patients and commercial competitiveness. Leveraging this platform, we select for antibody properties that we consider important in order to optimize safety, tolerability and efficacy, along with other properties that support reduced dosing volumes and frequency, time to onset of therapeutic effect, route of administration flexibility and other benefits.

We direct our pipeline efforts to treat central nervous system (CNS) diseases and pain where we believe there is a profound medical need and where a monoclonal antibody can offer an innovative and a best-in-class or first-in-class therapeutic option conveying safety and efficacy advantages compared to existing therapies. Our pipeline currently includes three internally discovered humanized monoclonal antibodies, as well as preclinical programs targeting additional indications that are in the discovery phase.

Eptinezumab

Overview

Eptinezumab, our most advanced solely owned product candidate, is a genetically engineered monoclonal antibody that inhibits CGRP for prevention of migraine. CGRP is a small protein and a validated biological target that is understood to drive migraine initiation, maintenance and chronification. Eptinezumab was discovered by Alder scientists and is the result of a deliberate process coupled with proprietary technologies to design a monoclonal antibody inhibiting CGRP that delivers a competitively differentiated profile and a unique clinical benefit to patients. We believe eptinezumab holds the potential to be a transformative therapeutic and meet a profound medical need, changing the migraine prevention treatment paradigm for physicians and patients living with migraine.

Eptinezumab is the subject of a pivotal trial program and has been successfully evaluated in multiple clinical trials, including two Phase 2 clinical trials. Our clinical data to date demonstrates that, after a single administration via an in-office infusion procedure, eptinezumab provided rapid and persistent migraine relief. As an infusion procedure, we believe eptinezumab will provide the opportunity for appropriate patient monitoring, facilitate proper administration of product and ensure patient adherence. In Phase 2 clinical trials for the prevention of migraine, eptinezumab has demonstrated:

1. Robust efficacy: three months after a single administration, approximately one-third of patients with either frequent episodic or chronic migraine had a 75% reduction in migraine days and over half of patients had a 50% reduction in migraine days.
2. Rapid reduction in migraine days: preliminary data from our Phase 2b clinical trial in chronic migraine suggested a separation of eptinezumab from placebo occurred within 48 hours of administration. Further, significant separation from placebo was also observed at 4 weeks post-dose in both frequent episodic and chronic migraine patients.
3. A persistent response: efficacy data supports a quarterly dosing regimen and possibly less frequent dosing regimen in a subset of patients.

We believe that the emerging profile of eptinezumab, with its potential to rapidly and significantly reduce the number of migraine days that patients experience after a single administration that persists for three months, including the potential to make a subset of patients 75% and 100% migraine free during the course of our completed Phase 2 clinical trials, addresses key therapeutic needs of patients and physicians and compete favorably with existing treatments and other treatments currently in development. In addition to its favorable emerging safety and efficacy profile, we believe eptinezumab has the potential for advantageous dosing regimens requiring infusions no more often than quarterly.

About Migraine

Migraine is a serious neurological disease; approximately 36 million Americans live with migraine. Migraine is the sixth most debilitating disease globally. In the United States, employers lose more than $13 billion each year as a result of 113 million lost work days due to migraine. Migraine is also a significant cause of emergency rooms visits, with estimates reaching over 1 million visits annually.

Migraine is a multifaceted disease associated with a complex interplay between genetics and the environment that results in a hyper-excitable nervous system. Migraine symptoms typically include sharp or throbbing head pain along with associated aura, such as disturbed vision, sensitivity to light, sound and smells, nausea and vomiting, mood changes and cognitive difficulties. Migraine starts as an episodic disorder but becomes chronic over time as the threshold for migraine initiation is reduced, resulting in an increased frequency of migraine attacks and little or no return to normal baseline nervous system function between episodes.

Migraine is three times more common in women than men, affecting 30% of women over a lifetime. Migraine is most common between the ages of 20 and 50 in both men and women. Migraine severity is divided into low frequency, frequent episodic and chronic. Low frequency migraine is characterized as zero to four migraine days per month, frequent episodic migraine as five to 14 migraine days per month, and chronic migraine as 15 or more headache days per month, with features of migraine on at least 8 days per month.

Of the 36 million people in the United States living with migraine, it is estimated that approximately 13 million are candidates for a preventative therapy, including three million with chronic migraine, representing the most disabled segment of the migraine

patient population. We estimate the annual market opportunity for the three million patients living with chronic migraine is estimated to be $4 billion.

Current Therapies. Currently, pharmacological treatment for migraine can be divided into abortive and preventive therapy. Abortive medications aim to reverse, or at least stop, the progression of a migraine once it has started. Preventive medications, which are given even in the absence of a migraine, aim to reduce the frequency and severity of the migraine attack, make acute attacks more responsive to abortive medications and may improve the patient's quality of life to a greater degree than abortive medications alone.

With some limitations and exceptions, FDA approved abortive medications are used successfully by many patients. However, for those patients living with migraine that are candidates for a preventative therapy, available treatments have limited efficacy, poor tolerability, or serious side-effects (or a combination of these) that limit patient use. Specifically, we believe that there is a need for migraine prevention therapies with improved safety, efficacy and route of administration options to meet patient and physician needs. Both patients and physicians seek treatment options that significantly reduce the number of migraine days patients experience and are safe and well-tolerated. Additionally, how quickly the treatment prevents migraines is of particular importance to patients. Providing dosing options that provide for infrequent quarterly dosing are also important to physicians and patients to improve convenience and medical compliance.

- Abortive Medications. Numerous abortive medications are used for migraine. The choice for an individual patient depends on the severity of the attacks, associated symptoms, such as severity of pain, incidence of nausea and vomiting, and the patient's treatment response. Patients most commonly use a non-steroidal anti-inflammatory drug, a 5-hydroxytryptamine–1 agonist, or triptan, or a combination of both to abort a migraine. Triptans are most effective when taken early during a migraine and may be repeated in two hours as needed, with a maximum of two doses daily. Triptans are not recommended for use more than three days a week because overuse can lead to increased frequency of migraines and medication overuse headache. Approximately 30% to 50% of patients respond to triptans and there is a high rate of recurrence of migraine within 24 hours. To avoid the development of medication overuse headache, patients are limited to no more than 10 doses of triptans in any one month, which may be insufficient to treat patients with frequent episodic or chronic migraines. This limitation can also be problematic for migraine patients who suffer from nausea and vomiting and cannot keep triptans in their systems. In addition to these limitations, triptans are also contraindicated for patients with existing, or at risk of, coronary artery disease.
- Preventive Medications. Currently, preventive medications approved for migraine include beta blockers (such as propranolol), topiramate, sodium valproate, and botulinum toxin, or Botox. In patients with frequent episodic and chronic migraine, beta blockers, topiramate and sodium valproate are commonly used. These medications are often not well-tolerated by patients because of adverse events such as cognitive impairment, nausea, fatigue and sleep disturbance. In clinical trials, complete responses, or a 100% reduction in migraine days or episodes, with topiramate were less than 6%. In the affected patient population, predominantly women of child-bearing age, the association of these agents with poor pregnancy outcomes and fetal abnormalities can limit their use.

Botox is only approved in chronic migraine patients. Approximately 47% of Botox-treated patients experience a 50% reduction in either migraine days per month or migraine frequency per month within six months, which leaves more than half of patients inadequately treated. In Phase 3 clinical trials, Botox did not report any complete responses. In addition, the dosing regimen requires approximately 31 subcutaneous injections at various sites on the head and neck which is repeated every 12 weeks if the patient has a therapeutic response.

Profound Unmet Medical Need. The utility of current preventative treatment options is challenged by limited efficacy and medication side-effects which often limit the use of migraine medications. According to the U.S. Agency for Healthcare Research and Quality, only about 12% of adults with frequent episodic or chronic migraine take preventive medications. Further, nearly 50% of migraineurs have not used a preventative therapy and 65% discontinue migraine

medication because of side effects. As a result, we believe the area of profound unmet need in migraine is for preventive therapies with improved efficacy and tolerability to treat the individuals with frequent episodic and chronic migraine.

Indications for preventive migraine medications may include:

- frequency of migraine attacks greater than two per month with disability that lasts three or more days per month;
- abortive medications fail or are overused; or
- symptomatic medications (e.g. analgesics or anti-emetics) are contraindicated or ineffective.

Approximately 50% of prevention candidates are treated by neurologists. We believe these patients are highly motivated to seek new preventative treatment options that offer improved safety and tolerability, and better efficacy as measured by a material reduction in the number of migraine days experienced, the rapidity with which the migraines are prevented, and infrequent dosing, as compared with current options, which have safety, tolerability and efficacy limitations. We believe that a therapeutic option that addresses these

limitations represents a significant opportunity to improve disease management in a substantial number of patients that are candidates for migraine prevention.

Our Migraine Prevention Solution: CGRP and the Science of Eptinezumab. We are developing eptinezumab for the prevention of migraine, to meet the needs of the estimated 13 million patients in the United States living with migraine that are candidates for a preventative therapy option. Eptinezumab is a genetically engineered monoclonal antibody that inhibits CGRP, a small protein and a validated biological target that is understood to drive migraine initiation, maintenance and chronification. Eptinezumab was discovered by Alder scientists and is the result of a deliberate process coupled with proprietary technologies to design a monoclonal antibody inhibiting CGRP. It was designed to provide a competitively differentiated clinical profile to the migraine prevention treatment paradigm and deliver a unique clinical benefit to patients.

We believe eptinezumab holds the potential to be a transformative therapeutic and meet a profound medical need, changing the migraine prevention treatment paradigm for physicians and patients living with frequent episodic or chronic migraine. We are developing eptinezumab as a highly potent, long-acting therapeutic that modulates the activity of CGRP for the prevention of migraine in patients with frequent episodic or chronic migraine.

Other CGRP Directed Therapeutics. There are no currently approved medications that directly target CGRP. Small molecule CGRP inhibitors, such as Merck's telcagepant, established that blocking CGRP was effective as an abortive treatment for migraine. However, these small molecules, which have very different properties than eptinezumab, a monoclonal antibody, had side-effects and toxicity issues that curtailed their development. The Merck experience further clinically validated CGRP biology as a target for migraine but suggested a different strategy for intervention to be used to avoid off-target toxicity issues. Based on prior experiences of other companies targeting the CGRP pathway and our own efficacy data in the prevention of frequent episodic migraine and chronic migraine, we believe there is compelling rationale to continue the development of a highly selective antibody, such as eptinezumab, for the prevention of migraine. In clinical trials of eptinezumab to date, involving more than 1,500 subjects, we have not observed any significant side-effects or toxicity issues. As described under "—Competition—Eptinezumab," there are several other CGRP inhibiting therapies currently in development that could compete with eptinezumab.

Commercial Strategy

In the United States, due to the severity of the disease, patients with frequent episodic or chronic migraine typically seek preventive treatment from neurologists and pain specialists. It is estimated that approximately 50% of the candidates for migraine prevention in the United States are cared for by neurologists, including the estimated three million patients with chronic migraine. By the time a frequent episodic or chronic migraine patient begins prevention therapy, the patient may have experienced any or all of: increased headache frequency; loss of response to abortive therapy; and significant migraine-related disability. Neurologists prescribe preventive therapies more often than do primary care physicians and pain specialists across all headache frequencies. Given the referral patterns for migraine and the need for improved patient care, the American Migraine Foundation has initiated a program to establish headache centers in major cities across the United States. We plan to build a specialty sales force targeting the high-prescribing neurologists and headache centers in the United States, if eptinezumab is approved, and to seek one or more partners to commercialize eptinezumab outside the United States.

We intend to commercialize an infusion formulation and are investigating additional routes of administration, such as a potential subcutaneous and/or intramuscular formulation. We expect to have further insight regarding our plans and timing following the availability of top-line data from PROMISE 1, which we believe will expand our understanding of eptinezumab's profile and potential commercial dose.

Infusion procedures are known to neurologists for the treatment of migraines specifically and a range of other neurological disorders with the objective of administration of fast, persistent, therapeutic benefit to patients. Our research supports that 70% of neurologists have access to IV delivery infrastructure, including infusion centers. Infusions have the benefit of being a procedure in the physician's office or a clinic setting, which our research supports a large segment of physicians and patients prefer to self-treating at home by self- injection. Procedures such as infusion administered in a physician office also address patient adherence issues which are one of the leading causes of lack of benefit from currently available oral therapies.

Overview. We believe the clinical data obtained to date in our development program for eptinezumab exhibits the potential of eptinezumab to transform the preventative treatment of patients with migraine. We have completed multiple clinical trials evaluating eptinezumab, including two Phase 2 trials in patients living with migraine, and are currently evaluating eptinezumab in a pivotal trial program that encompasses two Phase 3 pivotal clinical trials and an open-label Phase 3 clinical trial. Further, we are exploring the initiation of one or more additional clinical studies of our infusion formulation that would, if successful, potentially enable us to broaden the initial label beyond that contemplated by our existing pivotal trials. We are also committed to investigating additional routes of administration, such as a potential subcutaneous and/or intramuscular formulation. We plan to have discussions with the FDA in 2017 regarding any additional clinical requirements for our expected commercial supply of eptinezumab in support of our initial BLA submission.

For purposes of the clinical trial descriptions which follow below, the references to "p" values mean statistical calculations to determine whether the effects of eptinezumab were significant in comparison to placebo based on pre-specified statistical targets. We specified that any result where "p" was less than or equal to 0.05 would be statistically significant.

Pivotal Trial Program. We initiated our pivotal trial program for eptinezumab in October 2015 with PRevention Of Migraine via Intravenous ALD403 Safety and Efficacy 1 (PROMISE 1), a pivotal clinical trial evaluating the safety and efficacy of eptinezumab administered via infusion once every 12 weeks for one year in approximately 800 patients with frequent episodic migraine. PROMISE 1 is a double-blind, placebo-controlled Phase 3 clinical trial in which patients are randomized equally to either one of three doses of eptinezumab or placebo administered via infusion once every 12 weeks across sites in the United States and Europe. Patient recruitment for PROMISE 1 was completed in October 2016, and we expect top-line data from PROMISE 1 to be available in the first half of 2017. Also in October 2016, we met with the FDA regarding our eptinezumab pivotal clinical trial program. Based on input from the FDA, we finalized the design of our pivotal clinical trial program in support of a BLA submission, and in November 2016 initiated a second pivotal clinical trial, PRevention Of Migraine via Intravenous ALD403 Safety and Efficacy 2 (PROMISE 2), evaluating the safety and efficacy of eptinezumab in patients with chronic migraine. The study is a double-blind, placebo-controlled Phase 3 clinical trial enrolling approximately 1,050 patients randomized to either one of two dose levels of eptinezumab or placebo administered via infusion once every 12 weeks for six months across sites in the United States and Europe. The primary endpoint of both pivotal trials is the mean reduction in migraine days from baseline over weeks 1 to 12. Key secondary endpoints are the 75% responder rate over weeks 1 to 12 as determined by the change in migraine days between eptinezumab and placebo, and the 75% responder rate over weeks 1 to 4 as determined by the change in migraine days between eptinezumab and placebo. We expect top-line data from PROMISE 2 to be available in the first half of 2018.

In December 2016, we initiated an open-label Phase 3 clinical trial of eptinezumab to further confirm the long-term safety and tolerability of eptinezumab, as required by the FDA. This study is a Phase 3 clinical trial enrolling 120 patients receiving eptinezumab administered by infusion once every 12 weeks for one year. We expect data from this clinical trial to be available in the first half of 2018.

Completed Phase 2b Clinical Trial (Chronic Migraine). This Phase 2b clinical trial was a double-blind, placebo-controlled, randomized, single intravenous infusion, dose ranging study in 588 patients with chronic migraine. Patients were randomized to receive a single intravenous infusion of 10 mg, 30 mg, 100 mg or 300 mg of eptinezumab or placebo (approximately 120 patients per group). The primary efficacy endpoint of the study was the change in migraine days between eptinezumab and placebo as determined by the 75% responder rates over a 12-week period. Endpoints were also evaluated at week 24 and at week 48 (study end). In March 2016, we announced the following positive top-line data from the trial:

- The 300 mg and 100 mg dose levels of eptinezumab met the primary efficacy endpoint of the study, a 75% reduction in migraine days over the entire 12 weeks in 33% and 31% of patients, respectively ($p < 0.05$), as described in the table below:

*(p= < 0.05) **(p= < 0.01)

- A single administration of eptinezumab resulted in an immediate and persistent mean reduction in migraine days from baseline throughout the 12 weeks at the 300 mg ($p < 0.01$), 100 mg ($p < 0.01$), and 30 mg ($p < 0.01$) dose

levels, meeting the secondary efficacy endpoint.

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- A single administration of eptinezumab at 300 mg, 100 mg or 30 mg dose levels demonstrated a persistent reduction in migraine days for the entire 12 weeks, supporting a quarterly dosing strategy.
- The 10 mg dose of eptinezumab was identified as sub-therapeutic.
- The safety profile was consistent with that observed in earlier eptinezumab clinical trials.

In July 2016, we announced that top-line 24-week data from this trial demonstrated persistent migraine prevention in patients with chronic migraine, confirming and extending the 12-week data announced in March 2016. The 75% responder rate for the entire 24 weeks at the 300 mg, 100 mg and 30 mg dose levels was 31%, 29% and 30%, respectively, compared to a placebo rate of 20%. Eptinezumab also demonstrated a persistent mean reduction in migraine days from baseline throughout the 24-week period. The 48-week data suggest that a subset of patients continued to receive a benefit out to 48 weeks after a single administration. The statistical analysis plan for the Phase 2b trial does not provide for analyses of statistical significance at time points post the primary endpoint at 12 weeks.

A post-hoc analysis of the data demonstrated that within 48 hours after eptinezumab administration there was more than a 50% reduction in the percentage of patients experiencing migraine after receiving eptinezumab versus baseline, compared to a 17% reduction in patients administered placebo, as demonstrated in the figure below. Further studies will need to be undertaken to confirm these findings.

An analysis of the data also demonstrated that this rapid reduction in migraine days and significant separation between those patients receiving eptinezumab versus placebo was maintained at four weeks after administration, as demonstrated in the table below:

Completed Phase 2 Proof-of-Concept Clinical Trial (Frequent Episodic Migraine). Our first completed Phase 2 clinical trial of eptinezumab was a single intravenous infusion dose, double-blind, placebo-controlled, randomized proof-of-concept trial to evaluate the safety, pharmacokinetics and efficacy of eptinezumab in patients with frequent episodic migraine. Pharmacokinetics measures the amount of a specific drug in the body over a period of time, and includes the process of absorption, distribution, metabolism and excretion of the drug. Approximately 80 patients each received one dose of eptinezumab in the clinical trial.

Differences in the change in mean migraine days per month was the approvable endpoint for the pivotal clinical trials of Botox, which has been approved for prevention of chronic migraine. The primary endpoint for our proof-of-concept trial was the difference between eptinezumab and placebo in the change of mean migraine days per month from baseline to weeks five through eight following one dose of eptinezumab. As illustrated in the figure below, in the trial, one dose of eptinezumab produced a rapid and persistent reduction in migraine days that was statistically significant when compared to placebo, in terms of both change in migraine days per month ($p=0.03$) and the magnitude of the change in migraine days prevented across all patients ($p<0.001$) at the primary endpoint of eight weeks. The reduction in migraine days per month was also statistically significant across the entire combined three-month trial period ($p=0.0078$).

Eptinezumab 1000 mg IV versus Placebo IV as a Single Dose

In addition to reduction of mean migraine days per month as an efficacy endpoint, a responder analysis was performed. As illustrated in the table below, 16% of patients receiving a single dose of eptinezumab achieved a complete 100% response (zero migraine days) versus 0% on placebo over the entire 12-week period following infusion. In any four-week period of the trial (weeks 1-4, 5-8 or 9-12), approximately 75% of patients achieved a 50% reduction, 45% or more achieved a 75% reduction and 27% or more achieved a 100% reduction in migraine days. We believe measuring response rates, or the magnitude of the change in migraine days

prevented across patients, provides an important measure of patient benefit to prescribing physicians and patients. For example, telling a patient that he or she has a one in six chance of achieving a complete response, meaning no migraines, can be easier to relate to than reduction of mean migraine days per month.

Number (Percentage) of Patients Achieving a 50%, 75% and 100%

Reduction in Migraine Days During Weeks 1-4, 5-8, and 9-12

| | | Percent Reduction | | |
|---|---|---|---|---|
| Time Period | Migraine Days | Placebo IV | Eptinezumab 1000 mg IV | p-value |
| Weeks 1-4 | Number of Evaluable Patients | 80 | 76 | |
| | 50% | 40 (50.0) | 57 (75.0) | p=0.0011 |
| | 75% | 19 (23.8) | 39 (51.3) | p=0.0003 |
| | 100% | 4 (5.0) | 21 (27.6) | p<0.0001 |
| Weeks 5-8 | Number of Evaluable Patients | 80 | 78 | |
| | 50% | 43 (53.8) | 59 (75.6) | p=0.0032 |
| | 75% | 28 (35.0) | 35 (44.9) | p=0.1347 |
| | 100% | 12 (15.0) | 21 (26.9) | p=0.0493 |
| Weeks 9-12 | Number of Evaluable Patients | 78 | 73 | |
| | 50% | 52 (66.7) | 55 (75.3) | p=0.1603 |
| | 75% | 24 (30.8) | 39 (53.4) | p=0.0039 |
| | 100% | 13 (16.7) | 30 (41.1) | p=0.0008 |
| Weeks 1-12 | Number of Evaluable Patients | 76 | 68 | |
| | 50% | 25 (32.9) | 41 (60.3) | p=0.0006 |
| | 75% | 7 (9.2) | 22 (32.4) | p=0.0004 |
| | 100% | 0 | 11 (16.2) | p=0.0001 |

The following figure presents data from patients who achieved a 50%, 75% and 100% reduction in migraines at all-time points in the trial. Eptinezumab provided a statistically significant reduction versus placebo in migraines at all response levels in these patients (p<0.001).

Eptinezumab was well-tolerated and adverse events were comparable in terms of type and frequency across eptinezumab and placebo groups. In addition, there were no meaningful differences between the eptinezumab

treatment and placebo groups with respect to adverse events, cardiovascular measures or laboratory safety data.

Patients in this trial were followed for an additional three months for a total of six months (24 weeks) follow-up. The percentage of patients achieving a 50, 75 or 100% response for the entire 24-week duration of follow-up was similar to that observed for the first 12 weeks, suggesting that the response to a single dose of eptinezumab was persistent and long lasting.

Reduction in Migraine Days for Three and Six Months is Similar

Phase 1 Clinical Trials. We have completed various Phase 1 clinical trials of eptinezumab, including a Phase 1 clinical trial demonstrating that the pharmacokinetics and pharmacodynamics by infusion, subcutaneous or intramuscular injection of eptinezumab support a quarterly single injection dosing strategy.

Safety Profile. The observed serious adverse events, or SAEs, across all clinical trials to date for eptinezumab include, among others, inguinal hernia, kidney infection, transient ischemic attack, which is a precursor to stroke, conversion disorder, which is a mental health condition in which a person has blindness, paralysis, or other nervous system symptoms that cannot be explained by medical evaluation, chest pain, shortness of breath and wound infection. However, the relevant clinical investigators concluded that all observed SAEs to date were found to be unrelated to eptinezumab. We have observed some injection-site reactions, or ISRs, in Phase 1 clinical trials of subcutaneous and intramuscular injections of eptinezumab. Additional studies or requirements from the FDA for future studies may be necessary to address these ISRs.

ALD1910

ALD1910 is a genetically engineered monoclonal antibody discovered and designed by Alder to specifically inhibit pituitary adenylate cyclase-activating peptide-38, or PACAP-38, a protein active in mediating the initiation of migraine. We believe ALD1910 holds potential as a migraine prevention treatment for those who have an inadequate response to therapeutics directed at CGRP, and could provide an important new therapeutic option to migraine patients and their physicians.

ALD1910 is currently undergoing IND enabling preclinical studies. Similar to our other internally developed product candidates, ALD1910 is designed to have favorable antibody properties and a desirable product profile we consider critical to a streamlined development path.

Clazakizumab

Clazakizumab is a novel monoclonal antibody that inhibits the pro-inflammatory cytokine interleukin-6 (IL-6), an important driver of the inflammatory response. IL-6 is also implicated in the transition from acute to chronic inflammation. Chronic inflammation is a notable feature of several diseases, including rheumatoid arthritis (RA) and psoriatic arthritis. Clazakizumab completed two positive Phase 2b clinical studies establishing proof-of-concept for

RA.

In May 2016, Alder licensed the exclusive worldwide rights to clazakizumab to Vitaeris. which will pursue innovative therapeutic indications in chronic inflammatory diseases. In exchange for the rights to clazakizumab, Alder has received an equity stake in Vitaeris and is eligible to receive royalties and certain other payments.

Preclinical Pipeline

We are actively working to expand our antibody therapeutic pipeline in opportunities where our technology provides favorable development advantage in areas of unmet medical need, seeking both first-in-class and best-in-class therapeutics. We prioritize targets that meet the criteria of either genetic validation or clinical demonstration that they play a central role in the disease state. We are continuing to evaluate additional potential candidates that represent diverse opportunities in indications that may be eligible for orphan designations and/or indications where monoclonal antibodies have not previously played a role in the treatment paradigm, such as was the case with our eptinezumab program for migraine prevention.

Technology Platform

We built and use a proprietary antibody platform to discover and develop monoclonal antibody therapeutics that enables us to engineer our candidates to have properties that we believe optimize the therapeutic potential for patients. Since the unique structure, including sequence, of an antibody determines how it functions and behaves, we specifically engineer our candidates to have properties aligned with the desired therapeutic profile. Leveraging this proprietary platform, we select for properties that we consider important in order to optimize safety, tolerability and efficacy. We further select for properties that support reduced dosing volumes and frequency, time to onset of therapeutic effect, route of administration flexibility, reduced immunogenicity compared to other monoclonal antibody therapeutics, and other benefits. The specific monoclonal antibody properties that we consider important to optimize in the selection and development of our candidates to support best-in-class target therapeutic profiles include:

- Bioavailability
- Binding affinity and specificity
- Half-life
- Immunogenicity
- Manufacturing efficiency
- Formulation properties

Our proprietary platform consists of three components that we believe together allows us to optimize the discovery and selection of monoclonal antibody product candidates with the specific, pre-defined, properties that confer best-in-class therapeutic potential for patients:

- Antibody selection (ABS): our proprietary antibody selection platform that provides access to diverse antibody collections that meet our therapeutic target profile and provides access to optimal properties of high affinity and selectivity.
- A pioneering process we developed that humanizes rabbit antibodies to produce therapeutic antibodies that are greater than 95% human. Unlike fully-human antibodies, our antibodies are designed to lack certain sugars in an effort to minimize the body’s recognition of such antibodies as foreign, thereby limiting infusion reactions as well as maximizing durability of the therapeutic response.
- Our yeast-based proprietary manufacturing technology, MabXpress.

We also believe these technologies allow us to address a number of critical development priorities early, thereby reducing our development cost and timeline.

Antibody Discovery and Candidate Selection Technology

Antibodies are produced by the immune system in humans and other warm-blooded animals. They are naturally generated to help defend and protect from disease and infections. Antibodies are produced and secreted by specialized antibody producing cells called B cells. Traditionally, rodents have been used as the source of therapeutic antibodies. To find these antibodies, we remove the B cells from the spleen and fuse to a cancer cell. The combined cancer and B cell, or “hybridoma,” is able to live longer from this host than normal B cells would alone. Generally, this process has trouble recovering an antibody with the desired properties due to its low overall efficiency. Collectively, this limits the ability to identify high-quality antibody therapeutics with optimal therapeutic properties.

We discover all of our product candidates in-house with our ABS technology. As a precursor to discovery, we choose to target freely-circulating proteins, such as ligands, which are critical to the disease biology and are part of well understood disease pathways. We believe this strategy can lead to fewer drug doses at lower concentrations, while potentially minimizing off target activity and associated side-effects. The clinical relevance of these proteins is highly validated by prior scientific or clinical research.

Our ABS technology has been successfully applied to a wide cross section of therapeutic targets that range from small biologically active peptides to more traditional monoclonal antibody targets. ABS allows us to rapidly evaluate all the B cells in a host and identify the key subset of cells that produce the antibody responsible for the desired therapeutic effect. We believe one of our competitive advantages is our proprietary method to keep these B cells alive while we exhaustively screen them. This is an iterative

process that allows us to identify the rare antibodies that possess the ideal qualities needed to be a successful therapeutic, for example manufacturability, therapeutic stability, durability and favorable safety.

Our Antibody Selection Process

Our ABS technology has been applied in all our preclinical and clinical programs and led to the selection of our most advanced product candidate, eptinezumab, as well as ALD1910 and clazakizumab. We also use our ABS technology to provide bio-analytical support for all our product candidates in the clinic.

Antibody Humanization and Therapeutic Design

Antibodies derived from non-human sources elicit a natural rejection response, and if left unchanged when injected into humans, are removed rapidly and quickly lose their therapeutic effect. Common sources of antibodies include mice and rats, which have antibodies that are structurally different from humans and need to be altered to be more human-like.

Historically, this is a complex and difficult undertaking to convert rodent antibodies into human therapeutics that retain all the original rodent antibody properties. This is a highly iterative process that is both time and labor intensive and is fraught with significant failure.

We have pioneered the use of rabbit antibodies as the starting materials for our product candidates. Compared to rodent antibody humanization, our rabbit antibody humanization results in more human-like antibodies that maintain their original properties and are faster to produce. As a result, our process requires fewer iterations to complete humanization. Using our proprietary technology, we consistently generate antibody therapeutics that are greater than 95% human in terms of their sequence content. However, unlike fully-human antibodies, we specifically design our antibodies to lack certain sugars in order to further minimize the body’s recognition of such antibodies as foreign, thereby limiting infusion reactions, as well as maximizing durability of the therapeutic response. Our technology results in product candidates that are well-tolerated by patients.

Our product candidates are also differentiated from most other monoclonal antibodies based on our use of an immunoglobulin G1 (IgG1) backbone. While all therapeutic antibodies use an immunoglobulin backbone, there are four different IgG subclasses. We believe that the use of IgG1, in combination with our decision to engineer our antibodies to remove certain sugars from the backbone, improves certain therapeutic characteristics, including reduced immunogenicity and improved half-life.

Intellectual Property

Our success will significantly depend upon our ability to obtain and maintain patent and other intellectual property and proprietary protection for our product candidates and antibody platform. For the specific antibody product candidates in all of our programs, we seek to protect the candidate antibody and variants thereof, compositions containing the antibody, methods of manufacturing the antibody, and the use of the antibody in treating human disease conditions where we or any future partner is actively pursuing, or contemplate pursuing regulatory approval permitting the marketing of the antibody for use as a human

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therapeutic agent. In addition to pursuing patent protection for our key technologies, we rely upon unpatented trade secrets, know-how and continuing technological innovation to develop and maintain our competitive position.

We seek to protect our proprietary information, in part, by using confidentiality agreements with our collaborators, employees and consultants and invention assignment agreements with our employees and selected consultants. Despite these measures, any of our intellectual property and proprietary rights could be challenged, invalidated, circumvented, infringed or misappropriated, or such intellectual property and proprietary rights may not be sufficient to permit us to take advantage of current market trends or otherwise to protect competitive advantages. For more information, see the section of this Annual Report on Form 10-K titled “Risk Factors—Risks Related to Intellectual Property.”

Eptinezumab

Our patent applications relating to compositions and uses for eptinezumab have been broadly filed worldwide. If these applications issue as patents, they are estimated to expire in 2032.

We own, or co-own with exclusive rights, four patent families related to eptinezumab. Each family contains pending U.S. and foreign counterpart applications with claims directed to compositions and/or methods of using eptinezumab and variants thereof, alone or in combination to treat or prevent various human diseases and conditions associated with elevated CGRP such as migraine. Patents based on the earliest filed applications, if granted, are expected to expire in 2032.

We have full ownership of the first eptinezumab patent family, which relates to eptinezumab compositions and methods for treating or preventing various human disease conditions associated with elevated CGRP such as migraine.

We are the co-owner and exclusive licensee of the second eptinezumab patent family, which relates to use of eptinezumab compositions in methods for treating or preventing various human disease conditions associated with photophobia or light aversion.

We are the co-owner and exclusive licensee of the third eptinezumab patent family, which relates to use of eptinezumab compositions in methods for treating or preventing various other human disease conditions associated with diarrhea.

A fourth patent family, which is owned by us exclusively and estimated to expire in 2034, relates to the use of eptinezumab for regulating glucose metabolism.

ALD1910

We have patent applications for six patent families related to ALD1910 covering ALD1910 compositions and uses for anti-PACAP antibodies. If these applications issue as patents, they are estimated to expire in 2036.

Clazakizumab

Our patents and patent applications relating to clazakizumab have been broadly filed worldwide. Many of these applications have issued in the United States and other countries and will expire between 2028 and 2031, without any patent term extensions.

We hold one U.S. patent with granted claims directed to the clazakizumab antibody and compositions containing the clazakizumab antibody. This patent will expire in 2028.

We hold one U.S. patent with granted claims directed to nucleic acids encoding clazakizumab and methods of use thereof to produce this antibody. This patent will expire in 2028.

We hold nine U.S. patents with granted claims broadly or specifically directed to the use of clazakizumab and variants thereof, alone or in combination, to treat or prevent human disease conditions associated with elevated IL-6. These patents will expire between 2028 and 2030.

Technologies

We hold three U.S. patents and numerous foreign patents related to MabXpress, our yeast-based proprietary manufacturing technology. Our MabXpress patents and patent applications relate to the expression of heteropolymeric polypeptides, such as antibodies, in Pichia. These patents will expire between 2024 and 2026.

We have sought patent protection for our antibody discovery method, of which five foreign patents have been granted, and one pending U.S. application and six foreign applications are under examination. These foreign patents will expire in 2027. A patent based on the U.S. application, if issued, is expected to expire in 2027.

We also have sought patent protection for our proprietary method of humanizing rabbit antibodies. Three of these patents have been granted in foreign territories and two U.S. and 13 pending foreign patent applications are under examination. These foreign patents will expire in 2028. Patents based on the U.S. applications, if issued, are expected to expire in 2028. Patents based on the foreign applications, if issued, are expected to expire in 2028.

We also hold two granted U.S. patents claiming a yeast promoter sequence and its use in the MabXpress technology. These patents will expire in 2027.

Early Stage Programs

All programs where there is a potential at a later stage to transition into clinical candidate nomination are covered by pending U.S. (non-provisional or provisional), international (PCT) or directly filed foreign patent applications. There are currently ten U.S. patent applications and one granted U.S. patent that support these programs, and in some instances corresponding PCT and/or foreign counterpart applications have been filed.

Technology Licenses

Keck Graduate Institute of Applied Life Sciences

In October 2004, we entered into a royalty-free license agreement with Keck Graduate Institute of Applied Life Sciences, or Keck, under which we obtained an exclusive, worldwide license to Keck's patent rights in certain inventions, or the Keck patent rights, and technology or the Keck technology, related to production and optimization of antibodies in yeast, including certain patents relating to our ABS and MabXpress technologies. Under the license agreement, we are permitted to research, develop, manufacture and commercialize products using the Keck patent rights for all research and commercial uses, and to sublicense such rights. Keck retained the right, on behalf of itself and other non-profit institutions, to use the Keck patent rights and Keck technology for educational and research purposes and to publish information about the Keck patent rights and to further use the Keck technology for purposes other than production and optimization of antibodies in yeast.

In consideration for the rights granted to us under the license agreement, we issued Keck an aggregate of 40,000 shares of our common stock. As additional consideration, we are required to pay an annual license maintenance fee during the term of the agreement.

The license agreement requires that we use commercially reasonable efforts to develop and commercialize one or more products that are covered by the Keck patent rights. We may terminate the license agreement upon 30 days' notice to Keck. Either party may terminate the license agreement in the event of material breach of the license agreement which remains uncured after 90 days of receiving written notice of such breach. Absent early termination, the license agreement will automatically terminate on a country-by-country basis upon the expiration date of the longest-lived patent right included in the Keck patent rights.

Other

We also license intellectual property from certain other parties that we believe to be useful for the conduct of our business and may enter into additional license agreements in the future.

Information about Segments and Geographic Revenue

Information about segments and geographic revenue is set forth in the notes to consolidated financial statements included elsewhere in this report.

Manufacturing

We have adopted a manufacturing strategy of contracting with a variety of contract manufacturing organizations, or CMOs, within North America and Europe for the manufacture of eptinezumab, ALD1910, and future product candidates. This has enabled us to produce products under current Good Manufacturing Practices, or cGMP, controls for our completed and planned clinical trials. A protocol of methods has been established at these manufacturers along with specific testing facilities to generate sufficient information to inform the appropriate regulatory authorities. We anticipate there will be continued interaction with additional CMOs as our product candidates advance and we seek to expand our access to larger production facilities to supply clinical trials and commercialization. We currently rely on a single CMO to manufacture and provide us with clinical supplies of eptinezumab. We have entered into agreements with two other CMOs in anticipation of larger scale commercial production, and will use eptinezumab produced by these CMOs in future clinical studies. We expect to enter into agreements with additional CMOs in the future. We plan to have discussions with the FDA in 2017 regarding any additional clinical requirements for our expected commercial supply of eptinezumab in support of our initial BLA submission.

Competition

The development and commercialization of new therapeutic products is highly competitive. Our success will be based in part on our ability to identify, develop and manage products that are safer, more efficacious and/or more cost-effective than alternative therapies. We face competition with respect to our current product candidates, and will face competition with respect to product candidates that we may seek to develop or commercialize in the future, from major pharmaceutical companies, specialty pharmaceutical companies and biotechnology companies worldwide. In addition, our ability to compete may be affected in many cases by insurers or other third-party payors seeking to encourage the use of biosimilar products, which are expected to become

available over the coming years. Many of our competitors are large pharmaceutical companies that will have a greater ability to reduce prices for their competing drugs in an effort to gain market share and undermine the value proposition that we might otherwise be able to offer to payors.

Potential competitors also include academic institutions, government agencies and other public and private research organizations that conduct research, seek patent protection and establish collaborative arrangements for research, development, manufacturing and commercialization. Many of these competitors are attempting to develop therapeutics for our target indications.

Eptinezumab, if approved, will compete with beta blockers that are approved for prevention of frequent episodic and chronic migraine such as propranolol, marketed by Wyeth, and other treatments such as topiramate, marketed by Johnson & Johnson, and sodium valproate, marketed by Divalproex. In addition, Botox, marketed by Allergan, is approved for the prevention of chronic migraine and commonly prescribed for frequent episodic migraine. We are also aware of several CGRP inhibiting therapies currently in development that could compete with eptinezumab, including Amgen's AMG-334, Lilly's LY-2951742 and Teva's TEV-48125, all of which are therapies using antibodies similar to eptinezumab. Amgen and Teva have each announced that they plan to make BLA submissions in 2017 for their competing CGRP therapies, which, if approved, would enable them to commercialize their CGRP therapies before we are able to do so with eptinezumab. Furthermore, even if the class of CGRP inhibiting therapies receive regulatory approval and are determined to be more effective in treating high-frequency and chronic migraine, patients may be satisfied using cheaper generic abortive medications such as triptans, which could limit eptinezumab market penetration in the migraine prevention marketplace.

The commercial opportunity for eptinezumab or our other product candidates could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, more convenient or less expensive than our product candidates or any other product candidate that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours. In addition, our ability to compete may be affected because in many cases insurers or other third-party payers seek to encourage the use of generic products.

We believe that eptinezumab has potential benefits over competitive products as described under "—Our Pipeline." As a result, we believe that eptinezumab should be well placed to capture market share from competing products if approved. However, even with those benefits, eptinezumab may be unable to compete successfully against these products. See "Risk Factors — Risks Related to eptinezumab and Our Other Product Candidates."

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 and marketing of biopharmaceutical products. These agencies and other federal, state and local entities regulate research and development activities and the testing, manufacture, quality control, import, export, safety, effectiveness, labeling, storage, distribution record keeping, approval, advertising and promotion of our products.

The process required by the FDA before product candidates may be marketed in the United States generally involves the following:

- submission of an IND which must become effective before clinical trials may begin;
- adequate and well-controlled human clinical trials to establish the safety, purity and potency of the proposed biologic product candidate for its intended purpose;
-

pre-approval inspection of manufacturing facilities for their compliance with cGMP and selected clinical investigations for their compliance with Good Clinical Practices, or GCP; and

- FDA approval of a BLA to permit commercial marketing for particular indications for use.

The testing and approval process requires substantial time, effort and financial resources. Prior to commencing the first clinical trial with a product candidate, we must submit an IND to the FDA. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA, within the 30-day time period, raises safety concerns or questions about the conduct of the clinical trial by imposing a clinical hold. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. Submission of an IND may not result in FDA authorization to commence a clinical trial. A separate submission to the existing IND must be made for each successive clinical trial conducted during product development. Furthermore, an independent institutional review board for each medical center proposing to conduct the clinical trial must review and approve the plan for any clinical trial and its informed consent form before the clinical trial commences at that center. Regulatory authorities or an institutional review board or the 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. Some studies also include a data safety monitoring board, which receives special access to unblinded data during the clinical trial and may recommend that the sponsor halt the clinical trial if it determines that there is an unacceptable safety risk for subjects or other grounds, such as no demonstration of efficacy.

For purposes of BLA approval, human clinical trials are typically conducted in three sequential phases that may overlap.

- Phase 1—Studies are initially conducted to test the product candidate for safety, dosage tolerance, absorption, metabolism and distribution.
- Phase 2—Studies are conducted with groups of patients with a specified disease or condition to provide enough data to evaluate the preliminary efficacy, optimal dosages and dosing schedule and expanded evidence of safety. Multiple Phase 2 clinical trials may be conducted to obtain information prior to beginning larger and more expensive Phase 3 clinical trials.
- Phase 3—Clinical trials are undertaken in large patient populations to further evaluate dosage, to provide statistically significant evidence of clinical efficacy and to further test for safety in an expanded patient population at multiple clinical trial sites. These clinical trials are intended to establish the overall risk/benefit ratio of the product and provide an adequate basis for product approval.
- Phase 4—The FDA may require, or companies may pursue, additional clinical trials after a product is approved. These so-called Phase 4 studies may be made a condition to be satisfied after approval. The results of Phase 4 studies can confirm the effectiveness of a product candidate and can provide important safety information.

Concurrent with clinical trials, companies usually complete additional animal studies and must also develop additional information about the biological characteristics of the product candidate as well as finalize a process for manufacturing the product in commercial quantities in accordance with cGMP requirements. The manufacturing process must be capable of consistently producing quality batches of the product candidate and, among other things, must develop methods for testing the identity, strength, quality and purity of the final product. Additionally, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that the product candidate does not undergo unacceptable deterioration over its shelf life.

BLA Submission and Review by the FDA

The results of product development, nonclinical studies and clinical trials are submitted to the FDA as part of BLA. The submission of BLA requires payment of a substantial User Fee to the FDA. The FDA may convene an advisory committee to provide clinical insight on application review questions. The FDA reviews applications to determine, among other things, whether a product is safe and effective for its intended use and whether the manufacturing controls are adequate to assure and preserve the product's identity, strength, quality and purity. Before approving a BLA, the FDA will inspect the facility or facilities where the product is manufactured. The FDA will not approve an application unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. Once the BLA submission has been accepted for filing, the FDA typically takes one year from submission to review the application and respond to the applicant, which can take the form of either a Complete Response Letter or Approval. The review process is often significantly extended by FDA requests for additional information or clarification. The FDA may delay or refuse approval of a BLA if applicable regulatory criteria are not satisfied, require additional testing or information and/or require post-marketing testing and surveillance to monitor safety or efficacy of a product. FDA approval of any BLA submitted by us will be at a time the FDA chooses. Also, if regulatory approval of a product is granted, such approval may entail limitations on the indicated uses for which such product may be marketed. Once approved, the FDA may withdraw the product approval if compliance with pre- and post-marketing regulatory standards is not maintained or if problems occur after the product reaches the marketplace. In addition, the FDA may require Phase 4 post-marketing studies to monitor the effect of approved products, and may limit further marketing of the product based on the results of these post-marketing studies.

Post-Approval Requirements

Any products manufactured or distributed by us pursuant to FDA approvals are subject to continuing regulation by the FDA, including record-keeping requirements and reporting of adverse experiences. Biologic manufacturers and their subcontractors are required to register their establishments with the FDA and certain state agencies, and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with cGMP, which impose certain procedural and documentation requirements upon us and our third-party manufacturers. We cannot be certain that we or our present or future suppliers will be able to comply with the cGMP regulations and other FDA regulatory requirements. If our present or future suppliers are not able to comply with these requirements, the FDA may halt our clinical trials, require us to recall a product from distribution, or withdraw approval of the BLA.

The FDA closely regulates the marketing and promotion of biologics. A company can make only those claims relating to safety and efficacy, purity and potency that are approved by the FDA. Failure to comply with these requirements can result in adverse publicity, warning letters, corrective advertising and potential civil and criminal penalties. Physicians may prescribe legally available products for uses that are not described in the product's labeling and that differ from those tested by us and approved by the FDA. Such off-label uses are common across medical specialties. Physicians may believe that such off-label uses are the best treatment for many patients in varied circumstances. The FDA does not regulate the behavior of physicians in their choice of treatments. The FDA does, however, restrict manufacturer's communications on the subject of off-label use.

Healthcare Regulation

Our sales, promotion, medical education and other activities following product approval, and certain activities prior to approval, are and will be subject to regulation by numerous regulatory and law enforcement authorities in the United States in addition to FDA, including potentially the Federal Trade Commission, the U.S. Department of Justice, the Centers for Medicare & Medicaid Services (CMS), other divisions of the U.S. Department of Health and Human Services and state and local governments. Our current and future business activities, including our future promotional and scientific/educational programs, may be subject to additional healthcare regulation and enforcement by the federal government and by authorities in the states and foreign jurisdictions in which we conduct our business. Such laws include, without limitation, state and federal anti-kickback, false claims, patient data privacy and security, and physician sunshine laws and regulations, many of which may become more applicable if our product candidates are approved and we begin commercialization.

Depending on the circumstances, failure to meet these applicable regulatory requirements can result in criminal prosecution, fines or other penalties, contractual damages, reputational harm, disgorgement, exclusion from participation in government healthcare programs, individual imprisonment, integrity obligations, the curtailment of our operations, diminished profits or future earnings, injunctions, recall or seizure of products, total or partial suspension of production, denial or withdrawal of pre-marketing product approvals, private “qui tam” actions brought by individual whistleblowers in the name of the government or refusal to allow us to enter into supply contracts, including government contracts.

Coverage and Reimbursement

Sales of pharmaceutical products, when and if approved for marketing, depend significantly on the availability of third-party coverage and adequate reimbursement. Third-party payors include government health administrative authorities, managed care providers, private health insurers and other organizations. These third-party payors are increasingly challenging the price and examining the cost-effectiveness of medical products and services, and significant uncertainty exists as to the coverage and reimbursement status of any product candidates for which we obtain regulatory approval. A payor’s decision to provide coverage for a drug product does not imply that an adequate reimbursement rate will be approved. Further, one payor’s determination to provide coverage for a drug product does not assure that other payors will also provide coverage for the drug product. Adequate third-party reimbursement may not be available to enable us to maintain price levels sufficient to realize an appropriate return on our investment in product development.

In addition, significant uncertainty exists as to the coverage and reimbursement status of newly approved healthcare products. We may need to conduct expensive clinical studies to demonstrate the comparative cost-effectiveness of our products. The product candidates that we develop may not be considered cost-effective. It is time consuming and expensive for us to seek reimbursement from third-party payors. Decreases in third-party reimbursement for our product candidates or a decision by a third-party payor not to cover our product candidates could reduce physician usage of our products once approved and have a material adverse effect on our sales, results of operations and financial condition. Coverage and adequate reimbursement may not be available or sufficient to allow us to sell our products on a competitive and profitable basis. Coverage policies and third-party reimbursement rates may change at any time. Even if favorable coverage and reimbursement status is attained for one or more products for which we receive regulatory approval, less favorable coverage policies and reimbursement rates may be implemented in the future.

Health Reform

The United States and some foreign jurisdictions are considering or have enacted a number of legislative and regulatory proposals to change the healthcare system in ways that could affect our ability to sell our products profitably. Among policy makers and payers in the United States and elsewhere, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and/or expanding access. In the United States, the pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by major legislative initiatives, such as the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, or collectively the ACA. Among the provisions of the ACA of importance to our business are: an annual fee on any entity that manufactures or imports specified branded prescription drugs and biologic agents; an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program; extension of a manufacturer's Medicaid rebate liability; an expansion of eligibility criteria for Medicaid programs; and a new Medicare Part D coverage gap discount program. However, in January 2017, Congress voted to adopt a budget resolution for fiscal year 2017 that authorizes the implementation of legislation that would repeal portions of the ACA. Further, on January 20, 2017, President Trump signed an Executive Order directing federal agencies with authorities and responsibilities under the ACA to waive, defer, grant exemptions from, or delay the implementation of any provision of the ACA that would impose a fiscal or regulatory burden on states, individuals, healthcare providers, health insurers, or manufacturers of pharmaceuticals or medical devices. Congress also could consider subsequent legislation to replace elements of the ACA that are repealed.

Other legislative changes have been proposed and adopted since the ACA was enacted. These changes included the Budget Control Act of 2011, which caused aggregate reductions to Medicare payments to providers of up to 2% per fiscal year effective April 1, 2013 which, following passage of the Bipartisan Budget Act of 2015, will stay in effect through 2025 unless additional

Congressional action is taken. Additionally, the American Taxpayer Relief Act of 2012, among other things, further reduced Medicare payments to several types of providers.

There has also been increasing legislative and enforcement interest in the United States with respect to specialty drug pricing practices. Specifically, there have been several recent U.S. 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. Adoption of price controls and cost containment measures, and adoption of more restrictive policies in jurisdictions with existing controls and measures, could further limit our net revenue and results.

Foreign Regulation

In addition to regulations in the United States, we will be subject to a variety of foreign regulations governing clinical trials and commercial sales and distribution of our products to the extent we choose to develop or sell any products outside of the United States. The approval process varies from country to country and the time may be longer or shorter than that required to obtain FDA approval. The requirements governing the conduct of clinical trials, product licensing, pricing and reimbursement vary greatly from country to country.

In the European Union, or EU, member states require both regulatory clearances by the national competent authority and a favorable ethics committee opinion prior to the commencement of a clinical trial. Under the EU regulatory systems, marketing authorization applications may be submitted under either a centralized or decentralized procedure. The centralized procedure provides for the grant of a single marketing authorization that is valid for all EU member states. It is compulsory for medicines produced by certain biotechnological processes. Because our products are produced in that way, we would be subject to the centralized process. Under the centralized procedure, pharmaceutical companies submit a single marketing authorization application to the EMA. Once granted by the European Commission, a centralized marketing authorization is valid in all EU member states, as well as the EEA countries Iceland, Liechtenstein and Norway. By law, a company can only start to market a medicine once it has received a marketing authorization.

Research and Development Expense

Since inception, we have devoted a significant amount of resources to develop our product candidates and our technologies. For the years ended December 31, 2016, 2015, and 2014, we recorded $132.8 million, $69.6 million, and $33.4 million, respectively, in research and development expenses.

Employees

As of December 31, 2016, we had 176 employees. Substantially all of our employees are in Bothell, Washington. None of our employees are represented by a labor union or covered under a collective bargaining agreement. We consider our employee relations to be good.

Corporate Information

We were incorporated in Delaware in May 2002 as Alder BioPharmaceuticals, Inc. Our headquarters are located at 11804 North Creek Parkway South, Bothell, WA 98011, and our telephone number is (425) 205-2900. Our website address is www.alderbio.com. The information contained in, or that can be accessed through, our website is not part of, and is not incorporated into, this Annual Report on Form 10-K.

We file electronically with the Securities and Exchange Commission our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended. We make available on our website at www.alderbio.com, free of charge, through a hyperlink on our website, copies of these reports, as soon as reasonably practicable after electronically filing such reports with, or furnishing them to, the Securities and Exchange Commission. Further, a copy of this Annual Report on Form 10-K is located at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549-2736. Information on the operation of the Public Reference Room can be obtained by calling the SEC at 1-800-SEC-0330. The SEC maintains a website that contains reports, proxy and information statements and other information regarding our filings at www.sec.gov.

Item 1A. Risk Factors

You should carefully consider the following risk factors, in addition to the other information contained in this report on Form 10-K, including the section of this report titled “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our financial statements and related notes. If any of the events described in the following risk factors and the risks described elsewhere in this report occurs, or if any other risks of which we are not presently aware occurs, our business, operating results and financial condition could be seriously harmed. This report on Form 10-K also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of factors that are described below and elsewhere in this report.

Risks Related to Our Need for Additional Financing and Our Financial Results

We have incurred significant losses since our inception and anticipate that we will continue to incur significant losses for the foreseeable future.

We are a clinical-stage biopharmaceutical company. We do not currently have any products approved for sale, and we continue to incur significant research and development and general and administrative expenses. We have incurred significant operating losses in the past and expect to incur substantial and increasing losses for the foreseeable future. For the year ended December 31, 2016, our net loss was $156.3 million and as of December 31, 2016, we had an accumulated deficit of $378.6 million.

To date, we have devoted substantially all of our efforts to research and development, including clinical trials, but have not completed development or commercialized any product candidates. We anticipate that our expenses will increase substantially as we:

- continue the research and development of eptinezumab, ALD1910 and our other product candidates;
- seek regulatory approvals for our product candidates that successfully complete clinical trials;
- establish a sales, marketing and distribution infrastructure and scale-up manufacturing capabilities to commercialize eptinezumab or any of our future product candidates if they receive regulatory approval; and
- enhance operational, financial and information management systems and hire additional personnel, including personnel to support development of our product candidates and, if a product candidate is approved, our

commercialization efforts.

To be profitable in the future, we and any of our future collaborators must succeed in developing and eventually commercializing products with significant market potential. This will require success in a range of activities, including advancing product candidates, completing clinical trials of product candidates, obtaining regulatory approval for these product candidates and manufacturing, marketing and selling those products for which regulatory approval is obtained. We are only in the preliminary stages of some of these activities. We and any of our future collaborators may not succeed in these activities and may never generate revenues that are sufficient to be profitable in the future.

Drug development is a highly speculative undertaking and involves a substantial degree of uncertainty. We have never generated any revenues from product sales and may never be profitable.

We have devoted substantially all of our financial resources and efforts to developing our technology platform, identifying product candidates and conducting preclinical studies and clinical trials for our product candidates. We have not completed the development of any products and eptinezumab is our only product candidate in the clinical stage of development. We have never generated revenues from the sale of any products. Our ability to generate revenues and achieve profitability depends in large part on our ability, on our own or with any of our future collaborators, to successfully complete the development of, obtain the necessary regulatory approvals for, and commercialize our product candidates. We do not anticipate generating revenues from sales of products for several years, if at all. Our ability to generate future revenues from product sales depends on our and any of our future collaborators' success in:

- completing clinical development and obtaining regulatory approval for eptinezumab;

- entering into collaboration agreements with third parties with respect to eptinezumab or our other product candidates for their development and commercialization in the United States or in international markets, and the continued financial and other support of these third parties under such collaboration agreements;

- launching and commercializing eptinezumab, if approved, and successfully establishing sales, marketing and distribution infrastructure;

- obtaining regulatory approvals for ALD1910 or any future product candidates that we discover and successfully develop;

- establishing and maintaining supply and manufacturing relationships with third parties;

- obtaining coverage and adequate reimbursement from third-party payors; and

- maintaining, protecting, expanding and enforcing our intellectual property, including intellectual property we license from third parties.

Because of the numerous risks and uncertainties associated with biologic product development, we are unable to predict the timing or amount of increased expenses and when we will be able to achieve or maintain profitability, if ever. In addition, our expenses could increase beyond expectations if we are required by the U.S. Food and Drug Administration, or FDA, or foreign regulatory agencies, to perform studies and trials in addition to those that we currently anticipate, or if there are any delays in our or any of our future collaborators' clinical trials or the development of any of our product candidates. If one or more of the product candidates that we independently develop is approved for commercial sale, we anticipate incurring significant costs associated with commercializing such product candidates.

We will need additional funds to support our operations, and such funding may not be available to us on acceptable terms, or at all, which would force us to delay, reduce or suspend our research and development programs and other operations or commercialization efforts.

We are primarily focused on the advancement of eptinezumab through the clinical development process, as well as the advancement of the ALD1910 program and future product candidates. The completion of the development and the potential commercialization of our product candidates, should they receive regulatory approval, will require substantial funds. We will need to obtain substantial additional sources of funding to develop eptinezumab as currently contemplated. If such additional funding is not available on favorable terms or at all, we may need to delay or reduce the scope of our eptinezumab development program or grant rights in the United States, as well as outside the United States, to eptinezumab to one or more partners. As of December 31, 2016, we had $351.9 million in cash, cash equivalents and investments. We forecast a significant increase in expenditures to support our planned Biologics License Application, or BLA, submission in the second half of 2018, our commercial readiness activities and our anticipated commercial launch of eptinezumab. Based on projected spending, we believe that our available cash, cash equivalents and investments will be sufficient to fund our anticipated operating requirements through 2017, but planned activities, including commitments for commercial readiness activities, may deplete current cash, cash equivalents and investments in the first quarter of 2018.

In addition, our future financing requirements will depend on many factors, some of which are beyond our control, including the following:

- the rate of progress, recruitment and cost of our clinical trials and clinical success for eptinezumab, ALD1910 and any future product candidates;
- the timing of, and costs involved in, seeking and obtaining approvals from the FDA and other regulatory authorities;
- the costs of commercialization activities if any of our product candidates, such as eptinezumab, receive regulatory approval, including sales, marketing and distribution infrastructure;
- the degree and rate of market acceptance of any products launched by us or any of our future collaborators;
- our ability to enter into additional collaboration, licensing, commercialization or other arrangements and the terms and timing of such arrangements; and
- the emergence of competing technologies or other adverse market developments.

We do not have any material committed external source of funds or other support for our development efforts. Until we can generate sufficient revenues to finance our cash requirements, which we may never do, we expect to finance future cash needs through a combination of public or private equity offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing and distribution arrangements. There are no assurances that we will be able to raise sufficient amounts of funding in the future. Additional financing may not be available to us when we need it or it may not be available on favorable terms. If we raise additional capital through marketing and distribution arrangements or other collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish certain valuable rights to our product candidates, technologies, future revenue streams or research programs or grant licenses on terms that may not be favorable to us. If we raise additional capital through public or private equity offerings, the ownership interest of our existing stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect our stockholders' rights. If we raise additional capital through debt financing, we may be subject to covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, buying or selling assets, making capital expenditures or declaring dividends.

In addition, our clinical trials for eptinezumab may encounter manufacturing, enrollment or other issues that could cause our development costs to increase more than we expect. We do not have sufficient cash to complete the clinical development of any of our product candidates and will require additional funding in order to complete the development activities required for regulatory approval of eptinezumab, ALD1910 or any future product candidates that we develop independently. We intend to prioritize our development efforts on eptinezumab, both in terms of funding and attention of management and our organization. Because successful development of our product candidates is uncertain, we are unable to estimate the actual funds we will require to complete research and development and commercialize our product candidates.

Furthermore, we may seek additional capital due to favorable market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans.

If we are not able to secure adequate additional funding, we have plans to make reductions in certain spending to extend current funds. Should these reductions in spending not be sufficient, we could also be forced to make further reductions in spending, extend payment terms with suppliers, liquidate assets where possible, and/or suspend or curtail planned programs. In addition, if we are unable to obtain adequate financing when needed, we may have to delay, reduce the scope of, suspend or eliminate one or more of research and development programs or our commercialization efforts. Any of these actions could harm our business, results of operations and future prospects.

Our ability to use our net operating loss and tax credit carryforwards to offset future taxable income may be subject to certain limitations.

As of December 31, 2016, we had U.S. net operating loss carryforwards, or NOLs, of $379.9 million, for which we have recorded a full valuation allowance, which may be used to offset future taxable income or offset income taxes

due. In addition, we have U.S. research and development tax credit carryforwards of $13.1 million. These NOLs and tax credit carryforwards expire in various years beginning in 2024, if not utilized. Utilization of the NOLs and tax credit carryforwards may be subject to an annual limitation due to historical or future ownership change rules pursuant to Sections 382 and 383 of the Internal Revenue Code, or the Code. We performed a section 382 ownership analysis through 2015 and determined that an ownership change occurred in 2015. Based on the analysis performed, however, we do not believe that the Section 382 annual limitation will impact our ability to utilize the tax attributes that existed as of the date of the ownership change in a material manner. If we have experienced an ownership change in the past or will experience an ownership change as a result of future changes in our stock ownership, some of which changes are outside our control, the tax benefits related to the NOLs and tax credit carryforwards may be further limited or lost.

Risks Related to Eptinezumab and Our Other Product Candidates

If eptinezumab is not successfully commercialized, our business will be harmed.

Eptinezumab is our only product candidate currently in clinical trials. We have invested a significant portion of our efforts and financial resources into the development of eptinezumab to prevent migraines. Our ability to generate revenues from products, which we do not expect to occur for the foreseeable future, if ever, will depend heavily on the successful development, regulatory approval and eventual commercialization of eptinezumab. The success of eptinezumab and our other product candidates will depend on several factors, including the following:

- successful enrollment in, and completion of, clinical trials, including our PROMISE 1, PROMISE 2 and open-label Phase 3 clinical trials and any clinical trials for our commercial supply of eptinezumab that maybe necessary for our initial BLA submission;

- our ability to reach agreements with the FDA and other regulatory authorities on the appropriate regulatory path for approval for eptinezumab or other product candidates;

- receipt of approvals from the FDA and similar regulatory authorities outside the United States for eptinezumab or other product candidates;

- establishing commercial manufacturing arrangements with third parties;

- successfully launching sales, marketing and distribution of any product candidate that may be approved, whether alone or in collaboration with others;

- acceptance of any approved product by the medical community, third-party payors and patients and others involved in the reimbursement process, such as the Centers for Medicare and Medicaid Services in the United States and the National Institute of Clinical Excellence in the United Kingdom;

- effectively competing with other therapies;

- achieving a continued acceptable safety profile of the product following approval; and

- obtaining, maintaining, enforcing and defending intellectual property rights and claims, including intellectual property we license from third parties.

If we do not achieve one or more of these factors in a timely manner, or at all, we could experience significant delays or an inability to successfully commercialize our product candidates, which would harm our business.

If clinical trials of eptinezumab or any of our other product candidates fail to demonstrate safety and efficacy to the satisfaction of the FDA or similar regulatory authorities outside the United States or do not otherwise produce positive results, we may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of our product candidates.

Before obtaining regulatory approval for the sale of eptinezumab or any of our other product candidates, we or any of our future collaborators must conduct extensive clinical trials to demonstrate the safety and efficacy of our product candidates in humans. Clinical trials are expensive, difficult to design and implement, can take many years to complete and are uncertain as to outcome. A failure of one or more of such clinical trials could occur at any stage of evaluation. The outcome of preclinical testing and early clinical trials may not be predictive of the success of later clinical trials, and interim results of a clinical trial do not necessarily predict final results.

In some cases, we utilize novel mechanisms of action to treat diseases that have not previously been addressed by antibody therapies. We or any of our future collaborators may experience numerous unforeseen events during, or as a result of, clinical trials that could delay or prevent our or any of our future collaborators' ability to receive regulatory approval or commercialize our product candidates, including the following:

- clinical trials of our product candidates, in particular our PROMISE 1, PROMISE 2 and open-label Phase 3 clinical trials, and any clinical trials for our commercial supply of eptinezumab that may be necessary for our initial BLA submission, may produce negative or inconclusive results, and we or any of our future collaborators may decide, or regulators may require us, to conduct additional clinical trials or abandon product development programs;

- the number of patients required for clinical trials of our product candidates may be larger than we or any of our future collaborators anticipate, enrollment in these clinical trials may be insufficient or slower than anticipated or patients may drop out of these clinical trials at a higher rate than anticipated;

- the cost of clinical trials of our product candidates may be greater than anticipated;

- third-party contractors may fail to comply with regulatory requirements or meet their contractual obligations to us or any of our future collaborators in a timely manner, or at all;

- we or any of our future collaborators might have to suspend or terminate clinical trials of our product candidates for various reasons, including a finding that our product candidates have unanticipated serious side-effects or other unexpected characteristics or that the patients are being exposed to unacceptable health risks;

- regulators may not approve our or any of our future collaborators' proposed clinical development plans;

- regulators or institutional review boards may not authorize us, any of our future collaborators or our investigators to commence a clinical trial or conduct a clinical trial at a prospective site;

- regulators or institutional review boards may require that we, any of our future collaborators or our investigators suspend or terminate clinical research for various reasons, including noncompliance with regulatory requirements; and

- the supply or quality of our product candidates or other materials necessary to conduct clinical trials of our product candidates may be insufficient or inadequate.

If we or any of our future collaborators are required to conduct additional clinical trials or other testing of our product candidates beyond those currently contemplated, if we or any of our future collaborators are unable to successfully complete clinical trials of our product candidates or other testing, if the results of these trials or tests are not positive or are only modestly positive or if there are safety concerns, we or any of our future collaborators may:

- be delayed in obtaining regulatory approval for our product candidates;

- not obtain regulatory approval at all;

- obtain regulatory approval for indications that are not as broad as intended;

- have the product removed from the market after obtaining regulatory approval;

- be subject to additional post-marketing testing requirements; or

- be subject to restrictions on how the product is distributed or used.

Our product development costs will also increase if we experience delays in testing or approvals. We do not know whether any clinical trials will begin as planned, will need to be restructured or will be completed on schedule, or at all. Significant clinical trial delays also could shorten any periods during which we or any of our future collaborators may have the exclusive right to commercialize our product candidates or allow our competitors to bring products to market before we or any of our future collaborators do, which would impair our or any of our future collaborators' ability to commercialize our product candidates and harm our business and results of operations.

The development and commercialization of biologic products is subject to extensive regulation, and we may not obtain regulatory approvals for eptinezumab or any of our other product candidates.

The clinical development, manufacturing, labeling, packaging, storage, recordkeeping, advertising, promotion, export, import, marketing and distribution and other possible activities relating to eptinezumab, ALD1910 and any other product candidate that we may develop in the future are subject to extensive regulation in the United States. Biologics, like eptinezumab, require the submission of a Biologics License Application, or BLA, to the FDA and such product candidates are not permitted to be marketed in the United States until approval from the FDA of a BLA for that product has been obtained. A BLA must be supported by extensive preclinical and clinical data, as well as extensive information regarding chemistry, manufacturing and controls, or CMC, sufficient to demonstrate the safety, purity, potency and effectiveness of the applicable product candidate to the satisfaction of the FDA. We have not submitted an application for approval or obtained FDA approval for any product. This lack of experience may impede our ability to obtain FDA approval in a timely manner, if at all, for eptinezumab, ALD1910 and our future product candidates.

Regulatory approval of a BLA is not guaranteed, and the approval process is an expensive and uncertain process that may take several years. The FDA and foreign regulatory entities also have substantial discretion in the approval process. The number and types of preclinical studies and clinical trials that will be required for BLA approval varies depending on the product candidate, the disease or the condition that the product candidate is designed to target and the regulations applicable to any particular product candidate. Despite the time and expense associated with preclinical studies and clinical trials, failure can occur at any stage, and we could encounter problems that require us to repeat or perform additional preclinical studies or clinical trials or generate additional CMC data. The FDA and similar foreign authorities could delay, limit or deny approval of a product candidate for many reasons, including because they:

- may not deem the product candidate to be adequately safe or effective;

- may not find the data from preclinical studies, clinical trials or CMC data to be sufficient to support a claim of safety and efficacy;

- may not approve the manufacturing processes or facilities associated with the product candidate;

- may conclude that the long-term stability of the formulation of the drug product for which approval is being sought has been sufficiently demonstrated;

- may change approval policies or adopt new regulations; or

- may not accept a submission due to, among other reasons, the content or formatting of the submission.

To market any biologics outside of the United States, we and any of our future collaborators must comply with the numerous and varying regulatory and compliance related requirements of other countries. Approval procedures vary among countries and can involve additional product testing and additional administrative review periods, including obtaining reimbursement and pricing approval in select markets. The time required to obtain approval in other countries might differ from that required to obtain FDA approval. The regulatory approval process in other countries may include all of the risks associated with FDA approval as well as additional, presently unanticipated, risks. Regulatory approval in one country does not ensure regulatory approval in another, but a failure or delay in obtaining regulatory approval in one country may negatively impact the regulatory process in others, including the risk that our product candidates may not be approved for all indications requested and that such approval may be subject to limitations on the indicated uses for which the product may be marketed.

The results of clinical trials conducted at sites outside the United States may not be accepted by the FDA and the results or clinical trials conducted at sites inside the United States may not be accepted by international regulatory authorities.

We have conducted, and may in the future choose to conduct, our clinical trials outside the United States. Although the FDA may accept data from clinical trials conducted outside the United States, acceptance of this data is subject to certain conditions imposed by the FDA. For example, the clinical trial must be well-designed and conducted and performed by qualified investigators in accordance with ethical principles. The study population must also adequately represent the U.S. population, and the data must be applicable to the U.S. population and U.S. medical practice in ways that the FDA deems clinically meaningful. Generally, the patient population for any clinical trials conducted outside of the United States must be representative of the population for whom we intend to label the product in the United States. In addition, while these clinical trials are subject to the applicable local laws, FDA acceptance of the data will be dependent upon its determination that the trials also complied with all applicable U.S. laws and regulations. There can be no assurance the FDA will accept data from trials conducted outside of the United States. If the FDA does not accept the data from our international clinical trials, or if international regulatory authorities do not accept the data from our U.S. clinical trials, it would likely result in the need for additional trials, which would be costly and time-consuming and could delay or permanently halt the development of a product candidate.

We face substantial competition, and others may discover, develop or commercialize products before or more successfully than we do.

The development and commercialization of new therapeutic products is highly competitive. We face competition with respect to eptinezumab and our other current product candidates, and will face competition with respect to product candidates that we may seek to develop or commercialize in the future, from major pharmaceutical companies, specialty pharmaceutical companies and biotechnology companies worldwide. Our ability to compete may be affected in many cases by insurers or other third-party payors seeking to encourage the use of biosimilar products, which are expected to become available over the coming years. Many of our competitors are large pharmaceutical companies that have a greater ability to reduce prices for their competing drugs in an effort to maintain or gain market share and undermine the value proposition that drugs commercialized by us might otherwise be able to offer to payors.

Potential competitors also include academic institutions, government agencies and other public and private organizations that conduct research, seek patent protection and establish collaborative arrangements for research, development, manufacturing and commercialization. Many of these competitors are attempting to develop therapeutics for our target indications.

Currently in the United States, there are relatively few medications approved for the prevention of frequent episodic and chronic migraines. Most of the medications used today are generics that are prescribed for abortive treatment of migraines. Medications commonly used for prevention of frequent episodic and chronic migraine include beta blockers such as propranolol, marketed by Wyeth, and other treatments such as topiramate, marketed by Johnson & Johnson, and sodium valproate, marketed by Divalproex. In addition, Botox, marketed by Allergan, is approved for the prevention of chronic migraine and commonly prescribed for frequent

episodic migraine. There are also several other companies, including Amgen, Lilly and Teva, that have ongoing clinical trials for CGRP blocking therapies using monoclonal antibodies similar to eptinezumab. Other companies may be in later stages of development than we are or may progress their product candidates through clinical trials faster than our product candidates and, therefore, may obtain FDA or other regulatory approval for their products before we obtain approval for ours. For example, we are aware that Amgen and Teva have each announced that they plan to make BLA submissions in 2017 for their competing CGRP therapies, which, if approved, would enable them to commercialize their CGRP therapies before we are able to do so with eptinezumab.

Many of our competitors, including a number of large pharmaceutical companies that compete directly with us, have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved products than we do. Our competitors may develop products that are more effective, safer, more convenient or less costly than any that we are developing or that would render our product candidates obsolete or non-competitive. It is possible that our competitors might receive FDA or other regulatory approval for their products before us. Mergers and acquisitions in the pharmaceutical and biotechnology industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller or early stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These third parties compete with us in recruiting and retaining qualified scientific and management personnel, establishing clinical trial sites and patient enrollment for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

Delays in the enrollment of patients in our clinical trials could increase our development costs and delay completion of the trials and delays in enrollment of patients in any of our future collaborators' clinical trials could delay completion of any of our future collaborators' trials.

We may not be able to initiate or continue clinical trials for eptinezumab or any of our other product candidates if we are unable to locate and enroll a sufficient number of eligible patients to participate in these trials as required by the FDA or other regulatory authorities. Even if we are able to enroll a sufficient number of patients in our clinical trials, if the pace of enrollment is slower than we expect, the development costs for our product candidates may increase and the completion of our trials may be delayed or our trials could become too expensive to complete.

For example, our ongoing PROMISE 2 trial of eptinezumab for the prevention of chronic migraine is currently expected to enroll approximately 1,050 patients. We can provide no assurance that we will be able to enroll patients in PROMISE 2 or any other ongoing or planned clinical trial at a sufficient pace to complete the clinical trials within our projected time frame. Completing ongoing and future migraine trials will require us to continue to activate new clinical trial sites and to enroll patients at forecasted rates at both new and existing clinical trial sites. Our forecasts regarding the rates of clinical site activation and patient enrollment at those sites are based on a number of assumptions, including assumptions based on experience with prior eptinezumab clinical trials. However, there can be no assurance that those forecasts will be accurate or that we will complete our ongoing and planned eptinezumab trials on schedule. During the initial months of our clinical trials, the number of clinical sites activated and the number of patients enrolled at each clinical site per month could be lower than we have forecasted and, as a result, we might need

to make a number of adjustments to the clinical trial plan, including increasing the number of clinical trial sites. We can provide no assurance that those adjustments will be sufficient to enable us to complete the trials within our anticipated time frame. In addition, we may determine it necessary to increase the target number of patients to be enrolled in a clinical trial, which could extend the time necessary to complete such clinical trial. If we experience delays in enrollment, our ability to complete the trials could be materially adversely affected.

If serious adverse events, or SAEs, are identified during the development of eptinezumab or any of our product candidates, we or any of our future collaborators may need to abandon development of that product candidate.

Our most advanced product candidate, eptinezumab is still in clinical development and its risk of failure is high. It is impossible to predict when or if eptinezumab or any of our existing or future product candidates will prove effective and safe enough to receive regulatory approval.

With respect to eptinezumab, the observed SAEs to date include, among others, inguinal hernia, kidney infection, transient ischemic attack, which is a precursor to stroke, conversion disorder, which is a mental health condition in which a person has blindness, paralysis, or other nervous system symptoms that cannot be explained by medical evaluation, chest pain, shortness of breath and wound infection. The relevant clinical investigators concluded that all observed SAEs to date were found to be unrelated to eptinezumab. We have observed some injection-site reactions, or ISRs, in Phase 1 clinical trials of subcutaneous and intramuscular injections of eptinezumab. Additional studies or requirements from the FDA for future studies may be necessary to address these ISRs.

There can be no assurance that our ongoing or planned trials for eptinezumab will not fail due to safety issues. In such an event, we might need to abandon development of eptinezumab.

We rely on third parties to conduct and support our clinical trials, and those third parties may not perform satisfactorily, including failing to meet deadlines for the completion of such trials.

We do not independently conduct clinical trials for our product candidates. We rely on third parties, such as contract research organizations, or CROs, clinical data management organizations, medical institutions and clinical investigators, to perform this function. Our reliance on these third parties for clinical development activities reduces our control over these activities but does not relieve us of our responsibilities. Furthermore, some of the sites for our clinical trials are outside the United States. The performance of these sites may be adversely affected by various issues, including less advanced medical infrastructure, lack of familiarity with conducting clinical trials in accordance with U.S. standards, insufficient training of personnel, communication difficulties or change in local regulations. We remain responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan and protocols for the study. Moreover, the FDA requires us to comply with standards, commonly referred to as Good Clinical Practices, or GCP, for conducting, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of patients in clinical trials are protected. Furthermore, these third parties may also have relationships with other entities, including our competitors. If these third parties do not successfully carry out their contractual duties, meet expected deadlines or conduct our clinical trials in accordance with regulatory requirements or our stated protocols, we will not be able to obtain, or may be delayed in obtaining, regulatory approvals for our product candidates and will not be able to, or may be delayed in our efforts to, successfully commercialize our products.

We also rely on other third parties to store and distribute supplies for our clinical trials. Any performance failure on the part of our existing or future distributors could delay clinical development or regulatory approval of our product candidates or commercialization of our products, producing additional losses and depriving us of potential product revenues.

The manufacture of our product candidates is complex and we may encounter difficulties in production. If we or any of our third-party contract manufacturing organizations, or CMOs, encounter such difficulties, our ability to provide supply of our product candidates for clinical trials or our products for patients, if approved, could be delayed or stopped.

The process of manufacturing our products is complex, highly-regulated and subject to multiple risks. The manufacture of biologics involves complex processes, including developing cells or cell systems to produce the biologic, growing large quantities of such cells and harvesting and purifying the biologic produced by them. As a result, the cost to manufacture biologics is generally far higher than traditional small molecule chemical compounds, and the biologics manufacturing process is less reliable and is difficult to reproduce. Manufacturing biologics, such as eptinezumab and other product candidates, is highly susceptible to product loss due to contamination, equipment

failure, improper installation or operation of equipment, vendor or operator error, inconsistency in yields, variability in product characteristics and difficulties in scaling the production process. Even minor deviations from normal manufacturing processes could result in reduced production yields, product defects and other supply disruptions. If microbial or other contaminations are discovered in our product candidates or in the manufacturing facilities in which our product candidates are made, such manufacturing facilities may need to be closed for an extended period of time to investigate and remedy the contamination. We utilize third-party CMOs to produce eptinezumab using our proprietary yeast production technology.

The manufacturing facilities in which our product candidates are made could be adversely affected by equipment failures, labor shortages, natural disasters, power failures and numerous other factors. There are risks associated with scaling-up manufacturing to commercial scale including, among others, cost overruns, potential problems with process scale-up, process reproducibility, stability issues, lot consistency and timely availability of raw materials. Even if we or any of our future collaborators obtain regulatory approval for any of our product candidates, there is no assurance that manufacturers will be able to manufacture the approved product to specifications acceptable to the FDA or other regulatory authorities, to produce it in sufficient quantities to meet the requirements for the potential launch of the product or to meet potential future demand. If our or any of our future collaborators' manufacturers are unable to produce sufficient quantities of an approved product for commercialization, commercialization efforts would be impaired, which would have an adverse effect on our business, financial condition, results of operations and growth prospects.

We currently rely on a single CMO to manufacture and provide us with clinical supplies of eptinezumab. We have entered into agreements with two other CMOs in anticipation of larger scale commercial production, and will use eptinezumab produced by these CMOs in future clinical studies. We expect to enter into agreements with additional CMOs in the future. Scaling up a biologic manufacturing process is a difficult and uncertain task, and we may not be successful in transferring our production system or a manufacturer may not have the necessary capabilities to complete the implementation and development process. If we are unable to adequately validate or scale-up the manufacturing process for eptinezumab with a manufacturer, we will need to transfer to another manufacturer and complete the manufacturing validation process, which can be lengthy. If we are able to adequately validate and

scale-up the manufacturing process for eptinezumab or other product candidates with a manufacturer, we will still need to negotiate with such manufacturer an agreement for commercial supply and it is not certain we will be able to come to agreement on terms acceptable to us.

Our yeast-based production system used for the manufacture of eptinezumab is a non-traditional antibody production platform and as we or any of our future collaborators produce product in commercial quantities, we or any such collaborators may experience unforeseen safety or other manufacturing issues which would adversely affect the commercialization of eptinezumab or any of our future product candidates.

We rely on third-party CMOs to manufacture and supply eptinezumab. If one of our suppliers or manufacturers fails to perform adequately or fulfill our needs, we may be required to incur significant costs and devote significant efforts to find new suppliers or manufacturers and may also face delays in the development and commercialization of our product candidates.

We currently do not own manufacturing facilities for clinical-scale manufacturing of our product candidates and we rely upon third-party CMOs to manufacture and supply drug product for our clinical trials. The manufacture of pharmaceutical products in compliance with the FDA's current good manufacturing practices, or cGMP, requires significant expertise and capital investment, including the development of advanced manufacturing techniques and process controls. Manufacturers of pharmaceutical products often encounter difficulties in production, including difficulties with production costs and yields, quality control, including stability of the product candidate and quality assurance testing, shortages of qualified personnel, as well as compliance with strictly enforced cGMP requirements, other federal and state regulatory requirements and foreign regulations. If our manufacturers were to encounter any of these difficulties or otherwise fail to comply with their obligations to us or under applicable regulations, our ability to provide study drugs in our clinical trials would be jeopardized. Any delay or interruption in the supply of clinical trial materials could delay the completion of our clinical trials, increase the costs associated with maintaining our clinical trial programs and, depending upon the period of delay, require us to commence new trials at significant additional expense or terminate the trials completely.

All manufacturers of our product candidates must comply with cGMP requirements enforced by the FDA through its facilities inspection program. These requirements include, among other things, quality control, quality assurance and the maintenance of records and documentation. Manufacturers of our product candidates may be unable to comply with these cGMP requirements and with other FDA, state and foreign regulatory requirements. The FDA or similar foreign regulatory agencies may also implement new standards at any time, or change their interpretation and enforcement of existing standards for manufacture, packaging or testing of products. We have little control over our manufacturers' compliance with these regulations and standards. A failure to comply with these requirements may result in fines and civil penalties, suspension of production, suspension or delay in product approval, product seizure or recall or withdrawal of product approval. If the safety of any product supplied is compromised due to our manufacturers' failure to adhere to applicable laws or for other reasons, we may not be able to obtain regulatory approval for or successfully commercialize our products and we may be held liable for any injuries sustained as a result. Any of these factors could cause a delay of clinical trials, regulatory submissions, approvals or commercialization of our product candidates, entail higher costs or impair our reputation.

We currently rely on Ajinomoto Althea Inc. to manufacture and provide us with clinical supplies of eptinezumab. We have entered into agreements with other manufacturers for larger scale production in anticipation of commercialization, and will use eptinezumab produced by these CMOs in future clinical studies. We expect to enter into agreements with additional CMOs in the future. Our current agreements do not, and our future agreements may not, provide for an entire supply of the drug product necessary for all anticipated clinical trials or for full-scale commercialization. If we and our suppliers cannot agree to the terms and conditions for provision of the drug product necessary for our clinical and commercial supply needs, or if a manufacturer terminates their agreement in response to a breach by us or otherwise becomes unable to fulfill its supply obligations, our clinical trials and commercialization efforts could be delayed until a qualified alternative supplier is identified, the manufacturing process is qualified and validated and we have agreed on the terms and conditions for such alternative supplier to supply product for us, which would have an adverse impact on our business and prospects.

Eptinezumab is a biologic and therefore requires complex production processes. Transferring the production process to a new manufacturer would be particularly difficult, time-consuming and expensive and may not yield comparable product. Although alternative sources of supply exist, the number of third-party suppliers with the necessary manufacturing and regulatory expertise and facilities necessary to manufacture eptinezumab and any other product candidates we may develop is limited, and may be expensive and take a significant amount of time to arrange for alternative suppliers. New suppliers of any product candidate would be required to qualify under applicable regulatory requirements. Obtaining the necessary FDA approvals or other qualifications under applicable regulatory requirements could result in a significant interruption of supply and could require the new manufacturer to bear significant additional costs which may be passed on to us. We plan to have discussions with the FDA in 2017 regarding any additional clinical requirements for our expected commercial supply of eptinezumab in support of our initial BLA submission.

Even if eptinezumab or any of our other product candidates receive regulatory approval, they may fail to achieve the degree of market acceptance by physicians, patients, healthcare payors and others in the medical community necessary for commercial success.

If eptinezumab or any of our other product candidates receive regulatory approval, they may nonetheless fail to gain sufficient market acceptance by physicians, patients, healthcare payors and others in the medical community. The degree of market acceptance of our product candidates, if approved for commercial sale, will depend on a number of factors, including the following:

- the efficacy and potential advantages compared to alternative treatments;
- the prevalence and severity of any side-effects;
- the price we or any of our future collaborators charge for our products;
- the availability of third-party coverage and adequate reimbursement;
- the convenience and ease of administration compared to alternative treatments;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these new therapies; and
- the size and effectiveness of our sales, marketing and distribution support.

If our product candidates are approved and do not achieve an adequate level of acceptance, we may not generate significant product revenues and we may not become profitable on a sustained basis.

We currently have no sales or distribution personnel or infrastructure and only limited marketing capabilities. If we are unable to develop a sales, marketing and distribution infrastructure on our own or through collaborations or other marketing arrangements, we will not be successful in commercializing eptinezumab or any of our future products.

We do not currently have sales or distribution capabilities and have no experience as an organization in the sale, marketing and distribution of therapeutic products. To achieve commercial success for any approved product, we must either develop a sales and marketing organization or outsource these functions to third parties. Assuming regulatory

approval, we plan to focus our initial commercialization efforts on high-prescribing neurologists and headache centers in the United States employing a specialty sales force that we plan to establish. To maximize the potential commercial opportunity of eptinezumab while we focus on the U.S. specialty market, we may explore strategic arrangements that provide additional capabilities and infrastructure while improving access for physicians and patients.

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

We also may not be successful entering into arrangements with third parties to sell and market our product candidates or may be unable to do so on terms that are favorable to us. We likely will have little control over such third parties, and any of them may fail to devote the necessary resources and attention to sell and market our products effectively and could damage our reputation. If we do not establish sales and marketing capabilities successfully, either on our own or in collaboration with third parties, we will not be successful in commercializing eptinezumab or any other product candidates.

If we are able to commercialize eptinezumab or any other product candidates, the products may become subject to unfavorable pricing regulations or third-party reimbursement practices, thereby harming our business.

The regulations that govern pricing and reimbursement for new therapeutic products vary widely from country to country. Some countries require approval of the sale price of a product before it can be marketed. In many countries, the pricing review period begins after marketing or product licensing approval is granted. In some foreign markets, prescription pharmaceutical pricing remains subject to continuing governmental control even after initial approval is granted. As a result, we or any of our future collaborators might obtain regulatory approval for a product in a particular country, but then be subject to price regulations that delay commercial launch of the product and negatively impact the revenues we are able to generate from the sale of the product in that country. Adverse pricing limitations may hinder our ability to recoup our investment in our products, even if our product candidates obtain regulatory approval.

Our and any of our future collaborators' ability to commercialize any product candidates successfully also will depend in significant part on the extent to which coverage and adequate reimbursement for these products and related treatments becomes available from government health administration authorities, private health insurers and other third-party payors. Third-party payors decide which medications they will cover and establish reimbursement levels. A primary focus in the U.S. healthcare industry and elsewhere is cost containment. Increasingly, third-party payors are requiring that companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. We cannot be sure that coverage will be available for any product that we or any of our future collaborators commercialize and, if coverage is available, what the level of reimbursement will be. Further, one payor's determination to provide coverage for a product does not assure that other payors will also provide coverage for the product. Adequate third-party reimbursement may not be available to enable us to maintain price levels sufficient to realize an appropriate return on our investment in product development.

Reimbursement may impact the demand for, or the price of, any product for which we or any of our future collaborators obtain approval. Obtaining coverage and adequate reimbursement for our products may be particularly difficult because of the higher prices often associated with products administered under the supervision of a physician. If reimbursement is not available or is available only to limited levels, we or any of our future collaborators may not be able to successfully commercialize any product that has been approved.

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

Product liability lawsuits against us could cause us to incur substantial liabilities and to limit commercialization of any products that we may develop.

We face an inherent risk of product liability exposure related to the testing of our product candidates in human clinical trials and will face an even greater risk if we commercially sell any products that we may develop. If we cannot

successfully defend ourselves against claims that our product candidates or products caused injuries, we will incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- decreased demand for any product candidates or products that we or any of our future collaborators may develop;
- injury to our reputation and significant negative media attention;
- withdrawal of patients from clinical trials or cancellation of trials;
- significant costs to defend the related litigation;
- substantial monetary awards;
- loss of revenues; and
- the inability to commercialize any products that we may develop.

We currently have $20 million in product liability insurance coverage for our clinical trials, which may not be adequate to cover all liabilities that we may incur. Insurance coverage is increasingly expensive. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise.

Marketing approval of our product candidates in international markets will subject us to additional costs and a variety of risks associated with international operations.

We intend to pursue marketing approvals for our product candidates in international markets directly or with partners and will be subject to additional costs and additional risks related to international operations, including:

- different regulatory requirements for drug approvals in foreign countries;
- reduced protection for intellectual property rights;
- unexpected changes in tariffs, trade barriers and regulatory requirements;
- economic weakness, including inflation or political instability in particular foreign economies and markets;
- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;
- foreign taxes, including withholding of payroll taxes;
- foreign currency fluctuations, which could result in increased operating expenses and reduced revenues, and other obligations incident to doing business in another country;
- workforce uncertainty in countries where labor unrest is more common than in the United States;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad;
- the impact of the vote by the United Kingdom decided by referendum to leave the European Union (commonly referred to as “Brexit”); and
- business interruptions resulting from geopolitical actions, including war and terrorism, or natural disasters including earthquakes, typhoons, floods and fires.

We may expend our limited resources to pursue a particular product candidate or disease and fail to capitalize on product candidates or diseases that may be more profitable or for which there is a greater likelihood of success.

Because we have limited financial and managerial resources, we focus our research programs and product candidates for a specific disease. As a result, we may forego or delay pursuit of opportunities with other product candidates or other diseases that may later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs and product candidates for specific diseases may not yield any commercially viable products.

If we do not accurately evaluate the commercial potential for a particular product candidate in the right disease, we may relinquish valuable rights to that product candidate through collaboration, licensing or other royalty arrangements in cases in which it would have been advantageous for us to retain sole development and commercialization rights.

We may not be successful in our efforts to use and enhance our proprietary antibody platform to create a pipeline of product candidates and develop commercially successful products.

We are using our proprietary antibody platform for the selection and manufacturing of monoclonal antibodies. We used this platform to create eptinezumab, ALD1910 and the other future product candidates that we are currently evaluating. We are at an early stage of development and our platform has not yet, and may never, lead to approved or commercially successful products. Even if we are successful in continuing to build our pipeline, the future product candidates that we evaluate may not be suitable for clinical development, including as a result of their harmful side-effects, limited efficacy or other characteristics that make it unlikely such product candidates will receive regulatory approval or achieve commercial success. If we do not successfully develop and commercialize product candidates using our proprietary antibody platform, we may not be able to obtain product or collaboration revenues in future periods, which would harm our business and prospects.

If we do not successfully enter into future collaborations for the development and commercialization of product candidates our business may be harmed.

We may choose to enter into collaboration agreements with third parties with respect to our product candidates, including eptinezumab, for their development and commercialization in the United States or in international markets. We will have limited control over the amount and timing of resources that any of our future collaborators dedicate to the development or commercialization of our product candidates. Our ability to generate revenues from these arrangements will depend in part on any such collaborators' abilities to successfully perform the functions assigned to them in these arrangements.

Collaborations involving our product candidates are subject to numerous risks, which may include the following:

- collaborators may have significant discretion in determining the efforts and resources that they will apply to collaborations;

- collaborators may not pursue development and commercialization of our product candidates or may elect not to continue or renew development or commercialization programs based on clinical trial results, changes in their strategic focus due to the acquisition of competitive products, availability of funding or other external factors, such as a business combination that diverts resources or creates competing priorities;

- collaborators may delay clinical trials, provide insufficient funding for a clinical trial, stop a clinical trial, abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;

- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our products or product candidates;

- a collaborator with marketing and distribution rights to one or more products may not commit sufficient resources to their marketing and distribution;

- collaborators may not properly maintain or defend our intellectual property rights or may use our intellectual property or proprietary information in a way that gives rise to actual or threatened litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential liability;

- disputes may arise between us and a collaborator that cause the delay or termination of the research, development or commercialization of our product candidates or that result in costly litigation or arbitration that diverts management attention and resources;

- collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable product candidates; and

- collaborators may own or co-own intellectual property covering our products that results from our collaborating with them, and in such cases, we would not have the exclusive right to commercialize such intellectual property.

Any termination or disruption of any future collaboration could result in delayed development of product candidates, increased cost to develop product candidates or termination of development of a product candidate.

We may engage in future acquisitions that increase our capital requirements, dilute our stockholders, cause us to incur debt or assume contingent liabilities and subject us to other risks.

We may evaluate various strategic transactions, including licensing or acquiring complementary products, technologies or businesses. Any potential acquisitions may entail numerous risks, including increased operating expenses and cash requirements, assimilation of operations and products, retention of key employees, diversion of our management's attention and uncertainties in our ability to maintain key business relationships of the acquired entities. In addition, if we undertake acquisitions, we may issue dilutive securities, assume or incur debt obligations, incur large one-time expenses and acquire intangible assets that could result in significant future amortization expense. Moreover, we may not be able to locate suitable acquisition opportunities and this inability could impair our ability to grow or obtain access to technology or products that may be important to the development of our business.

Risks Related to Government Regulation

The regulatory approval process is expensive, time consuming and uncertain and may prevent us or our any of our future collaboration partners from obtaining approvals for the commercialization of some or all of our product candidates.

Among other things, the research, testing, manufacturing, labeling, approval, selling, import, export, marketing and distribution of drug products are subject to extensive regulation by the FDA and other regulatory authorities in the United States and other countries, which regulations differ from country to country. Neither we nor any future collaboration partner is permitted to market our product candidates in the United States until we receive approval of a BLA from the FDA. We have not submitted an application or received marketing approval for any of our product candidates. Obtaining approval of BLA can be a lengthy, expensive and uncertain process. In addition, failure to comply with FDA and other applicable U.S. and foreign regulatory requirements may subject us to administrative or judicially imposed sanctions, including the following:

- warning letters;
- civil or criminal penalties and fines;
- injunctions;
- suspension or withdrawal of regulatory approval;
- suspension of any ongoing clinical trials;
- voluntary or mandatory product recalls and publicity requirements;
- refusal to accept or approve applications for marketing approval of new drugs or biologics or supplements to approved applications filed by us;
- restrictions on operations, including costly new manufacturing requirements; or
- seizure or detention of our products or import bans.

Prior to receiving approval to commercialize any of our product candidates in the United States or abroad, we and any of our future collaboration partners must demonstrate with substantial evidence from well-controlled clinical trials, and to the satisfaction of the FDA and other regulatory authorities abroad, that such product candidates are safe and effective for their intended uses. Results from preclinical studies and clinical trials can be interpreted in different ways. Even if we and any of our future collaboration partners believe the preclinical or clinical data for our product candidates are promising, such data may not be sufficient to support approval by the FDA and other regulatory authorities. Administering any of our product candidates to humans may produce undesirable side-effects, which could interrupt, delay or cause suspension of clinical trials of our product candidates and result in the FDA or other regulatory authorities denying approval of our product candidates for any or all targeted indications.

Regulatory approval of BLA is not guaranteed, and the approval process is expensive and may take several years. The FDA also has substantial discretion in the approval process. Despite the time and expense exerted, failure can occur at any stage, and we could encounter problems that cause us to abandon or repeat clinical trials, or perform additional preclinical studies and clinical trials. The number of preclinical studies and clinical trials that will be required for FDA approval varies depending on the product candidate, the disease or condition that the product candidate is designed to address and the regulations applicable to any particular product candidate.

The FDA can delay, limit or deny approval of a product candidate for many reasons, including, but not limited to, the following:

- a product candidate may not be deemed safe or effective;
- FDA officials may not find the data from preclinical studies and clinical trials sufficient;
- the FDA might not approve our or our third-party manufacturers' processes or facilities; or
- the FDA may change its approval policies or adopt new regulations.

If any of our product candidates fails to demonstrate safety and efficacy in clinical trials or does not gain regulatory approval, our business will be harmed.

Even if we receive regulatory approval for a product candidate, we will be subject to ongoing regulatory obligations and continued regulatory review, which may result in significant additional expense and subject us to penalties if we fail to comply with applicable regulatory requirements.

Once regulatory approval has been granted, the approved product and its manufacturer are subject to continual review by the FDA and/or non-U.S. regulatory authorities. Any regulatory approval that we or any of our future collaboration partners receive for our product candidates may be subject to limitations on the indicated uses for which the product may be marketed or contain requirements for potentially costly post-marketing follow-up trials to monitor the safety and efficacy of the product. In addition, if the FDA and/or non-U.S. regulatory authorities approve any of our product candidates, we will be subject to extensive and ongoing regulatory requirements by the FDA and other regulatory authorities with regard to the labeling, packaging, adverse event reporting, storage, advertising, promotion and recordkeeping, among other things, for our products. In addition, manufacturers of our drug products are required to comply with cGMP regulations, which include requirements related to quality control and quality assurance as well as the corresponding maintenance of records and documentation. Furthermore, regulatory authorities must approve these manufacturing facilities before they can be used to manufacture our drug products, and these facilities are subject to continual review and periodic inspections by the FDA and other regulatory authorities for compliance with cGMP regulations. If we or a third party discover previously unknown problems with a product, such as adverse events of unanticipated severity or frequency, or problems with the facility where the product is manufactured, a regulatory authority may impose restrictions on that product, the manufacturer or us, including requiring withdrawal of the product from the market or suspension of manufacturing. If we, our product candidates or the manufacturing facilities for our product candidates fail to comply with regulatory requirements of the FDA and/or other non-U.S. regulatory authorities, we could be subject to administrative or judicially imposed sanctions, including the following:

- warning letters;
- civil or criminal penalties and fines;
- injunctions;
- suspension or withdrawal of regulatory approval;
- suspension of any ongoing clinical trials;
- voluntary or mandatory product recalls and publicity requirements;
- refusal to approve pending applications for marketing approval of new drugs or supplements to approved applications filed by us;

- restrictions on operations, including costly new manufacturing requirements; or

- seizure or detention of our products or import bans.

The regulatory requirements and policies may change and additional government regulations may be enacted for which we may also be required to comply. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or in other countries. If we are not able to maintain regulatory compliance, we may not be permitted to market our future products and our business may suffer.

Failure to obtain regulatory approvals in foreign jurisdictions will prevent us from marketing our products in these jurisdictions.

We or a future collaboration partner may market eptinezumab and any future products in international markets. In order to market our future products in the European Economic Area, or EEA, and many other foreign jurisdictions, we must obtain separate regulatory approvals. Specifically, in the EEA, medicinal products can only be commercialized after obtaining a Marketing Authorization, or MA.

Before granting the MA, the European Medicines Agency, or EMA, or the competent authorities of the member states of the EEA make an assessment of the risk-benefit balance of the product on the basis of scientific criteria concerning its quality, safety and efficacy.

We have had limited interactions with foreign regulatory authorities, and the approval procedures vary among countries and can involve additional clinical testing, and the time required to obtain approval may differ from that required to obtain FDA approval.

Clinical trials conducted in one country may not be accepted by regulatory authorities in other countries. Approval by the FDA does not ensure approval by regulatory authorities in other countries, and approval by one or more foreign regulatory authorities does not ensure approval by regulatory authorities in other foreign countries or by the FDA. However, a failure or delay in obtaining regulatory approval in one country may have a negative effect on the regulatory process in others. The foreign regulatory approval process may include all of the risks associated with obtaining FDA approval. We may not obtain foreign regulatory approvals on a timely basis, if at all. We may not be able to file for regulatory approvals and even if we file we may not receive necessary approvals to commercialize our products in any market.

Healthcare reform measures could hinder or prevent our product candidates' commercial success.

In the United States, there have been and we expect there will continue to be a number of legislative and regulatory changes to the healthcare system in ways that could affect our future revenues and profitability and the future revenues and profitability of our potential customers. Federal and state lawmakers regularly propose and, at times, enact legislation that would result in significant changes to the healthcare system, some of which are intended to contain or reduce the costs of medical products and services, improve quality of care, and expand access to coverage. For example, one of the most significant healthcare reform measures in decades, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, collectively, the ACA, was enacted in 2010. The ACA contains a number of provisions, including those governing enrollment in federal healthcare programs, reimbursement changes and fraud and abuse measures. However, in January 2017, Congress voted to adopt a budget resolution for fiscal year 2017, or the Budget Resolution, that authorizes the implementation of legislation that would repeal portions of the ACA. Further, on January 20, 2017, President Trump signed an Executive Order directing federal agencies with authorities and responsibilities under the ACA to waive, defer, grant exemptions from, or delay the implementation of any provision of the ACA that would impose a fiscal or regulatory burden on states, individuals, healthcare providers, health insurers, or manufacturers of pharmaceuticals or medical devices. Congress also could consider subsequent legislation to replace elements of the ACA that are repealed.

In addition, other legislative changes have been proposed and adopted since the ACA was enacted. For example, the Budget Control Act of 2011, among other things, created the Joint Select Committee on Deficit Reduction to recommend proposals in spending reductions to Congress. The Joint Select Committee did not achieve a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, which triggered the legislation's automatic reduction to several government programs, including aggregate reductions to Medicare payments to providers of up to 2% per fiscal year that went into effect on April 1, 2013, following passage of the Bipartisan Budget Act of 2015, and will remain in effect through 2025 unless additional Congressional action is taken. On January 2, 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 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 federal and state levels directed at containing or lowering the cost of health care. For example, there has been increasing legislative and enforcement interest in the United States with respect to specialty drug pricing practices. Specifically, there have been

several recent U.S. 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. We cannot predict the initiatives that may be adopted in the future or their full impact. The continuing efforts of the government, insurance companies, managed care organizations and other payors of healthcare services to contain or reduce costs of health care may adversely affect:

- our ability to set a price we believe is fair for our products;
- our ability to generate revenues and achieve or maintain profitability; and
- the availability of capital for our business.

Furthermore, changes in regulatory requirements and guidance may occur and we may need to amend clinical trial protocols to reflect these changes. Amendments may require us to resubmit our clinical trial protocols to Institutional Review Boards for reexamination, which may impact the costs, timing or successful completion of a clinical trial. Data from clinical trials may receive greater scrutiny with respect to safety, which may make the FDA or other regulatory authorities more likely to terminate or suspend clinical trials before completion, or require longer or additional clinical trials that may result in substantial additional expense and a delay or failure in obtaining approval or approval for a more limited indication than originally sought.

Given the serious public health risks of high profile adverse safety events with certain drug products, the FDA may require, as a condition of approval, costly risk evaluation and mitigation strategies, which may include safety surveillance, restricted distribution

and use, patient education, enhanced labeling, special packaging or labeling, expedited reporting of certain adverse events, preapproval of promotional materials and restrictions on direct-to-consumer advertising.

If we fail to comply with healthcare laws, we could face substantial penalties and our business, operations and financial condition could be adversely affected.

Even though we do not and will not control referrals of healthcare services or bill directly to Medicare, Medicaid or other third-party payors, certain federal and state healthcare laws and regulations, including those pertaining to fraud and abuse and patients' rights, are and will be applicable to our business. We could be subject to healthcare regulation by both the federal government and the states in which we conduct our business. The healthcare laws and regulations that may affect our ability to operate include, without limitation:

- the federal Anti-Kickback Statute, which prohibits, among other things, any person or entity from knowingly and willfully offering, soliciting, receiving or providing remuneration, directly or indirectly, in exchange for or to induce 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 federal healthcare programs, such as the Medicare and Medicaid programs;

- federal false claims laws, including the federal civil False Claims Act, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment that are false or fraudulent, or knowingly making false statements to avoid, decrease, or conceal an obligation to pay money to the federal government;

- the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which imposes criminal and civil liability for, among other things, executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters;

- the federal Physician Payments Sunshine Act under the ACA, which requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid, or the Children's Health Insurance Program to annually report to the U.S. Department of Health and Human Services' Centers for Medicare & Medicaid Services, or CMS, information related to payments and other transfers of value provided to physicians and teaching hospitals and physician ownership and investment interests;

- HIPPA, as amended by the Health Information Technology for Economic and Clinical Health Act, which imposes requirements on certain types of entities and individuals regarding the conduct of certain electronic healthcare transactions and the security and privacy of protected health information; and

- state law equivalents of each of the above federal laws, such as anti-kickback and false claims laws which may apply to items or services reimbursed by any third-party payor, including commercial insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government; state laws that require drug manufacturers to

report information related to payments and other transfers of value to other healthcare providers and healthcare entities, or marketing expenditures; and state and foreign laws governing the privacy and security of health information in some circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

The ACA, among other things, amends the intent requirement of the federal Anti-Kickback Statute and criminal healthcare fraud statutes. A person or entity no longer needs to have actual knowledge of this statute or specific intent to violate it in order to commit a violation. In addition, the ACA provides that the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the False Claims Act.

If our operations are found to be in violation of any of the laws described above or any other governmental regulations that apply to us, we may be subject to penalties, including administrative, civil and criminal penalties, damages, fines, disgorgement, individual imprisonment, exclusion from participation in federal healthcare programs, integrity obligations, contractual damages, reputational harm, diminished profits and future earnings, and the curtailment or restructuring of our operations, which could adversely affect our ability to operate our business and our financial results. Any action against us for violation of these laws, even if we successfully defend against it, could cause us to incur significant legal expenses and divert our management’s attention from the operation of our business. Moreover, achieving and sustaining compliance with applicable federal and state privacy, security and fraud laws may prove costly.

Risks Related to Intellectual Property

If we fail to comply with our obligations in our intellectual property licenses with third parties, we could lose license rights that are important to our business.

We are a party to intellectual property license agreements with third parties. For example, we have a third-party royalty free license associated with the Keck Graduate Institute for our yeast-based proprietary manufacturing technology. We may enter into additional license agreements in the future. Our existing license agreements impose, and we expect that our future license agreements will impose, various diligence, royalty payment, milestone payment, insurance and other obligations on us. If we fail to comply with these obligations or our other obligations in our license agreements, our licensors may have the right to terminate these agreements, in which event we may not be able to develop and market any product or use any platform technology that is covered by these agreements. Termination of these licenses or reduction or elimination of our licensed rights may result in our having to negotiate new or reinstated licenses with less favorable terms or our not having sufficient intellectual property rights to operate our business. The occurrence of such events could materially harm our business.

Our ability to successfully commercialize our products may be impaired if we are unable to obtain and maintain effective intellectual property rights for our proprietary antibody platform and product candidates.

Our success depends in large part on our and our licensors' ability to obtain and maintain patent and other intellectual property protection in the United States and in other countries with respect to our proprietary antibody platform and products. In some circumstances, we may not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the patents or enforce the patents, covering technology or products that we license from third parties. Therefore, we cannot be certain that these patents and applications will be prosecuted and enforced in a manner consistent with the best interests of our business. In addition, if third parties who license patents to us fail to maintain such patents, or lose rights to those patents, the rights we have licensed may be reduced or eliminated. Because certain intellectual property rights are shared between us and any of our future collaborators, it is possible that disputes may arise related to the distribution of those rights.

We have sought to protect our proprietary position by filing patent applications in the United States and abroad related to our novel technologies and products that are important to our business. This process is expensive and time-consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. The standards that the United States Patent and Trademark Office, or USPTO, uses to grant patents are not always applied predictably or uniformly and can change. Consequently, we cannot be certain as to whether pending patent applications will be allowed; and if allowed, we cannot be certain as to the type and extent of patent claims that will be issued to us in the future. Our existing patents and any future patents we obtain may not be sufficiently broad to prevent others from using our technologies or from developing competing products and technologies.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain and involves complex legal and factual questions for which legal principles remain unresolved. In recent years, patent rights have been the subject of significant litigation. As a result, the issuance, scope, validity, enforceability and commercial value of our and our licensors' patent rights are highly uncertain. Our and our licensors' pending and future patent applications may not result in patents being issued which protect our technology or products or which effectively prevent others from commercializing competitive technologies and products. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents or narrow the scope of our patent protection. The laws of foreign countries may not protect our rights to the same extent as the laws of the United States. Publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all. Therefore, we cannot be certain that we or our licensors were the first to make the inventions claimed in our owned and licensed patents or pending patent applications, or that we or our licensors were the first to file for patent protection of such inventions.

In March 2013, the United States converted to a first-to-file patent system under the recently enacted America Invents Act. With this change, the United States patent system was brought into closer conformity with the patent systems of other countries, the vast majority of which operate as first-to-file patent systems. Under the former system, and assuming the other requirements for patentability were met, the first to invent was entitled to the patent. A number of our patents and patent applications are subject to the first-to-invent system because they originated prior to the March 2013 cutoff. Under the new United States system, and outside the United States, the first to file a patent application is entitled to the patent, with certain exceptions. A number of our patents and patent applications are subject to the new first-to-file system in the United States because they originated after the March 2013 cutoff. The full effect of these changes remains unclear as the USPTO endeavors to implement various regulations concerning the new system. Furthermore, the courts have yet to address the vast majority of these provisions and the applicability of the America Invents Act and new regulations on specific patents discussed herein have not been determined and would need to be reviewed. We may become

involved in opposition, interference, post-grant or derivation proceedings challenging our patent rights or the patent rights of others, and the outcome of any proceedings are highly uncertain. An adverse determination in any such proceeding could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or products and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third-party patent rights. Even if our owned and licensed patent applications issue as patents, they may not issue in a form that will provide us with any meaningful protection, prevent competitors from competing with us or otherwise provide us with any competitive advantage. Our competitors may be able to circumvent our owned or licensed patents by developing similar or alternative technologies or products in a non-infringing manner. The issuance of a patent is not conclusive as to its scope, validity or enforceability, and our owned and licensed patents may be challenged in the courts or patent offices in the United States and abroad. Such challenges may result in patent claims being narrowed, invalidated or held unenforceable, which could limit our ability to stop or prevent us from stopping others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and products. Given the amount of time required for the development, testing and regulatory review of future product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours or otherwise provide us with a competitive advantage.

We may become involved in lawsuits to protect or enforce our patents, which could be expensive, time-consuming and unsuccessful.

Competitors may infringe our patents. To counter infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time-consuming. In addition, in an infringement proceeding, a court may decide that a patent of ours is invalid or unenforceable, or may refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover the technology in question. The standards that courts use to interpret patents are not always applied predictably or uniformly and can change, particularly as new technologies develop. As a result, we cannot predict with certainty how much protection, if any, will be given to our patents if we attempt to enforce them and they are challenged in court. An adverse result in any litigation proceeding could put one or more of our patents at risk of being invalidated or interpreted narrowly. Inequitable conduct is frequently raised as a defense during intellectual property litigation. It is believed that all parties involved in the prosecution of our patent applications have complied with their duties of disclosure in the course of prosecuting our patent applications, however, it is possible that legal claims to the contrary could be asserted if we were engaged in intellectual property litigation, and the results of any such legal claims are uncertain due to the inherent uncertainty of litigation. If a court determines that any party involved in the prosecution of our patents failed to comply with their duty of disclosure, the subject patent would be unenforceable. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation.

Third parties may initiate legal proceedings alleging that we are infringing their intellectual property rights, the outcome of which would be uncertain and could harm our business. In addition, we are currently involved in an opposition proceeding involving the granted European patent of one of our potential competitors.

Third parties may assert infringement claims against us, or other parties we have agreed to indemnify, based on existing patents or patents that may be granted in the future. We are aware of third-party patents and patent applications containing granted claims relating to CGRP antibodies and the therapeutic use of CGRP antibodies to treat conditions including migraine. Furthermore, since patent applications are published some time after filing, and because applications can take several years to issue, there may be additional currently pending third-party patent applications that are unknown to us, which may later result in issued patents.

We may initiate litigation or other legal proceedings with respect to patents held by others. For example, in July 2014, we and Eli Lilly and Company each filed an opposition to a European patent issued to Teva (Labrys) requesting that such patent be revoked in its entirety. In an oral proceeding held in Munich, Germany on November 18, 2016, the Opposition Division, or OD, of the European Patent Office, or EPO, issued a ruling revoking all claims in the patent relating to CGRP antagonist antibodies and maintaining but narrowing claims relating to the use of CGRP antagonist antibodies in human therapy to the prevention or treatment of headache such as migraine and cluster headache. The written decision consistent with the oral ruling was issued in February 2017. We plan to pursue an appeal based on our continued firm belief that the patent claims that were maintained and narrowed were nevertheless improperly granted by the EPO and upheld by the OD, and should be revoked in their entirety on appeal for the reasons set forth in the opposition. For the reasons set forth in our opposition, we continue to firmly believe the patent should be revoked in its entirety. However, we cannot predict the specific timing or outcome of events or matters described above, or the impact of the November 18, 2016 decision on our business. We plan to take action seeking to invalidate certain granted and pending Teva (Labrys) U.S. applications.

Because of the inevitable uncertainty in intellectual property legal proceedings, the opposition proceeding and appeal referenced above, or any other future proceeding, may not ultimately be resolved in our favor regardless of our perception of the merits. If we lose such a proceeding, or are found to infringe a third party’s intellectual property rights in any jurisdiction, we may not be to engage

in commercialization and related activities for a product candidate for its intended use in such jurisdiction without obtaining a license from such third party. However, we may not be able to obtain any required license on commercially reasonable terms or at all. Even if we are able to obtain a license, it may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us. We could be forced, including by court order, to cease commercializing the infringing technology or product. In addition, in any such proceeding or litigation, we could be found liable for monetary damages, including in the United States treble damages if we are found to have willfully infringed a patent, and attorneys' fees. A finding of infringement could prevent us from commercializing our product candidates or force us to cease some of our business operations.

We may be unable to protect the confidentiality of our trade secrets, thus harming our business and competitive position.

In addition to our patented technology and products, we rely upon trade secrets, including unpatented know-how, technology and other proprietary information to develop and maintain our competitive position, which we seek to protect, in part, by confidentiality agreements with our employees, collaborators and consultants. We also have agreements with our employees and selected consultants that obligate them to assign their inventions to us. However, it is possible that technology relevant to our business will be independently developed by a person that is not a party to such an agreement. Furthermore, if the employees, consultants or collaborators that are parties to these agreements breach or violate the terms of these agreements, we may not have adequate remedies for any such breach or violation, and we could lose our trade secrets through such breaches or violations. Furthermore, our trade secrets could be disclosed, misappropriated or otherwise become known or be independently discovered by our competitors. Our trade secrets can be lost through their inadvertent or advertent disclosure to others. In addition, intellectual property laws in foreign countries may not protect our intellectual property to the same extent as the laws of the United States. If our trade secrets are disclosed or misappropriated, it would harm our ability to protect our rights and harm our business.

We may be subject to claims that our employees have wrongfully used or disclosed intellectual property of their former employers. Intellectual property litigation or proceedings could cause us to spend substantial resources and distract our personnel from their normal responsibilities.

Many of our employees were previously employed at universities or other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although we try to ensure that our employees do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or these employees have used or disclosed intellectual property, including trade secrets or other proprietary information, of any such employee's former employer. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in defending against such claims, litigation or other legal proceedings relating to intellectual property claims may cause us to incur significant expenses, and could distract our technical and management personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Such litigation or proceedings could substantially increase our operating losses and reduce our resources available for

development activities. We may not have sufficient financial or other resources to adequately conduct such litigation or proceedings. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their substantially greater financial resources. Uncertainties resulting from the initiation and continuation of patent litigation or other intellectual property related proceedings could impair our ability to compete in the marketplace.

Risks Related to Our Operations and Personnel

Our future success depends on our ability to retain our executive officers and other key employees and to attract, retain and motivate qualified personnel.

We are highly dependent on our executive officers and other key employees. The employment of our executive officers and other key employees is typically at-will and our executive officers and other key employees may terminate their employment with us at any time. The loss of the services of any of our executive officers or other key employees could impede the achievement of our research, development and commercialization objectives.

Recruiting and retaining other qualified scientific, clinical, manufacturing and sales and marketing personnel is critical to our success. We may not be able to attract and retain critical personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategy. Our consultants and

advisors may be employed by third parties and have commitments under consulting or advisory contracts with other entities that may limit their availability to us.

We expect to expand our development, regulatory affairs, sales and marketing and other capabilities, and as a result, we may encounter difficulties in managing our growth, which could disrupt our operations.

Over the next several years, if any of our product candidates receive marketing approval, we expect to experience significant growth in the number of our employees and the scope of our operations, particularly in the areas of drug development, regulatory affairs, sales and marketing and other functional areas, including finance, accounting and legal. For example, if eptinezumab is approved, we plan to build a specialty sales force targeting high-prescribing neurologists and headache centers in the United States. 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 financial resources and the limited experience of our management team in managing a company with such anticipated growth, 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.

If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could harm our business.

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

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

In addition, we may be required to incur substantial costs to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may divert resources away from our

research, development or production efforts. Failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

Business disruptions could harm our future revenues and financial condition and increase our costs and expenses.

Our operations could be subject to earthquakes, power shortages, telecommunications failures, floods, hurricanes, fires, extreme weather conditions, medical epidemics and other natural or manmade disasters or business interruptions. The occurrence of any of these business disruptions could harm our operations and financial condition and increase our costs and expenses. Our corporate headquarters is located in Washington and certain clinical sites for our product candidates, operations of our existing and future partners and suppliers are or will be located in Washington near major earthquake faults. The ultimate impact on us, our significant partners, suppliers and our general infrastructure of being located near major earthquake faults and being consolidated in certain geographical areas is unknown, but our operations and financial condition could suffer in the event of a major earthquake or other natural or manmade disaster.

Our internal computer systems, or those of our CROs 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 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 trial data from completed or ongoing clinical trials for any of our product 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.

Risks Related to Ownership of Our Common Stock

Our operating results may fluctuate significantly, which makes our future operating results difficult to predict and could cause our operating results to fall below expectations or our guidance.

Our quarterly and annual operating results have fluctuated in the past and may fluctuate significantly in the future, which makes it difficult for us to predict our future operating results. From time to time, we may enter into collaboration agreements with other companies that include development funding and significant upfront and milestone payments, and amounts earned from collaboration agreements may be an important source of our revenues. Accordingly, our revenues, if any, will depend on development funding and the achievement of development and clinical milestones under any of our future collaboration arrangements, as well as any potential future license agreements and sales of our products, if approved. These upfront and milestone payments may vary significantly from period to period and any such variance could cause a significant fluctuation in our operating results from one period to the next.

Our operating results may fluctuate due to a variety of other factors, many of which are outside of our control and may be difficult to predict, including the following:

- the timing and cost of, and level of investment in, research and development activities relating to our product candidates, which may change from time to time;
- the cost of manufacturing our product candidates, which may vary depending on the quantity of production and the terms of our agreements with manufacturers;
- expenditures that we will or may incur to acquire or develop additional product candidates and technologies;
- the level of demand for our product candidates, should they receive approval, which may vary significantly;
- future accounting pronouncements or changes in our accounting policies;
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- the timing and success or failure of clinical trials for our product candidates or competing product candidates, or any other change in the competitive landscape of our industry, including consolidation among our competitors or partners; and

- the risk/benefit profile, cost and reimbursement policies with respect to our products candidates, if approved, and existing and potential future drugs that compete with our product candidates.

The cumulative effects of these factors could result in large fluctuations and unpredictability in our quarterly and annual operating results. As a result, comparing our operating results on a period-to-period basis may not be meaningful. Investors should not rely on our past results as an indication of our future performance. This variability and unpredictability could also result in our failing to meet the expectations of industry or financial analysts or investors for any period. If our operating results fall below the expectations of analysts or investors or below any forecasts we may provide to the market, or if the forecasts we provide to the market are below the expectations of analysts or investors, the price of our common stock could decline substantially. Such a stock price decline could occur even when we have met any previously publicly stated operating results guidance we may provide.

Our stock price may be volatile, and purchasers of our common stock could incur substantial losses.

Our stock price has fluctuated in the past and is likely to be volatile in the future. Since January 1, 2015, the reported sale price of our common stock has fluctuated between $15.82 and $54.90 per share. The stock market in general and the market for biotechnology companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. As a result of this volatility, investors may experience losses on their investment in our common stock. The market price for our common stock may be influenced by many factors, including the following:

- the success of competitive products or technologies;

- results of clinical trials of our product candidates or those of our competitors;

- regulatory or legal developments in the United States and other countries, especially changes in laws or regulations applicable to our product candidates;

- introductions and announcements of future product candidates by us, any of our future collaborators, or our competitors, and the timing of these introductions or announcements;

- actions taken by regulatory agencies with respect to our product candidates, clinical trials, manufacturing process or sales and marketing terms;

- variations in our financial results or those of companies that are perceived to be similar to us;

- the success of our efforts to discover, acquire or in-license additional products or product candidates;

- developments concerning our future collaborations, including but not limited to those with our sources of manufacturing supply and our future collaborators;

- manufacturing disruptions;

- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures or capital commitments;

- developments or disputes concerning patents or other proprietary rights, including litigation matters and our ability to obtain patent protection for our product candidates;

- our ability or inability to raise additional capital and the terms on which we raise it;

- the recruitment or departure of key personnel;

- changes in the structure of healthcare payment systems;

- market conditions in the pharmaceutical and biotechnology sectors;

- actual or anticipated changes in earnings estimates or changes in stock market analyst recommendations regarding our common stock, other comparable companies or our industry generally;

- trading volume of our common stock;

- sales of our common stock by us or our stockholders;

- changes in our board of directors or key personnel;

- the expiration of contractual lock-up agreements;

- changes in our capital structure, such as future issuances of debt or equity securities;

- short sales, hedging and other derivative transactions involving our capital stock;

- general economic, industry and market conditions in the United States and abroad, including, for example, the impact of Brexit or similar events on global financial markets;

- other events or factors, including those resulting from war, incidents of terrorism or responses to these events; and

- the other risks described in this "Risk Factors" section.

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, securities class-action litigation has often been instituted against companies. Such litigation, if instituted against us, could result in substantial costs and diversion of management's attention and resources, which could harm our business.

Substantial future sales of shares of our common stock could cause the market price of our common stock to decline. This could cause the market price of our common stock to drop significantly, even if our business is doing well.

Sales of a substantial number of shares of our common stock into the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares intend to sell shares, could reduce the market price of our

common stock and could impair our ability to raise capital through the sale of additional equity securities. We are unable to predict the effect that such sales may have on the prevailing market price of our common stock.

In addition, as of December 31, 2016, we had options outstanding that, if fully exercised, would result in the issuance of 4,918,052 shares of common stock. The authorized number of shares under both such benefit plans are subject to additional automatic annual increases in the number of shares of common stock reserved for future issuance on January 1 of each year through 2024. As of January 1, 2017, there were also 4,095,211 shares of common stock reserved for future issuance under our 2014 Equity Incentive Plan and 1,297,677 shares of common stock reserved for issuance under our 2014 Employee Stock Purchase Plan. All of the shares of common stock issuable pursuant to our equity compensation plans have been registered for public resale under the Securities Act of 1933, as amended, or the Securities Act. Accordingly, these shares will be able to be freely sold in the public market upon issuance as permitted by any applicable vesting requirements and the restrictions of Rule 144 under the Securities Act in the case of our affiliates.

Moreover, as of December 31, 2016, holders of an aggregate of up to approximately 3.7 million shares of our common stock have rights, subject to some conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders.

If securities or industry analysts do not publish research, or 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. We do not have any control over these analysts. If one or more of the analysts who cover us downgrade our stock or publish inaccurate or unfavorable research about our business, our stock price would likely decline. In addition, if our operating results fail to meet the forecast of analysts, our stock price would likely decline. If one or more of these analysts cease coverage of our company or fail to publish reports on us regularly, demand for our stock could decrease, which might cause our stock price and trading volume to decline.

Complying with the laws and regulations affecting public companies has increased and will increase our costs and the demands on management and could harm our operating results.

As a public company, we are incurring significant legal, accounting and other expenses that we did not incur as a private company. In addition, the Sarbanes-Oxley Act and rules subsequently implemented by the SEC and NASDAQ impose numerous requirements on public companies, including requiring changes in corporate governance practices. Also, the Exchange Act requires, among other things, that we file annual, quarterly and current reports with respect to our business and operating results. Our management and other personnel need to devote a substantial amount of time to compliance with these laws and regulations. These burdens may increase as new legislation is passed and

implemented, including any new requirements that the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 may impose on public companies. These requirements have increased and will continue to increase our legal, accounting, and financial compliance costs and have made and will continue to make some activities more time consuming and costly. We expect these rules and regulations may make it difficult and expensive for us to obtain director and officer liability insurance, and in the future we may be required to accept reduced policy limits and coverage or to incur substantial costs to maintain the same or similar coverage. These rules and regulations could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors or our board committees or as executive officers.

The Sarbanes-Oxley Act requires, among other things, that we assess the effectiveness of our internal control over financial reporting annually and the effectiveness of our disclosure controls and procedures quarterly. Section 404 of the Sarbanes-Oxley Act, or Section 404, requires us to perform system and process evaluation and testing of our internal control over financial reporting to allow management to report on, and our independent registered public accounting firm potentially to attest to, the effectiveness of our internal control over financial reporting. Our compliance with applicable provisions of Section 404 subjects us to substantial accounting expense and to expend significant management time on compliance-related issues. If we are not able to comply with the requirements of Section 404 applicable to us in a timely manner, or if we or our independent registered public accounting firm identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, the market price of our stock could decline and we could be subject to sanctions or investigations by the SEC or other regulatory authorities, which would require additional financial and management resources.

Furthermore, investor perceptions of our company may suffer if deficiencies are found, and this could cause a decline in the market price of our stock. Irrespective of compliance with Section 404, any failure of our internal control over financial reporting could have a material adverse effect on our stated operating results and harm our reputation. If we are unable to implement these requirements effectively or efficiently, it could harm our operations, financial reporting, or financial results and could result in an adverse opinion on our internal control over financial reporting from our independent registered public accounting firm.

Provisions in our corporate charter documents could make an acquisition of us more difficult and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our corporate charter and our bylaws may discourage, delay or prevent a merger, acquisition or other change in control of us that stockholders may consider favorable, including transactions in which stockholders might otherwise receive a premium for their shares. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. In addition, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors. Because our board of directors is responsible for appointing the members of our management team, these provisions could in turn affect any attempt by our stockholders to replace current members of our management team. Among others, these provisions include the following:

- our board of directors is divided into three classes with staggered three-year terms which may delay or prevent a change of our management or a change in control;
- our board of directors has the right to elect directors to fill a vacancy created by the expansion of the board of directors or the resignation, death or removal of a director, which prevents stockholders from being able to fill vacancies on our board of directors;
- our stockholders may not act by written consent or call special stockholders' meetings; as a result, a holder, or holders, controlling a majority of our capital stock would not be able to take certain actions other than at annual stockholders' meetings or special stockholders' meetings called by the board of directors, the chairman of the board or the chief executive officer;
- our certificate of incorporation does not provide for cumulative voting in the election of directors, which limits the ability of minority stockholders to elect director candidates;
- stockholders must provide advance notice and additional disclosures in order to nominate individuals for election to the board of directors or to propose matters that can be acted upon at a stockholders' meeting, which may discourage or deter a potential acquiror from conducting a solicitation of proxies to elect the acquiror's own slate of directors or otherwise attempting to obtain control of our company; and
- our board of directors may issue, without stockholder approval, shares of undesignated preferred stock; the ability to issue undesignated preferred stock makes it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to acquire us.

Provisions under Delaware law and Washington law could make an acquisition of our company more difficult, limit attempts by our stockholders to replace or remove our current management and limit the market price of our common stock.

In addition to provisions in our corporate charter and our bylaws, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which generally prohibits a Delaware corporation from engaging in any of a broad range of business combinations with any holder of at least 15% of our capital stock for a period of three years following the date on which the stockholder became a 15% stockholder. Likewise, because our principal executive offices are located in Washington, the anti-takeover provisions of the Washington Business Corporation Act may apply to us under certain circumstances now or in the future. These provisions prohibit a “target corporation” from engaging in any of a broad range of business combinations with any stockholder constituting an “acquiring person” for a period of five years following the date on which the stockholder became an “acquiring person.”

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our corporate headquarters are located in Bothell, Washington, where we lease approximately 85,000 square feet of office and laboratory space pursuant to lease agreements which expire in July 2023. These facilities house our research, clinical, regulatory, commercial and administrative personnel. We believe that our existing facilities are adequate for our near-term needs. We believe that suitable additional or alternative space would be available if required in the future on commercially reasonable terms.

Item 3. Legal Proceedings

In July 2014, we and Eli Lilly and Company each filed an opposition to Labrys Biologics Inc.'s (owned by Teva Pharmaceutical Industries Ltd.) European Patent No. 1957106 B1, requesting that such patent be revoked in its entirety. The patent at issue, granted in October 2013, originally contained claims relating to CGRP antagonist antibodies and the use of such CGRP antagonist antibodies in human therapy for the prevention or treatment of CGRP-associated vasomotor symptoms such as migraine and hot flush. The opposition asserts that the patent be revoked in its entirety because the patent's broad claims do not meet the requirements for patentability under the European Patent Convention. In an oral proceeding held in Munich, Germany on November 18, 2016, the Opposition Division, or OD, of the European Patent Office, or EPO, issued a ruling revoking all claims in the patent relating to CGRP antagonist antibodies and maintaining but narrowing claims relating to the use of CGRP antagonist antibodies in human therapy to the prevention or treatment of headache such as migraine and cluster headache. The written decision consistent with the oral ruling was issued in February 2017.

The initial decision by the EPO affirms our right to continue clinical development of eptinezumab, and has no impact on our plan to submit a BLA for eptinezumab to the FDA in the second half of 2018 and to commercialize eptinezumab in the United States. The OD's decision is subject to appeal to the EPO's Technical Board of Appeal by the parties to the proceeding. We plan to pursue an appeal based on our continued firm belief that the patent claims that were maintained and narrowed were nevertheless improperly granted by the EPO and upheld by the OD, and should be revoked in their entirety on appeal for the reasons set forth in the opposition. The OD decision has no binding effect on the U.S. Patent and Trademark Office's patentability determination of claims in granted or pending Labrys patent applications in the United States or impact on our ability to take action seeking to invalidate such granted or pending U.S. applications, which we intend to do.

For the reasons set forth in our opposition, we continue to firmly believe the patent should be revoked in its entirety. However, we cannot predict the specific timing or outcome of events or matters described above, or the impact of the November 18, 2016 decision on our business. Because of the inherent uncertainty in intellectual property legal proceedings, the opposition proceeding and appeal may not ultimately be resolved in our favor regardless of our perception of the merits. If we lose such a proceeding or appeal, we may not be able to engage in commercialization and related activities for eptinezumab for the treatment of migraine in the European countries that are members of the

European Patent Organisation without obtaining a license. However, such license may not be available on commercially reasonable terms or at all, and if granted may be non-exclusive, thereby giving our competitors freedom to operate in these countries. If we are found to infringe the patent in these European countries, we could be forced, including by court order, to cease commercialization and related activities for eptinezumab in such countries and possibly be found liable for monetary damages and attorneys' fees.

In addition, from time to time, we may become involved in other legal proceedings relating to claims arising from the ordinary course of business. Our management believes that there are currently no claims or actions pending against us, the ultimate disposition of which could have a material adverse effect on our results of operations, financial condition or cash flows.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

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

Our common stock is traded on The NASDAQ Global Market under the symbol "ALDR." Trading of our common stock commenced on May 8, 2014 in connection with our initial public offering, or IPO. The following table sets forth, for the periods indicated, the high and low sales prices for our common stock as reported on The NASDAQ Global Market.

| Year ended December 31, 2015 | High | Low |
|---|---|---|
| First quarter | $32.30 | $23.81 |
| Second quarter | $53.14 | $22.23 |
| Third quarter | $54.90 | $28.67 |
| Fourth quarter | $39.43 | $26.21 |
| | | |
| Year ended December 31, 2016 | | |
| First quarter | $32.96 | $15.82 |
| Second quarter | $32.44 | $22.38 |
| Third quarter | $36.48 | $24.39 |
| Fourth quarter | $34.30 | $20.30 |

Holders

As of February 16, 2017, there were approximately 19 holders of record of our common stock. The actual number of stockholders is greater than this number of record holders and includes stockholders who are beneficial owners but whose shares are held in street name by brokers and other nominees.

Dividends

We have never declared or paid, and do not anticipate declaring, or paying in the foreseeable future, any cash dividends on our capital stock. Future determinations as to the declaration and payment of dividends, if any, will be at the discretion of our board of directors and will depend on then existing conditions, including our operating results, financial conditions, contractual restrictions, capital requirements, business prospects and other factors our board of directors may deem relevant.

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Performance Graph

The following graph compares the performance of our common stock for the periods indicated with the performance of the NASDAQ Composite Index and the NASDAQ Biotechnology Index. This graph assumes an investment of $100 on May 8, 2014 in each of our common stock, the NASDAQ Composite Index and the NASDAQ Biotechnology Index, and assumes reinvestment of dividends, if any. The stock price performance shown on the graph below is not necessarily indicative of future stock price performance.

This information under “Stock Performance Graph” is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference in any filing of Alder BioPharmaceuticals, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Annual Report on Form 10-K and irrespective of any general incorporation language in those filings.

Item 6. Selected Consolidated Financial Data

The following selected consolidated financial data is derived from our audited financial statements and should be read in conjunction with, and is qualified in its entirety by, Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and Item 8, “Financial Statements and Supplementary Data” contained elsewhere in this Annual Report on Form 10-K. The selected consolidated statements of operations data for the years ended December 31, 2016, 2015 and 2014 and consolidated balance sheet data as of December 31, 2016 and 2015 have been derived from our audited consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K. The selected consolidated statements of operations data for the year ended December 31, 2013 and 2012 and consolidated balance sheet data as of December 31, 2014, 2013 and 2012 were derived from our audited financial statements that are not included in this Annual Report on Form 10-K.

| | Years Ended December 31, | | | | |
|---|---|---|---|---|---|
| | 2016 | 2015 | 2014 | 2013 | 2012 |
| Consolidated statement of operations data: [1] | (in thousands, except share and per share data) | | | | |
| Revenues | | | | | |
| Collaboration and license agreements | $113 | $— | $54,705 | $18,796 | $20,067 |
| Operating expenses | | | | | |
| Cost of sales | 113 | — | — | — | — |
| Research and development | 132,760 | 69,611 | 33,439 | 31,883 | 30,669 |
| General and administrative | 26,148 | 16,718 | 12,462 | 7,674 | 7,217 |
| Total operating expenses | 159,021 | 86,329 | 45,901 | 39,557 | 37,886 |
| Gain on license of clazakizumab | 1,050 | — | — | — | — |
| Income (loss) from operations | (157,858) | (86,329) | 8,804 | (20,761) | (17,819) |
| Other income (expense) | | | | | |
| Interest income | 1,966 | 702 | 44 | 54 | 101 |
| Foreign currency gain (loss) | (349) | 73 | 15 | (21) | — |
| Other income | 172 | 84 | 45 | 158 | — |
| Interest expense | — | — | — | — | (88) |
| Other expense | — | — | — | (43) | — |
| Total other income, net | 1,789 | 859 | 104 | 148 | 13 |
| Net income (loss) before equity in net loss of unconsolidated entity | (156,069) | (85,470) | 8,908 | (20,613) | (17,806) |
| Equity in net loss of unconsolidated entity | (185) | — | — | — | — |
| Net income (loss) | $(156,254) | $(85,470) | $8,908 | $(20,613) | $(17,806) |
| Net income (loss) per share - basic | $(3.23) | $(2.11) | $0.43 | $(21.14) | $(19.54) |
| Net income (loss) per share - diluted | $(3.23) | $(2.11) | $0.30 | $(21.14) | $(19.54) |
| Weighted average number of common shares used in net income (loss) per share - basic | 48,407,565 | 40,586,980 | 20,506,565 | 975,158 | 911,354 |
| Weighted average number of common shares used in net income (loss) per share - diluted | 48,407,565 | 40,586,980 | 29,427,287 | 975,158 | 911,354 |

[1] As discussed in Note 9 to the consolidated financial statements, Bristol-Myers Squibb, or BMS, terminated their collaboration agreement regarding clazakizumab with us on December 29, 2014. As a result of the termination of the agreement, the estimated development period was adjusted and we recognized revenue related to the BMS agreement in the amount of $54.5 million in 2014. The acceleration of revenue recognition resulted in us reporting net income for 2014.

| | As of December 31, | | | | |
|---|---|---|---|---|---|
| | 2016 | 2015 | 2014 | 2013 | 2012 |
| Consolidated balance sheet data: [2] | (in thousands) | | | | |
| | | | | | |
| Cash, cash equivalents and investments | $351,867 | $381,012 | $55,872 | $23,227 | $59,373 |
| Working capital | 367,293 | 309,829 | 55,734 | 2,457 | 39,938 |
| Total assets | 409,154 | 400,027 | 64,359 | 26,739 | 64,654 |
| Total liabilities | 26,371 | 12,510 | 5,202 | 58,727 | 76,664 |
| Convertible preferred stock | — | — | — | 111,374 | 111,374 |
| Common stock and additional paid in capital | 761,461 | 610,394 | 196,085 | 2,443 | 1,820 |
| Accumulated deficit | (378,630) | (222,376) | (136,906) | (145,814) | (125,201) |
| Total stockholders' equity (deficit) | 382,783 | 387,517 | 59,157 | (143,362) | (123,384) |

[2] The 2016 consolidated balance sheet data reflect $134.9 million in net proceeds received from an underwritten public offering of our common stock that was completed in April 2016. The 2015 consolidated balance sheet data reflect $406.6 million in net proceeds received from two underwritten public offerings of our common stock that

were completed in January and June 2015.

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Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

You should read the following discussion and analysis together with the financial statements and the related notes to those statements included elsewhere in this report. This discussion contains forward-looking statements that involve risks and uncertainties. As a result of many factors, such as those set forth in the section of this report captioned "Risk Factors" and elsewhere in this report, our actual results may differ materially from those anticipated in these forward-looking statements.

Overview

We are a clinical-stage biopharmaceutical company that discovers, develops and seeks to commercialize therapeutic antibodies with the potential to meaningfully transform current treatment paradigms. All of our product candidates were discovered and developed by Alder scientists using our proprietary antibody technology platform coupled with a deliberate approach to design and select candidates with properties that we believe optimize the therapeutic potential for patients and commercial competitiveness.

We are focusing our resources and development efforts principally on eptinezumab (ALD403), our most advanced solely-owned product candidate, in order to maximize its therapeutic and commercial potential. Eptinezumab is being evaluated in a pivotal trial program for the prevention of migraine, with a Biologics License Application (BLA) submission to the U.S. Food and Drug Administration (FDA) planned for the second half of 2018. Migraine is a serious neurological disease affecting about 36 million people in the United States. Of that number, approximately 13 million adults in the U.S. are estimated to be candidates for a migraine prevention therapeutic, including three million people that live with chronic migraine, the most serious form of the disease.

Eptinezumab is a genetically engineered monoclonal antibody inhibiting calcitonin gene-related peptide (CGRP), a validated target that is understood to drive migraine initiation, maintenance and chronification. Designed to deliver a competitively differentiated approach to migraine prevention, we believe eptinezumab holds the potential to be a transformative therapeutic and meet a profound medical need, changing the migraine prevention treatment paradigm for physicians and patients living with migraine.

Our deliberate approach to engineering and developing eptinezumab is designed to provide a unique clinical profile that, after a single administration via an in-office infusion procedure, provides rapid and persistent migraine relief, and facilitates patient adherence. We believe that this clinical profile, as supported by data from our clinical trials, will present a potentially compelling value proposition for patients, physicians, payors and our stakeholders. In Phase 2 clinical trials for the prevention of migraine, eptinezumab has demonstrated robust efficacy, rapid reduction in migraine days and a persistent response.

The pivotal trial program for our infusion formulation of eptinezumab in support of a BLA submission consists of two Phase 3 pivotal trials and a single open-label Phase 3 clinical trial. Our first pivotal trial, PRevention Of Migraine via Intravenous ALD403 Safety and Efficacy 1 (PROMISE 1), commenced in October 2015 and is evaluating the safety and efficacy of eptinezumab administered via infusion once every 12 weeks for one year in approximately 800 patients with frequent episodic migraine, defined as five to 14 migraine days per month. Our second pivotal trial, PRevention Of Migraine via Intravenous ALD403 Safety and Efficacy 2 (PROMISE 2), commenced in November 2016 and is evaluating the safety and efficacy of eptinezumab administered via infusion once every 12 weeks for six

months in approximately 1,050 patients with chronic migraine, defined as 15 or more migraine days per month, with features of migraine on at least eight days per month. The open-label trial commenced in December 2016 and is evaluating the long-term safety and tolerability of eptinezumab administered via infusion once every 12 weeks for one year in approximately 120 patients with chronic migraine. We expect top-line data from PROMISE 1 to be available in the first half of 2017, top-line data from PROMISE 2 to be available in the first half of 2018 and top-line data from the open-label trial to be available in the first half of 2018. Our objective is to submit a BLA to the FDA based on the results of these three trials in the second half of 2018.

We intend to investigate opportunities to maximize the differentiated therapeutic and commercial profile of eptinezumab based on preclinical and clinical data observed to date, through the initiation of one or more additional clinical studies of our infusion formulation. Based on the data from our eptinezumab clinical trials and feedback we have received from investigators and key opinion leaders around the clinical value of rapid onset, effectiveness and persistence of relief from our infusion formulation of eptinezumab, we believe that further studies focused on these characteristics have the potential to add value and represent the best use of our resources in the near term. We are also committed to investigating additional routes of administration, such as a potential subcutaneous and/or intramuscular formulation. We expect to have further insight regarding our plans and timing following the availability of top-line data from PROMISE 1, which we believe will expand our understanding of eptinezumab's profile and potential commercial dose.

Assuming eptinezumab is approved by the FDA, we plan to focus our initial commercialization efforts on high-prescribing neurologists and headache centers in the United States employing a specialty sales force. To maximize the potential commercial opportunity of eptinezumab while we focus on the U.S. specialty market, we may explore strategic arrangements that provide additional capabilities and infrastructure, while improving access for physicians and patients. We also intend to seek approval for eptinezumab in the European Union and other jurisdictions outside the United States.

Our product candidate pipeline also includes ALD1910, a preclinical wholly-owned monoclonal antibody that targets pituitary adenylate cyclase-activating polypeptide-38 (PACAP-38). ALD1910 is undergoing investigational new drug (IND)-enabling studies

for the prevention of migraine. PACAP-38 is a protein that is active in mediating the initiation of migraine, and we believe that ALD1910 holds potential as a treatment for migraineurs who have an inadequate response to therapeutics directed at CGRP or its receptor. Our third pipeline candidate is clazakizumab, designed to block the pro-inflammatory cytokine IL-6. In May 2016, we licensed the exclusive worldwide rights to clazakizumab to Vitaeris, Inc., or Vitaeris, based in Vancouver, British Columbia, that will pursue innovative therapeutic indications in chronic inflammatory diseases. Prior to the license to Vitaeris, clazakizumab completed two positive Phase 2b clinical trials establishing proof-of-concept in patients with rheumatoid arthritis.

We were incorporated in 2002 and have not generated any product revenue. Through December 31, 2016, our operations have been primarily funded by $621.8 million of net proceeds in public offerings, $111.4 million in private placements of our capital stock, and $135.0 million in upfront payments, milestones and research and development payments from our former collaborators and government grants.

As of December 31, 2016, we had an accumulated deficit of $378.6 million. We expect to experience increasing operating losses for the foreseeable future. We expect our expenses will increase substantially in connection with our ongoing activities, particularly the clinical development of eptinezumab for the prevention of migraine. We forecast a significant increase in expenditures to support our planned Biologics License Application, or BLA, submission in the second half of 2018, our commercial readiness activities and our anticipated commercial launch of eptinezumab. Based on projected spending, we believe that our available cash, cash equivalents and investments will be sufficient to fund our anticipated operating requirements through 2017, but planned activities, including commitments for commercial readiness activities, may deplete current cash, cash equivalents and investments in the first quarter of 2018. If we are not able to secure adequate additional funding, we have plans to make reductions in certain spending to extend current funds. Should these reductions in spending not be sufficient, we could also be forced to make further reductions in spending, extend payment terms with suppliers, liquidate assets where possible, or suspend or curtail planned programs. In addition, if we are unable to obtain adequate financing when needed, we may have to delay, reduce the scope of, suspend or eliminate one or more of research and development programs or our commercialization efforts.

We will not generate revenues from product sales unless and until we or our future collaborators successfully complete development and obtain regulatory approval for one or more of our product candidates, which we expect will take a number of years and is subject to significant uncertainty. If we obtain regulatory approval for eptinezumab, ALD1910 or any future product candidate, we expect to incur significant commercialization expenses related to sales, marketing, manufacturing and distribution to the extent that such costs are not paid by future collaborators. We do not have sufficient cash to complete the clinical development of any of our product candidates and will require additional funding in order to complete the development activities required for regulatory approval of eptinezumab, ALD1910 or any future product candidates that we develop independently. In addition, our clinical trials for eptinezumab may encounter manufacturing, enrollment or other issues that could cause our development costs to increase more than we expect. If such additional funding is not available on favorable terms or at all, we may need to delay or reduce the scope of our development programs or grant rights in the United States, as well as outside the United States, to our product candidates to one or more partners.

Financial Operations Overview

Revenues

We recognized $0.1 million in revenue in 2016 relating to the sale of drug supply inventory to Vitaeris at cost. We did not recognize any revenue in 2015. We recognized $54.7 million in revenue in 2014, substantially all of which was derived from our collaboration with BMS, which was terminated effective December 29, 2014.

We have not generated any revenues from the sale of products. In the future, we may generate revenues from product sales and from collaboration agreements in the form of license fees, milestone payments, reimbursements for clinical supply and development costs and royalties on product sales. We expect that any revenues we generate will fluctuate from quarter to quarter as a result of the uncertain timing and amount of such payments and sales.

Research and Development Expenses

Research and development expenses represent costs incurred by us for the discovery and development of our product candidates. The following items are included in research and development expenses:

- external costs under agreements with clinical research organizations, or CROs, contract manufacturing organizations, or CMOs, and other significant third-party vendors or consultants used to perform preclinical, clinical and manufacturing activities;

- internal costs including employee-related costs such as salaries, benefits, stock-based compensation expense, travel, laboratory consumables and services for our research and development personnel; and
- allocated facilities, depreciation, and other expenses, which include rent and maintenance of facilities, information technology services and other infrastructure expenses.

We use our employee and infrastructure resources across multiple research and development programs directed toward evaluating our monoclonal antibodies for selecting product candidates. We manage certain activities such as preclinical toxicology studies, clinical trial operations and manufacture of product candidates through third-party CROs, CMOs or other third-party vendors. We track our significant external costs by each product candidate. We also track our human resource efforts on certain programs for purposes of billing our collaborators for time incurred at agreed upon rates. We do not, however, assign or allocate to individual product candidates or development programs our internal costs and we group these internal research and development activities into three categories:

| Category | Description |
|---|---|
| Preclinical discovery and development | Research and development expenses incurred in activities substantially in support of discovery of new targets through the selection of a single product candidate. These activities encompass the discovery and translational medicine functions, including pharmacokinetic and drug metabolism preclinical studies, toxicology and early strain and assay development activities. |
| Pharmaceutical operations | Research and development expenses incurred related to manufacturing preclinical study and clinical trial materials, including scale-up process development and quality control activities. |
| Clinical development | Research and development expenses incurred related to Phase 1, Phase 2 and Phase 3 clinical trials, including regulatory affairs activities. |

Our research and development expenses during 2016, 2015 and 2014 were as follows:

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2016 | 2015 | 2014 |
| | (in thousands) | | |
| External costs: | | | |
| Eptinezumab | $82,326 | $37,764 | $14,085 |
| ALD1613 | 6,025 | 5,272 | — |
| Clazakizumab | 578 | 192 | 1,055 |
| Unallocated internal costs: | | | |
| Preclinical discovery and development | 17,908 | 13,556 | 11,480 |
| Pharmaceutical operations | 18,051 | 9,834 | 5,209 |
| Clinical development | 7,872 | 2,993 | 1,610 |
| Total research and development expenses | $132,760 | $69,611 | $33,439 |

We plan to increase our research and development expenses for the foreseeable future as we continue the development of eptinezumab and advance ALD1910 and our future product candidates into clinical development. The timing and amount of research and development expenses incurred will depend largely upon the outcomes of current and future clinical trials for our product candidates as well as the related regulatory requirements, manufacturing costs and any costs associated with the advancement of our preclinical programs. We cannot determine with certainty the duration and completion costs of the current or future clinical trials of our product candidates. The duration, costs and timing of clinical trials and development of our product candidates will depend on a variety of factors, including:

- the scope, rate of progress, and expense of our ongoing, as well as any additional, clinical trials and other research and development activities;
- future clinical trial results;

- potential changes in government regulation; and
- the timing and receipt of any regulatory approvals.

A change in the outcome of any of these variables with respect to the development of a product candidate could mean a significant change in the costs and timing associated with the development of that product candidate.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries and related benefits, including stock-based compensation, related to our executive, business development, intellectual property, finance, human resources and support functions. Other general and administrative expenses include allocated facility-related costs not otherwise included in research and development expenses, travel expenses and professional fees for auditing, tax and legal services, including intellectual property related legal services. We have incurred and expect to incur additional expenses as a result of being a public company, including expenses related to compliance with the rules and regulations of the SEC, and those of the NASDAQ Stock Market LLC, or NASDAQ, additional insurance expenses, investor relations activities and other administrative and professional services.

Other Income (Expense)

Other income consists primarily of interest income received on our cash, cash equivalents and investments, gains and losses on foreign currency and refundable Australian tax credits received by our wholly-owned Australian subsidiary.

Results of Operations

Comparison of the Years Ended December 31, 2016 and 2015

The following table summarizes our results of operations for 2016 and 2015, together with the changes in those items in dollars and as a percentage:

| | Years Ended December 31, | | | |
|---|---|---|---|---|
| | 2016 | 2015 | Dollar change | % change |
| | (dollars in thousands) | | | |
| Revenues: | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Collaboration and license agreements | $113 | $— | $ 113 | — | |
| Operating expenses: | | | | | |
| Cost of sales | 113 | — | 113 | — | |
| Research and development | 132,760 | 69,611 | 63,149 | 91 | % |
| General and administrative | 26,148 | 16,718 | 9,430 | 56 | % |
| Total operating expenses | 159,021 | 86,329 | 72,692 | 84 | % |
| Gain on license of clazakizumab | 1,050 | — | 1,050 | — | |
| Loss from operations | (157,858) | (86,329) | (71,529) | (83 | %) |
| Other income (expense) | | | | | |
| Interest income | 1,966 | 702 | 1,264 | 180 | % |
| Foreign currency gain (loss) | (349) | 73 | (422) | (578 | %) |
| Other income | 172 | 84 | 88 | 105 | % |
| Total other income, net | 1,789 | 859 | 930 | 108 | % |
| Net loss before equity in net loss of unconsolidated entity | (156,069) | (85,470) | (70,599) | (83 | %) |
| Equity in net loss of unconsolidated entity | (185) | — | (185) | — | |
| Net loss | $(156,254) | $(85,470) | $ (70,784) | (83 | %) |

Revenue and Cost of Sales

We recognized $0.1 million in revenue and cost of sales in 2016 relating to the sale of drug supply inventory to Vitaeris at cost. We did not recognize any revenue or cost of sales in 2015.

Research and Development Expenses

| | Years Ended December 31, | | | |
|---|---|---|---|---|
| | 2016 | 2015 | Dollar change | % change |
| | (dollars in thousands) | | | |
| External costs: | | | | |
| Eptinezumab | $82,326 | $37,764 | $ 44,562 | 118 % |
| ALD1613 | 6,025 | 5,272 | 753 | 14 % |
| Clazakizumab | 578 | 192 | 386 | 201 % |
| Unallocated internal costs: | | | | |
| Preclinical discovery and development | 17,908 | 13,556 | 4,352 | 32 % |
| Pharmaceutical operations | 18,051 | 9,834 | 8,217 | 84 % |
| Clinical development | 7,872 | 2,993 | 4,879 | 163 % |
| Total research and development expenses | $132,760 | $69,611 | $ 63,149 | 91 % |

Research and development expenses increased by $63.1 million, or 91%, in 2016 compared to 2015. During 2016, external costs incurred for eptinezumab increased by $44.6 million, or 118%. The increased level of spending for eptinezumab was primarily due to an additional $21.1 million in clinical trial costs and $23.5 million in manufacturing costs for drug supply in support of planned and ongoing pivotal clinical trials. External costs for ALD1613 increased $0.8 million due to an increase in preclinical studies offset by a decrease in manufacturing costs before we terminated the development of this product candidate in mid-2016. Unallocated internal costs also increased by $17.4 million due primarily to an increase in salaries expense of $8.4 million and an increase in stock-based compensation expense of $4.1 million in 2016 as a result of a 53% increase in our research and development headcount to support our ongoing and planned pivotal clinical trials.

General and Administrative Expenses

General and administrative expenses increased by $9.4 million, or 56%, for 2016 compared to 2015. The increase was primarily due to an increase in stock-based compensation expense of $3.7 million and an increase of $3.0 million in salaries expense due to a 68% increase in headcount, as well as increases in commercial readiness activities, business insurance and other administrative costs.

Gain on License of Clazakizumab

In May 2016, we licensed the exclusive worldwide rights to clazakizumab to Vitaeris. In exchange for the rights to clazakizumab, we received an equity stake in Vitaeris and are eligible to receive royalties and certain other payments. We recognized a gain on the license agreement of $1.1 million in 2016.

Interest Income

The increase of $1.3 million in interest income for 2016 compared to 2015 was due primarily to increases in the average balances of cash, cash equivalents and investments.

Foreign Currency Gain (Loss)

Other income (expense) recognized from foreign currency gains (losses) decreased $0.4 million for 2016 compared to 2015. We maintain bank accounts denominated in British pounds, Swiss francs, Australian dollars and Euros for purposes of settling certain obligations arising outside the United States. We recognized a net foreign currency loss of $0.3 million in 2016 and a net foreign currency gain of $0.1 million in 2015 due primarily in both years to fluctuations in the exchange rate for British pounds relative to U.S. dollars.

Other Income

Other income primarily represents incentive payments received by our Australian subsidiary from the Australian government for eligible research and development expenditures in the prior calendar year. We received $0.2 million in such incentive payments in 2016 and $0.1 million in 2015. The increase in the incentive payments received in 2016 was due to a higher level of eligible expenditures in Australia in 2015 compared to expenditures in 2014.

Equity in Net Loss of Unconsolidated Entity

The equity in net loss of unconsolidated entity relates to our investment in Vitaeris. We record our share of any loss or income generated by Vitaeris under the equity method of accounting on a three-month lag. We recognized $0.2 million in equity in net loss for 2016. There was no equity in net loss of unconsolidated entity in 2015.

Comparison of the Years Ended December 31, 2015 and 2014

The following table summarizes our results of operations for 2015 and 2014, together with the changes in those items in dollars and as a percentage:

| | Years Ended December 31, | | | |
|---|---|---|---|---|
| | 2015 | 2014 | Dollar change | % change |
| | (dollars in thousands) | | | |
| Revenues: | | | | |
| Collaboration and license agreements | $— | $54,705 | $ (54,705) | (100 %) |
| Operating expenses: | | | | |
| Research and development | 69,611 | 33,439 | 36,172 | 108 % |
| General and administrative | 16,718 | 12,462 | 4,256 | 34 % |
| Income (loss) from operations | (86,329) | 8,804 | (95,133) | (1081 %) |
| Interest income | 702 | 44 | 658 | 1495 % |
| Foreign currency gain (loss) | 73 | 15 | 58 | 387 % |
| Other income | 84 | 45 | 39 | 87 % |
| Net income (loss) | $(85,470) | $8,908 | $ (94,378) | (1059 %) |

Revenues

Revenues recognized and cash payments received under our collaboration agreements were as follows:

| | Years Ended December 31, | | | |
|---|---|---|---|---|
| | 2015 | 2014 | Dollar change | % change |
| | (dollars in thousands) | | | |
| Revenues recognized: | | | | |
| Bristol-Myers Squibb: | | | | |
| Amortization of deferred revenue from upfront payments | $— | $35,403 | $ (35,403) | (100 %) |
| Recognition of milestone payments | — | 7,706 | (7,706) | (100 %) |
| Recognition of reimbursed clinical supply and development costs | — | 11,431 | (11,431) | (100 %) |
| Bristol-Myers Squibb total | — | 54,540 | (54,540) | (100 %) |
| Other | — | 165 | (165) | (100 %) |
| Total revenues recognized | $— | $54,705 | $ (54,705) | (100 %) |
| Cash payments received: | | | | |
| Bristol-Myers Squibb: | | | | |
| Reimbursed clinical supply and development costs | 113 | 320 | (207) | (65 %) |
| Bristol-Myers Squibb total | 113 | 320 | (207) | (65 %) |
| Other | — | 265 | (265) | (100 %) |
| Total cash payments received | $113 | $585 | $ (472) | (81 %) |

We did not recognize any revenue in 2015. Revenues for 2014 were $54.7 million and were derived primarily from our collaboration agreement with BMS, which was terminated effective December 29, 2014. We will not recognize any additional future revenue under the BMS collaboration agreement.

Research and Development Expenses

| | Years Ended December 31, |
|---|---|

| | 2015 | 2014 | Dollar change | % change |
|---|---|---|---|---|
| | (dollars in thousands) | | | |
| External costs: | | | | |
| Eptinezumab | $37,764 | $14,085 | $ 23,679 | 168 % |
| ALD1613 | 5,272 | — | 5,272 | — |
| Clazakizumab | 192 | 1,055 | (863) | (82 %) |
| Unallocated internal costs: | | | | |
| Preclinical discovery and development | 13,556 | 11,480 | 2,076 | 18 % |
| Pharmaceutical operations | 9,834 | 5,209 | 4,625 | 89 % |
| Clinical development | 2,993 | 1,610 | 1,383 | 86 % |
| Total research and development expenses | $69,611 | $33,439 | $ 36,172 | 108 % |

Research and development expenses increased by $36.2 million, or 108%, in 2015 compared to 2014. During 2015, external costs incurred for eptinezumab increased by $23.7 million, or 168%. The increased level of spending was primarily due to an additional $19.8 million in clinical trial costs related to the ongoing chronic migraine clinical trial, the initiation of the PROMISE 1 clinical trial and $3.6 million in manufacturing costs for eptinezumab drug supply for existing and planned pivotal clinical trials. External costs for ALD1613 increased $5.3 million, which included an additional $4.3 million for costs related to preclinical activities before this product candidate was terminated in mid-2016. Unallocated internal costs also increased by $8.1 million due primarily to an increase in salaries expense of $3.4 million and an increase in stock-based compensation expense of $2.7 million in 2015 as a result of a 47% increase in our research and development headcount to support our planned pivotal trials for eptinezumab.

In August 2014, we regained the worldwide rights to clazakizumab from BMS. BMS was responsible through June 29, 2015 for all costs of the clinical trials that were initiated by BMS prior to August 29, 2014.

General and Administrative Expenses

General and administrative expenses increased by $4.3 million, or 34%, for 2015 compared to 2014. The increase was primarily due to an increase in stock-based compensation expense of $2.1 million and an increase in salaries expense due to a 29% increase in headcount, as well as increases in commercial readiness activities, business insurance and other administrative costs.

Interest Income

The increase of $0.7 million in interest income for 2015 compared to 2014 was due primarily to increases in the average balances of cash, cash equivalents and investments.

Foreign Currency Gain (Loss)

Other income (loss) recognized from net foreign currency gain (loss) increased $0.1 million for 2015 compared to 2014. The net gain in 2015 reflects the impact of an increase in the exchange rate for British pounds relative to U.S. dollars during the year.

Other Income (Expense)

Other income primarily represents incentive payments received by our Australian subsidiary from the Australian government for eligible research and development expenditures in the prior calendar year. We received $84,000 in such incentive payments in 2015 and $45,000 in 2014. The increase in the incentive payments received in 2015 was due to a higher level of eligible expenditures in Australia in 2014 compared to expenditures in 2013.

Liquidity and Capital Resources

Due to our significant research and development expenditures, we have generated significant operating losses from inception and we expect to incur significant operating losses in the future. We have funded our operations primarily through sales of our equity securities and payments from our former collaboration partners. As of December 31, 2016, we had available cash, cash equivalents and investments of $351.9 million, which consisted of cash, money market funds, negotiable certificates of deposit and U.S. government agency obligations. In April 2016, we completed an underwritten public offering of 6,182,795 shares of common stock resulting in net proceeds of $134.9 million, after deducting underwriting discounts, commissions and offering expenses. Cash in excess of immediate requirements is invested with a view toward liquidity and capital preservation, and we seek to minimize the potential effects of concentration and degrees of risk.

We are currently focusing our resources on development of eptinezumab and ALD1910. We may consider possible partnerships for our product candidates or sources of additional equity or debt financing. We forecast a significant increase in expenditures to support our planned BLA submission in the second half of 2018, our commercial readiness activities and our anticipated commercial launch of eptinezumab. Based on projected spending, we believe that our available cash, cash equivalents and investments will be sufficient to fund our anticipated operating requirements through 2017, but planned activities, including commitments for commercial readiness activities, may deplete current cash, cash equivalents and investments in the first quarter of 2018. 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. Furthermore, our operating plans may change, and we may need additional funds to meet operational needs and capital requirements for product development and commercialization sooner than planned. If we are not able to secure adequate additional funding, we have plans to make reductions in certain spending to extend current funds. Should these reductions in spending not be sufficient, we could also be forced to make further reductions in spending, extend payment terms with suppliers, liquidate assets where possible, or suspend or curtail planned programs. In addition, if we are unable to obtain adequate financing when needed, we may have to delay, reduce the scope of, suspend or eliminate one or more of research and development programs or our commercialization efforts. We currently have no credit facility or committed sources of capital. Because of the numerous risks and uncertainties associated with the development and commercialization of our product candidates and the extent to which we may enter into additional collaborations with third parties to participate in their development and commercialization, we are unable to estimate the amounts of increased capital outlays and operating expenditures associated with our current and anticipated clinical trials. Our future funding requirements will depend on many factors, as we:

- continue to prioritize the advancing clinical development of eptinezumab for the prevention of migraine;
- leverage the commercial potential of eptinezumab by commercializing it for the prevention of migraine in the United States, if approved by the FDA;

- advance the ALD1910 program;
- establish a sales, marketing and distribution infrastructure and scale-up manufacturing capabilities to commercialize eptinezumab or any of our future product candidates if they receive regulatory approval;
- enhance operational, financial and information management systems and hire additional personnel, including personnel to support development of our product candidates and, if a product candidate is approved, our commercialization efforts.
- leverage our technology platform to discover future product candidates for areas of unmet need; and
- build a leading biopharmaceutical company to transform current treatment paradigms.

We plan to continue to fund our operations and capital funding needs through equity, debt financing and/or new collaborations. The sale of additional equity would result in dilution to our stockholders. The incurrence of debt financing would result in debt service obligations and the instruments governing such debt could provide for operating and financing covenants that would restrict our operations.

We may consider partnering one or more of our product candidates for further clinical development and commercialization. To the extent that we raise additional capital through marketing and distribution arrangements or other collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our product candidates, future revenue streams, research programs or product candidates or to grant licenses on terms that may not be favorable to us. There are no assurances that we will be able to raise sufficient amounts of funding in the future. If we do need to raise additional capital to fund our operations, funding may not be available to us on acceptable terms, or at all. If we are not able to secure adequate additional funding, we have plans to make reductions in certain spending to extend current funds. Should these not be sufficient, we could also be forced to make further reductions in spending, extend payment terms with suppliers, liquidate assets where possible, and/or suspend or curtail planned programs. In addition, if we are unable to obtain adequate financing when needed, we may have to delay, reduce the scope of, suspend or eliminate one or more of research and development programs or our commercialization efforts. Any of these actions could harm our business, results of operations and future prospects.

Historical Cash Flow Trends

The following table summarizes our cash flows for the periods indicated:

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2016 | 2015 | 2014 |
| | (in thousands) | | |
| Net cash used in operating activities | $(159,687) | $(81,233) | $(47,657) |
| Net cash used in investing activities | (67,720) | (167,267) | (9,734) |
| Net cash provided by financing activities | 137,110 | 408,206 | 80,982 |

Cash Used in Operating Activities

Net cash used in operating activities includes net income (loss), adjusted for non-cash charges and the changes in deferred revenue and components of working capital. Net cash used in operating activities was $159.7 million in 2016 compared to $81.2 million in 2015. The $78.5 million increase in net cash used in operating activities in 2016 compared to 2015 was driven primarily by an increase in net loss of $70.8 million, offset by an increase in stock-based compensation of $7.8 million due to increases in headcount to support our programs under development, and the change in accounts payable and accrued liabilities increased by $2.7 million and $3.6 million, respectively. In addition, cash used in operating activities increased by $21.6 million primarily related to prepaid manufacturing costs in support of drug development for our clinical trials.

Net cash used in operating activities was $33.6 million higher in 2015 compared to 2014 in which net cash used in operating activities was $47.7 million and we had net income of $8.9 million. The increase in net cash used in operating activities was due primarily to an increase in net loss of $94.4 million, increases in stock-based compensation, changes in accounts payable, accrued liabilities and prepaid manufacturing, offset by a decrease in deferred revenue of $54.3 million related to our former agreement with BMS.

Cash Used in Investing Activities

Net cash used in investing activities was $67.7 million, $167.3 million and $9.7 million in 2016, 2015 and 2014, respectively, due primarily to purchases of investments, offset in part by sales and maturities of investments. Purchases of property and equipment

used cash of $6.6 million, $1.2 million and $0.6 million in 2016, 2015 and 2014, respectively. We anticipate additional purchases of property and equipment for tenant improvements in support of additional leased space for the foreseeable future.

Cash Provided by Financing Activities

Net cash provided by financing activities in 2016 was $137.1 million due primarily to the April 2016 public offering in which we received proceeds of $134.9 million net of underwriting discounts, commissions and offering costs, and $2.2 million from the exercise of stock options and purchases under the employee stock purchase plan.

Net cash provided by financing activities in 2015 was $408.2 million due primarily to underwritten public offerings of our common stock in January and June 2015 in which we received $406.6 million net of underwriting discounts, commissions and offering costs, and $1.5 million from the exercise of stock options and purchases under the employee stock purchase plan.

Net cash provided by financing activities in 2014 was $81.0 million due to our IPO, in which we received proceeds of $80.3 million net of underwriting discounts and commissions and offering costs, and $0.8 million from the exercise of stock options and purchases under the employee stock purchase plan.

Off-Balance Sheet Arrangements

We did not have any off-balance sheet arrangements during 2016.

Contractual Obligations

Our contractual obligations as of December 31, 2016 were as follows:

| | Total | Less Than 1 Year | 1-3 Years | 3-5 Years | More Than 5 Years |
|---|---|---|---|---|---|
| | (in thousands) | | | | |
| Operating lease obligations[1] | $9,609 | $1,166 | $4,415 | $4,028 | $ — |

| | | | | | |
|---|---|---|---|---|---|
| License agreements[2] | 625 | 50 | 150 | 150 | 275 |
| Purchase obligations[3] | 19,660 | 19,660 | — | — | — |
| Contract manufacturing obligations[4] | 200,283 | 79,376 | 120,907 | — | — |
| Total contractual obligations | $230,177 | $100,252 | $125,472 | $ 4,178 | $ 275 |

(1) Represents future minimum lease payments under our non-cancelable operating lease. The minimum lease payments above do not include any related common area maintenance charges or real estate taxes.
(2) Some of our licensing agreements obligate us to pay a royalty on net sales of products utilizing licensed technology. Such royalties are dependent on future product sales and are not provided for in the table above as they are not estimable.
(3) We enter into agreements in the normal course of business with contract research organizations for clinical trials and with vendors for preclinical research studies and other services and products for operating purposes which are cancelable at any time by us, generally upon 30 days prior written notice. These payments are not included in this table of contractual obligations.
(4) Represents contractual obligations related to manufacturing our product candidates for use in our clinical trials, including long-term stability studies. Includes estimated purchase obligations as of December 31, 2016 under agreements with third-party contract manufacturing organizations for larger scale production of eptinezumab that became effective during the twelve months ended December 31, 2016. We expect to incur additional purchase obligations relating to future purchase orders under such agreements.

Newly Adopted Accounting Pronouncements

For a discussion of recently issued accounting pronouncements, please see Note 2 to our consolidated financial statements, which are included in this report.

Critical Accounting Policies and Significant Judgments and Estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our financial statements, which have been prepared in accordance with United States generally accepted accounting principles, or U.S. GAAP. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported revenues generated and expenses incurred during the reporting periods. Our estimates are based on our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about

the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. We believe that the accounting policies discussed below are critical to understanding our historical and future performance, as these policies relate to the more significant areas involving management's judgments and estimates.

Equity Method of Accounting

We have a relationship with a variable interest entity ("VIE"). We evaluate VIEs to determine whether we are the primary beneficiary by performing a qualitative and quantitative analysis of each VIE that includes a review of, among other factors, the VIE's capital structure, contractual terms, related party relationships, our fee arrangements and the design of the VIE. This analysis includes determining whether we (1) have the power to direct matters that most significantly impact the activities of the VIE, and (2) have the obligation to absorb losses or the right to receive benefits of the VIE that could potentially be significant to the VIE.

In circumstances where we are not the primary beneficiary, but we have the ability to exercise significant influence over the operating and financial policies of a company in which we have an investment, we utilize the equity method of accounting for recording investment activity. In assessing whether we exercise significant influence, we consider the nature and magnitude of our investment, the voting and protective rights we hold, any participation in the governance of the other company, and other relevant factors such as the presence of a collaboration or other business relationship. Under the equity method of accounting, we record in our results of operations our share of income or loss of the other company. If our share of losses exceeds the carrying value of our investment, we will suspend recognizing additional losses and will continue to do so unless we commit to providing additional funding. We monitor our investment to evaluate whether any decline in value has occurred that would be other-than-temporary, based on the implied value of recent company financings, public market prices of comparable companies, and general market conditions. The carrying value of the investment is included in our consolidated balance sheet as investment in unconsolidated entity.

Revenue Recognition

We recognize revenues from collaboration, license or research service contract arrangements when persuasive evidence of an arrangement exists, delivery has occurred or services have been rendered, the price is fixed or determinable and collectability is reasonably assured.

We evaluate multiple-element arrangements to determine (1) the deliverables included in the arrangement and (2) whether the individual deliverables represent separate units of accounting or whether they must be accounted for as a single unit of accounting. This evaluation involves subjective determinations and requires us to make judgments about the individual deliverables and whether such deliverables are separable from the other aspects of the contractual relationship. Deliverables are considered separate units of accounting provided that the delivered item has value to the customer on a standalone basis, and if the arrangement includes a general right of return with respect to the delivered item, delivery or performance of the undelivered item is considered probable and substantially in our control. In assessing whether an item has standalone value, we consider factors such as the research, development, manufacturing and commercialization capabilities of the collaboration partner and the availability of the associated expertise in the general marketplace. In addition, we consider whether the collaboration partner can use any other deliverable for its

intended purpose without the receipt of the remaining deliverable, whether the value of the deliverable is dependent on the undelivered item and whether there are other vendors that can provide the undelivered items. For revenue arrangements entered into prior to January 1, 2011, we were also required to evaluate whether there was fair value of the undelivered elements in the arrangement. The deliverables under our 2009 BMS collaboration agreement did not qualify as separate units of accounting and accordingly are accounted for as a single unit of accounting.

The consideration received under an arrangement which contains separate units of accounting is allocated among the separate units using the relative selling price method. We determine the estimated selling price for units of accounting within each arrangement using vendor-specific objective evidence, or VSOE, of selling price, if available, third-party evidence, or TPE, of selling price if VSOE is not available, or best estimate of selling price, or BESP, if neither VSOE nor TPE is available.

When we have substantive performance obligations under an arrangement accounted for as one unit of accounting, revenues are recognized using either a time-based or proportional performance-based approach. When we cannot estimate the total amount of performance obligations that are to be provided under the arrangement, a time-based method is used. Under the time-based method, revenues are recognized over the arrangement's estimated performance period based on the elapsed time compared to the total estimated performance period. When we are able to estimate the total amount of performance obligations under the arrangement, revenues are recognized using a proportional performance model. Under this approach, revenue recognition is based on costs incurred to date compared to total expected costs to be incurred over the performance period as this is considered to be representative of the delivery of service under the arrangement. Changes in estimates of total expected performance costs or service obligation time period are accounted for prospectively as a change in estimate. Under both methods, revenues recognized at any point in time are limited to the amount of noncontingent payments received or due.

We may also perform research and development activities on behalf of collaborative partners that are paid for by the collaborators. For research and development activities which are not determined to be separate units of accounting based on the

criteria above, revenues for these research and development activities are recognized using the single unit of accounting method for that collaborative arrangement. For research and development activities which are determined to be separate units of accounting, arrangement consideration is allocated and revenues are recognized as services are delivered, assuming the general criteria for revenue recognition noted above have been met. The corresponding research and development costs incurred under these contracts are included in research and development expense in the consolidated statements of operations.

We generally invoice collaborators upon the completion of the effort, based on the terms of each agreement. Amounts earned, but not yet collected from the collaborators, if any, are included in accounts receivable in the accompanying consolidated balance sheets. Deferred revenue arises from payments received in advance of the culmination of the earnings process. Deferred revenue expected to be recognized within the next 12 months is classified as a current liability. Deferred revenue will be recognized as revenue in future periods when the applicable revenue recognition criteria have been met.

Accrued Expenses

As part of the process of preparing financial statements, we are required to estimate and accrue expenses, the largest of which are research and development expenses. Costs for certain development activities are recognized based on an evaluation of the progress to completion of specific tasks using information and data provided to us by our vendors and our clinical sites. This process involves the following:

- communicating with our applicable personnel to identify services that have been performed on our behalf and estimating the level of service performed and the associated cost incurred for the service when we have not yet been invoiced or otherwise notified of actual cost;

- estimating and accruing expenses in our financial statements as of each balance sheet date based on facts and circumstances known to us at the time; and

- periodically confirming the accuracy of our estimates with selected service providers and making adjustments, if necessary.

Examples of estimated research and development expenses that we accrue include:

- fees paid to CROs in connection with preclinical and toxicology studies and clinical trials;

- fees paid to clinical sites in connection with clinical trials.

We base our expense accruals related to clinical trials on our estimates of the services received and efforts expended pursuant to contracts with multiple research institutions and CROs that conduct and manage clinical trials on our behalf. The financial terms of these agreements vary from contract to contract and may result in uneven payment flows. Payments under some of these contracts depend on factors, such as the successful enrollment of patients and the completion of clinical trial milestones. In accruing service fees, we estimate the time period over which services will be performed and the level of effort to be expended in each period. If we do not identify costs that we have begun to incur or if we underestimate or overestimate the level of services performed or the costs of these services, our actual expenses could differ from our estimates. For service contracts entered into that include a nonrefundable prepayment for service the upfront payment is deferred and recognized in the consolidated statement of operations as the services are rendered.

Other than described above, we have not experienced significant changes in our critical accounting policies after a reporting period. However, due to the nature of estimates, we cannot assure you that we will not make changes to our estimates in the future as we become aware of additional information about the status or conduct of our clinical trials and other research activities.

Stock-Based Compensation

Stock-based compensation cost is measured on the grant date, based on the estimated fair value of the award using a Black-Scholes pricing model and recognized as an expense over the employee’s requisite service period on a straight-line basis. We recorded stock-based compensation expense of $14.0 million, $6.1 million and $1.3 million for 2016, 2015 and 2014, respectively. At December 31, 2016, we had $39.1 million and $1.9 million of total unrecognized stock-based compensation expense, net of estimated forfeitures, related to stock option grants and employee stock purchase plan awards, respectively, that will be recognized over a weighted average period of 2.9 years and 1.1 years, respectively. We expect to continue to grant stock options pursuant to our 2014 Equity Incentive Plan and to allow employees to purchase shares of our common stock pursuant to our 2014 Employee Stock Purchase Plan, and to the extent that we do, our stock-based compensation expense recognized in future periods will likely increase.

We account for stock-based compensation arrangements with non-employees using a fair value approach. The fair value of these options is measured using the Black-Scholes option pricing model reflecting the same assumptions as applied to employee options in

each of the reported periods, other than the expected life, which is assumed to be the remaining contractual life of the option. The compensation costs of these arrangements are subject to remeasurement over the vesting terms as earned.

Prior to our IPO, the fair value of our common stock underlying stock options was historically determined by our board of directors, with assistance from management, based upon information available at the time of grant. Given the absence of a public trading market for our common stock, and in accordance with the American Institute of Certified Public Accountants Practice Aid, Valuation of Privately-Held-Company Equity Securities Issued as Compensation, or the Practice Aid, our board of directors exercised reasonable judgment and considered numerous objective and subjective factors to determine the best estimate of the fair value of our common stock at each grant date. Following our IPO, the fair value per share of our common stock for purposes of determining stock-based compensation is the closing price of our common stock as reported on The NASDAQ Stock Market on the applicable grant date.

Key Assumptions

Our Black-Scholes option-pricing model requires the input of highly subjective assumptions, including the expected volatility of the price of our common stock, the expected term of the option, risk-free interest rates, the expected dividend yield of our common stock and, for the period prior to our IPO, the fair value of the underlying common stock. These estimates involve inherent uncertainties and the application of management's judgment. If factors change and different assumptions are used, our stock-based compensation expense could be materially different in the future.

In determining the fair value of stock awards granted, the following weighted average assumptions were used in the Black-Scholes option pricing model for awards granted in the periods indicated:

| | Stock Options Years Ended December 31, | | | Employee Stock Purchase Plan Year Ended December 31, | | |
|---|---|---|---|---|---|---|
| | 2016 | 2015 | 2014 | 2016 | 2015 | 2014 |
| Volatility | 60.5% | 59.5% | 66.1% | 68.0% | 57.0% | 59.1% |
| Expected term (years) | 6.1 | 6.1 | 6.1 | 1.4 | 0.9 | 0.6 |
| Risk-free interest rate | 1.4% | 1.6% | 1.9% | 0.8% | 0.3% | 0.1% |
| Dividend rate | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

Income Taxes

We use the asset and liability method of accounting for income taxes. Deferred income tax assets and liabilities are recognized for the future tax consequences attributable to the differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax basis. Deferred income tax assets and liabilities are measured using enacted tax rates expected to be in effect when such assets and liabilities are recovered or settled. The effect on deferred income tax assets and liabilities of a change in tax rates is recognized in the period that includes the enactment date. We determine deferred income tax assets including net operating losses and liabilities, based on temporary differences between the book and tax bases of assets and liabilities. We believe that it is currently more

likely than not that our deferred income tax assets will not be realized, and as such, we have recorded a full valuation allowance.

We utilize a two-step approach for evaluating uncertain tax positions. Step one, recognition, requires us to determine if the weight of available evidence indicates that a tax position is more likely than not to be sustained upon audit, including resolution of related appeals or litigation processes, if any. If a tax position is not considered “more likely than not” to be sustained, no benefits of the position are recognized. If we determine that a position is “more likely than not” to be sustained, then we proceed to step two, measurement, which is based on the largest amount of benefit which is more likely than not to be realized on effective settlement. This process involves estimating our actual current tax exposure, including assessing the risks associated with tax audits, together with assessing temporary differences resulting from the different treatment of items for tax and financial reporting purposes. If actual results differ from our estimates, our net operating loss and credit carryforwards could be materially impacted.

We file U.S. federal income and Australia tax returns. For 2016, we anticipate filing a tax return for state income tax purposes. To date, we have not been audited by the Internal Revenue Service, Australian Tax Office or any state income tax authority. As of December 31, 2016, our total deferred income tax assets were $136.8 million. Due to our history of losses and evaluation of available positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax planning strategies, and the ability to carry back losses to prior years, we have determined that it is more likely than not that our deferred income tax assets will not be realized, and therefore, the deferred income tax assets are fully offset by a valuation allowance at December 31, 2016. The deferred income tax assets were primarily comprised of U.S. net operating loss carryforwards, or NOLs, and tax credit carryforwards. As of December 31, 2016, we had NOLs of $379.9 million and federal tax credit carryforwards of $13.1 million to offset future taxable income or offset income taxes due. These NOLs expire from 2025 to 2036 and the tax credit carryforwards expire from 2024 to 2036, if not utilized.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

Interest Rate Risk

The primary objective of our investment activities is to preserve our capital to fund our operations. We also seek to maximize income from our investments without assuming significant risk. To achieve our objectives, we maintain a portfolio of cash equivalents and investments in a variety of securities of high credit quality. As of December 31, 2016, we had cash, cash equivalents and investments of $351.9 million consisting of cash, money market accounts, negotiable certificates of deposit in highly rated financial institutions in the United States and U.S. government agency obligations. A portion of our investments may be subject to interest rate risk and could fall in value if market interest rates increase. We have estimated the effect on our investment portfolio of a hypothetical increase in interest rates by one percent to be a reduction of $1.0 million in the fair value of our investments as of December 31, 2016. In addition, a hypothetical decrease of 10% in the effective yield of our investments would reduce our expected investment income by approximately $0.2 million over the next twelve months based on our investment balance at December 31, 2016.

Foreign Currency Risk

We contract for the conduct of certain clinical development activities with vendors in Australia and we contract for the conduct of manufacturing activities in the United Kingdom, Switzerland and Austria. Our foreign subsidiaries in Australia and Ireland also maintain bank accounts in their local currencies which are Australian dollars and Euros. We are subject to exposure due to fluctuations in foreign exchange rates in connection with these currencies, as well as fluctuations in British pounds and Swiss francs. We manage a portion of these cash flow exposures through our bank accounts in which we hold foreign currencies. Our holdings in foreign currencies are marked to market at the end of each period and any net change is recorded as gains or losses in the consolidated statements of operations. As of December 31, 2016, we held the U.S. dollar equivalent of $2.8 million in British pounds, $0.1 million in Swiss francs, $0.6 million in Australian dollars, and $0.3 million in Euros. A hypothetical 10% change in the exchange rate between the U.S. dollar and the British pounds, Swiss francs, Australian dollars, and Euros from the December 31, 2016 rate would have increased/decreased our total unrealized foreign currency loss on our holdings by approximately $0.4 million. We generally transfer funds to our Australian subsidiary and our Irish subsidiary to fund operating needs within 30 days of disbursement and these cash balances are also subject to exposure due to fluctuations in exchange rates. For the year ended December 31, 2016, we recorded a net foreign currency loss of $0.3 million in our consolidated statements of operations.

Item 8. Financial Statements and Supplementary Data

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

ALDER BIOPHARMACEUTICALS, INC.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Alder BioPharmaceuticals, Inc.:

In our opinion, the accompanying consolidated balance sheets and the related consolidated statements of operations, comprehensive income (loss), convertible preferred stock and stockholders' equity (deficit) and cash flows present fairly, in all material respects, the financial position of Alder BioPharmaceuticals, Inc. and its subsidiaries at December 31, 2016 and December 31, 2015, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2016 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, 2016, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company's management is responsible for these 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 Annual Report on Internal Control Over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on these financial statements and on the Company's internal control over financial reporting based on our audits (which were integrated audits in 2016 and 2015). We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. 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.

As discussed in Note 1 to the consolidated financial statements, the Company will require additional financing to fund future operations and may be required to reduce planned expenditures. Management's plans in regard to this matter are described in Note 1.

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

Seattle, Washington

February 23, 2017

Alder BioPharmaceuticals, Inc.

Consolidated Balance Sheets

| | December 31, | |
|---|---|---|
| | 2016 | 2015 |
| | (in thousands, except share and per share data) | |
| Assets | | |
| Current assets | | |
| Cash and cash equivalents | $116,216 | $206,492 |
| Short-term investments | 235,651 | 98,680 |
| Prepaid expenses and other assets | 40,380 | 17,029 |
| Inventory | 936 | — |
| Total current assets | 393,183 | 322,201 |
| Long-term investments | — | 75,840 |
| Property and equipment, net | 7,076 | 1,974 |
| Investment in unconsolidated entity | 865 | — |
| Other assets | 8,030 | 12 |
| Total assets | $409,154 | $400,027 |
| Liabilities and stockholders' equity | | |
| Current liabilities | | |
| Accounts payable | $10,361 | $4,727 |
| Accrued liabilities | 15,437 | 7,583 |
| Deferred rent | 92 | 62 |
| Total current liabilities | 25,890 | 12,372 |
| Long-term deferred rent | 481 | 138 |
| Total liabilities | 26,371 | 12,510 |
| Commitments and contingencies (Note 15) | | |
| Stockholders' equity | | |
| Preferred stock; $0.0001 par value; 10,000,000 shares authorized; no shares issued and outstanding | — | — |
| Common stock; $0.0001 par value; 200,000,000 shares authorized; 50,368,206 and 43,706,789 shares issued and outstanding, respectively | 5 | 4 |
| Additional paid-in capital | 761,456 | 610,390 |
| Accumulated deficit | (378,630) | (222,376) |
| Accumulated other comprehensive loss | (48) | (501) |
| Total stockholders' equity | 382,783 | 387,517 |
| Total liabilities and stockholders' equity | $409,154 | $400,027 |

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

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Alder BioPharmaceuticals, Inc.

Consolidated Statements of Operations

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2016 | 2015 | 2014 |
| | (in thousands, except share and per share data) | | |
| Revenues | | | |
| Collaboration and license agreements | $113 | $— | $54,705 |
| Operating expenses | | | |
| Cost of sales | 113 | — | — |
| Research and development | 132,760 | 69,611 | 33,439 |
| General and administrative | 26,148 | 16,718 | 12,462 |
| Total operating expenses | 159,021 | 86,329 | 45,901 |
| Gain on license of clazakizumab | 1,050 | — | — |
| Income (loss) from operations | (157,858) | (86,329) | 8,804 |
| Other income (expense) | | | |
| Interest income | 1,966 | 702 | 44 |
| Foreign currency gain (loss) | (349) | 73 | 15 |
| Other income | 172 | 84 | 45 |
| Total other income, net | 1,789 | 859 | 104 |
| Net income (loss) before equity in net loss of unconsolidated entity | (156,069) | (85,470) | 8,908 |
| Equity in net loss of unconsolidated entity | (185) | — | — |
| Net income (loss) | $(156,254) | $(85,470) | $8,908 |
| Net income (loss) per share - basic | $(3.23) | $(2.11) | $0.43 |
| Net income (loss) per share - diluted | $(3.23) | $(2.11) | $0.30 |
| Weighted average number of common shares used in net income (loss) per share - basic | 48,407,565 | 40,586,980 | 20,506,565 |
| Weighted average number of common shares used in net income (loss) per share - diluted | 48,407,565 | 40,586,980 | 29,427,287 |

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

Alder BioPharmaceuticals, Inc.

Consolidated Statements of Comprehensive Income (Loss)

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2016 | 2015 | 2014 |
| | (in thousands) | | |
| Net income (loss) | $(156,254) | $(85,470) | $8,908 |
| Other comprehensive income (loss): | | | |
| Unrealized gain (loss) on securities available-for-sale, net of tax | 432 | (470) | (8) |
| Foreign currency translation income (loss), net of tax | 21 | (9) | (23) |
| Total other comprehensive income (loss) | 453 | (479) | (31) |
| Comprehensive income (loss) | $(155,801) | $(85,949) | $8,877 |

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

Alder BioPharmaceuticals, Inc.

Consolidated Statements of Convertible Preferred Stock and Stockholders' Equity (Deficit)

| ertible Preferred Stock | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A | | Series B | | Series C | | Series D | | Common Stock | | Additional Paid-in Capital | Accumula |
| s | Amount | Shares | Amount | Shares | Amount | Shares | Amount | Shares | Amount | | Deficit |
| ousands, except for share data) | | | | | | | | | | | |
| 0,267 | $11,276 | 4,556,638 | $16,242 | 6,767,673 | $40,120 | 5,819,559 | $43,736 | 988,685 | $— | $2,443 | $(145,814 |
| | — | — | — | — | — | — | — | — | — | — | 8,908 |
| | — | — | — | — | — | — | — | — | — | — | — |
| 0,267) | (11,276) | (4,556,638) | (16,242) | (6,767,673) | (40,120) | (5,819,559) | (43,736) | 20,914,137 | 2 | 111,372 | — |
| | — | — | — | — | — | — | — | 8,875,396 | 1 | 80,258 | — |
| | — | — | — | — | — | — | — | 186,207 | — | 486 | — |
| | — | — | — | — | — | — | — | 32,101 | — | 273 | — |
| | — | — | — | — | — | — | — | — | — | 1,250 | — |
| | — | — | — | — | — | — | — | 30,996,526 | 3 | 196,082 | (136,906 |
| | — | — | — | — | — | — | — | — | — | — | (85,470 |
| | — | — | — | — | — | — | — | — | — | — | — |
| | — | — | — | — | — | — | — | 12,068,539 | 1 | 406,633 | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| — | — | — | — | — | — | — | 548,491 | — | 701 | — |
| — | — | — | — | — | — | — | 93,233 | — | 835 | — |
| — | — | — | — | — | — | — | — | — | 6,139 | — |
| — | — | — | — | — | — | — | 43,706,789 | 4 | 610,390 | (222,376 |
| — | — | — | — | — | — | — | — | — | — | (156,254 |
| — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | 6,182,795 | 1 | 134,870 | — |
| — | — | — | — | — | — | — | 376,919 | — | 921 | — |
| — | — | — | — | — | — | — | 101,703 | — | 1,318 | — |
| — | — | — | — | — | — | — | — | — | 13,957 | — |
| $— | — | $— | — | $— | — | $— | 50,368,206 | $5 | $761,456 | $(378,630 |

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

Alder BioPharmaceuticals, Inc.

Consolidated Statements of Cash Flows

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2016 | 2015 | 2014 |
| | (in thousands) | | |
| Operating activities | | | |
| Net income (loss) | $(156,254) | $(85,470) | $8,908 |
| Adjustments to reconcile net loss to net cash used in operating activities | | | |
| Non-cash gain on license of clazakizumab in exchange for investment in unconsolidated entity | (1,050) | — | — |
| Equity in net loss of unconsolidated entity | 185 | — | — |
| Depreciation and amortization | 1,674 | 751 | 701 |
| Loss on retirement of property and equipment | — | — | 2 |
| Stock-based compensation | 13,957 | 6,139 | 1,250 |
| Other non-cash charges, net | 407 | 17 | — |
| Changes in operating assets and liabilities | | | |
| Accounts receivable | — | 113 | 203 |
| Prepaid expenses and other assets | (31,374) | (9,744) | (5,196) |
| Inventory | (936) | — | — |
| Accounts payable | 5,488 | 2,816 | (312) |
| Accrued liabilities | 7,843 | 4,273 | 835 |
| Deferred rent | 373 | (128) | 276 |
| Deferred revenue | — | — | (54,324) |
| Net cash used in operating activities | (159,687) | (81,233) | (47,657) |
| Investing activities | | | |
| Purchases of investments | (165,871) | (185,629) | (11,045) |
| Proceeds from maturities of investments | 104,765 | 19,335 | 1,960 |
| Proceeds from sales of investments | — | 250 | — |
| Purchases of property and equipment | (6,619) | (1,223) | (649) |
| Proceeds from sale of property and equipment | 5 | — | — |
| Net cash used in investing activities | (67,720) | (167,267) | (9,734) |
| Financing activities | | | |
| Proceeds from issuance of common stock, net of offering costs | 134,871 | 406,634 | 80,259 |
| Deferred offering costs | — | 36 | (36) |
| Proceeds from exercise of stock options and employee stock purchase plan | 2,239 | 1,536 | 759 |
| Net cash provided by financing activities | 137,110 | 408,206 | 80,982 |
| Effect of exchange rate changes on cash | 21 | (9) | (23) |
| Net increase (decrease) in cash and cash equivalents | (90,276) | 159,697 | 23,568 |
| Cash and cash equivalents | | | |
| Beginning of period | 206,492 | 46,795 | 23,227 |
| End of period | $116,216 | $206,492 | $46,795 |

| | | | |
|---|---|---|---|
| Supplemental disclosures: | | | |
| Purchases of property and equipment included in accounts payable and accrued liabilities | $503 | $347 | $— |
| Conversion of convertible preferred stock into common stock | $— | $— | $111,374 |

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

Alder BioPharmaceuticals, Inc.

Notes to Consolidated Financial Statements

1. Nature of Business

Alder BioPharmaceuticals, Inc. (the “Company”) is a clinical-stage biopharmaceutical company that discovers, develops and seeks to commercialize therapeutic antibodies with the potential to meaningfully transform current treatment paradigms. The Company has developed a proprietary antibody platform designed to select and manufacture antibodies that have the potential to maximize efficacy as well as speed of onset and durability of therapeutic response. The Company was incorporated in Delaware on May 20, 2002 and is located in Bothell, Washington.

Liquidity

The Company has an accumulated deficit as of December 31, 2016. To date, the Company has funded its operations primarily through sales of its capital stock and payments from its former collaboration partners, and will require substantial additional capital for research and product development.

The Company forecasts a significant increase in expenditures to support the planned Biologics License Application submission, commercial readiness activities and anticipated commercial launch of eptinezumab. Based on projected spending, the Company has sufficient cash, cash equivalents and investments to meet its anticipated operating requirements through 2017, but planned activities, including commitments for commercial readiness activities, may deplete current cash, cash equivalents and investments in the first quarter of 2018. The Company plans to continue to fund its operations and capital funding needs through equity, debt financing, and/or new collaborations. There are no assurances that the Company will be able to raise sufficient amounts of funding in the future. If the Company needs to raise additional capital to fund its operations, funding may not be available on acceptable terms, or at all. If the Company is not able to secure adequate additional funding, it has plans to make reductions in certain spending to extend current funds. Should these not be sufficient, the Company could also be forced to make further reductions in spending, extend payment terms with suppliers, liquidate assets where possible, and/or suspend or curtail planned programs. In addition, if the Company is unable to obtain adequate financing when needed, it may have to delay, reduce the scope of, suspend or eliminate one or more of research and development programs or its commercialization efforts. Any of these actions could harm the Company’s business, results of operations and future prospects.

2. Summary of Significant Accounting Policies

Principles of Consolidation

The accompanying consolidated financial statements reflect the accounts of Alder BioPharmaceuticals, Inc. and its wholly owned subsidiaries, Alder BioPharmaceuticals Pty. Ltd., AlderBio Holdings LLC, and Alder BioPharmaceuticals Limited. All inter-company balances and transactions have been eliminated in consolidation. The consolidated financial statements have been prepared in conformity with United States generally accepted accounting principles ("U.S. GAAP").

The Company has a relationship with a variable interest entity ("VIE"). The Company evaluates VIEs to determine whether the Company is the primary beneficiary by performing a qualitative and quantitative analysis of each VIE that includes a review of, among other factors, the VIE's capital structure, contractual terms, related party relationships, the Company's fee arrangements and the design of the VIE. This analysis includes determining whether the Company (1) has the power to direct matters that most significantly impact the activities of the VIE, and (2) has the obligation to absorb losses or the right to receive benefits of the VIE that could potentially be significant to the VIE.

In circumstances where the Company is not the primary beneficiary, but the Company has the ability to exercise significant influence over the operating and financial policies of a company in which it has an investment, the Company utilizes the equity method of accounting for recording investment activity. In assessing whether the Company exercises significant influence, it considers the nature and magnitude of the investment, the voting and protective rights held, any participation in the governance of the other company, and other relevant factors such as the presence of a collaboration or other business relationship. Under the equity method of accounting, the Company records in its results of operations its share of income or loss of the other company. If the Company's share of losses exceeds the carrying value of its investment, it will suspend recognizing additional losses and will continue to do so unless the Company commits to providing additional funding. The Company monitors its investment to evaluate whether any decline in value has occurred that would be other-than-temporary, based on the implied value of recent company financings, public market prices of comparable companies, and general market conditions. The carrying value of the investment is included in the Company's consolidated balance sheet as investment in unconsolidated entity.

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure 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.

Foreign Currency Translation

The functional currency of the Company's subsidiaries is the U.S. dollar and all assets and liabilities of the subsidiaries are translated using year-end exchange rates and revenues and expenses are translated at average exchange rates for the year. Translation adjustments are reflected in foreign currency gain (loss) in the consolidated statements of operations.

Cash and Cash Equivalents

The Company considers all highly liquid investments purchased with original maturities less than 90 days to be cash equivalents. Cash and cash equivalents consist primarily of money market funds and are stated at cost, which approximates fair value.

Investments

Investments consist of negotiable certificates of deposit and U.S. government agency obligations. The Company classifies its securities as available-for-sale, which are reported at estimated fair value with unrealized gains and losses included in accumulated other comprehensive income (loss) in stockholders' equity. Investments in securities with maturities of less than one year, or where management's intent is to use the investments to fund current operations, or to make them available for current operations, are classified as short-term investments.

Realized gains and realized losses are included in interest income. Cost of investments for purposes of computing realized and unrealized gains and losses are based on the specific identification method. Interest and dividends earned on all securities are included in interest income.

Concentration of Credit Risk

The Company is exposed to credit risk from its deposits of cash and cash equivalents and restricted cash in excess of amounts insured by the Federal Deposit Insurance Corporation.

The Company had one collaborator which accounted for 100% of total revenues for the year ended December 31, 2016. The Company had no revenue for the year ended December 31, 2015. For the year ended December 31, 2014, one of the Company's collaborators accounted for nearly 100% of total revenues.

Fair Value of Financial Instruments

The Company holds financial instruments that are measured at fair value which is determined according to a fair value hierarchy that prioritizes the inputs and assumptions used, and the valuation techniques used to measure fair value. The three levels of the fair value hierarchy are described as follows:

Level 1 Inputs are unadjusted quoted prices in active markets for identical assets or liabilities.

Level 2 Inputs are quoted prices for similar assets and liabilities in active markets or quoted prices for identical or similar instruments in markets that are not active and model-derived valuations in which all significant inputs and significant value drivers are observable in active markets.

Level 3 Inputs are unobservable inputs based on the Company's assumptions and valuation techniques used to measure assets and liabilities at fair value. The inputs require significant management judgment or estimation.

The Company's assessment of the significance of a particular input to the fair value measurement requires judgment and may affect the valuation of fair value assets and liabilities and their placement within the fair value hierarchy levels.

The Company established the fair value of its assets and liabilities using the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date and established a fair value hierarchy based on the inputs used to measure fair value.

Property and Equipment

Property and equipment consists of laboratory equipment, computer equipment and software, leasehold improvements, and furniture and fixtures. Property and equipment are stated at cost, net of accumulated depreciation and amortization. Depreciation and amortization are computed using the straight-line method over the estimated useful lives of the depreciable assets.

| | |
|---|---|
| Computer equipment and software | 3 - 5 years |
| Laboratory equipment | 4 years |
| Furniture and fixtures | 5 years |
| Leasehold improvements | Shorter of asset’s useful life or remaining term of lease |

Upon retirement or sale, the cost of assets disposed of and the related accumulated depreciation are removed from the accounts and any resulting gain or loss is reflected in the statements of operations in the year of disposition. Additions and improvements that increase the value or extend the life of an asset are capitalized. Repairs and maintenance costs are expensed as incurred.

Rent Expense, Deferred Rent and Leasehold Improvements

Rent expense for leases that provide free rent periods and scheduled rent increases during the lease term is recognized on a straight-line basis over the term of the related lease. Leasehold improvements that are funded by landlord incentives or allowances under operating leases are recorded as a component of deferred rent and are amortized as a reduction of rent expense over the term of the related lease.

Impairment of Long-Lived Assets

The Company evaluates the recoverability of long-lived assets in accordance with authoritative guidance on accounting for the impairment or disposal of long-lived assets. The Company evaluates long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying value of these assets may not be recoverable. Such impairment is recognized in the event the net book value of such assets exceeds their fair value. If the carrying value of the net assets assigned exceeds the fair value of the assets, then the second step of the impairment test is performed in order to determine the implied fair value. No impairment of long-lived assets occurred in the periods presented.

Segment and Geographic Information

Operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision makers, or decision making group, in making decisions on how to allocate resources and assess performance. The Company's chief operating decision makers are its chief executive officer and its board of directors. The Company manages its business as one operating segment; however, the Company operates in three geographic regions: United States (Bothell, WA), Australia, and Ireland. Substantially all of the Company's assets are located in, and revenues are generated in, the United States.

Revenue Recognition

The Company recognizes revenues from collaboration, license or research service contract arrangements when persuasive evidence of an arrangement exists, delivery has occurred or services have been rendered, the price is fixed or determinable and collectability is reasonably assured.

The Company evaluates multiple-element arrangements to determine (1) the deliverables included in the arrangement and (2) whether the individual deliverables represent separate units of accounting or whether they must be accounted for as a single unit of accounting. This evaluation involves subjective determinations and requires the Company to make judgments about the individual deliverables and whether such deliverables are separable from the other aspects of the contractual relationship. Deliverables are considered separate units of accounting provided that the delivered item has value to the customer on a standalone basis, and if the arrangement includes a general right of return with respect to the delivered item, delivery or performance of the undelivered item is

considered probable and substantially in the Company's control. In assessing whether an item has standalone value, the Company considers factors such as the research, development, manufacturing and commercialization capabilities of the collaboration partner and the availability of the associated expertise in the general marketplace. In addition, the Company considers whether the collaboration partner can use any other deliverable for its intended purpose without the receipt of the remaining deliverable, whether the value of the deliverable is dependent on the undelivered item and whether there are other vendors that can provide the undelivered items. For revenue arrangements entered into prior to January 1, 2011, the Company was also required to evaluate whether there was fair value of the undelivered elements in the arrangement. The deliverables under the 2009 Bristol-Myers Squibb ("BMS") collaboration agreement did not qualify as separate units of accounting and accordingly are accounted for as a single unit of accounting.

The consideration received under an arrangement which contains separate units of accounting, is allocated among the separate units using the relative selling price method. The Company determines the estimated selling price for units of accounting within each arrangement using vendor-specific objective evidence, ("VSOE"), of selling price, if available, third-party evidence, ("TPE"), of selling price if VSOE is not available, or best estimate of selling price, ("BESP"), if neither VSOE nor TPE is available.

When the Company has substantive performance obligations under an arrangement accounted for as one unit of accounting, revenues are recognized using either a time-based or proportional performance-based approach. When the Company cannot estimate the total amount of performance obligations that are to be provided under the arrangement, a time-based method is used. Under the time-based method, revenues are recognized over the arrangement's estimated performance period based on the elapsed time compared to the total estimated performance period. When the Company is able to estimate the total amount of performance obligations under the arrangement, revenues are recognized using a proportional performance model. Under this approach, revenue recognition is based on costs incurred to date compared to total expected costs to be incurred over the performance period as this is considered to be representative of the delivery of service under the arrangement. Changes in estimates of total expected performance costs or service obligation time period are accounted for prospectively as a change in estimate. Under both methods, revenues recognized at any point in time are limited to the amount of noncontingent payments received or due.

The Company may also perform research and development activities on behalf of collaborative partners that are paid for by the collaborators. For research and development activities which are not determined to be separate units of accounting based on the criteria above, revenues for these research and development activities are recognized using the single unit of accounting method for that collaborative arrangement. For research and development activities which are determined to be separate units of accounting, arrangement consideration is allocated and revenues are recognized as services are delivered, assuming the general criteria for revenue recognition noted above have been met. The corresponding research and development costs incurred under these contracts are included in research and development expense in the consolidated statements of operations.

The Company generally invoices its collaborators upon the completion of the effort, based on the terms of each agreement. Amounts earned, but not yet collected from the collaborators, if any, are included in accounts receivable in the accompanying consolidated balance sheets. Deferred revenue arises from payments received in advance of the culmination of the earnings process. Deferred revenue expected to be recognized within the next 12 months is

classified as a current liability. Deferred revenue will be recognized as revenue in future periods when the applicable revenue recognition criteria have been met.

Research and Development

Research and development expenses consist primarily of salaries and benefits, stock-based compensation, occupancy, materials and supplies, contracted research, consulting arrangements and other expenses incurred to sustain the Company's research and development programs. Research and development costs are expensed as incurred. In-licensing fees and other costs to acquire technologies that are utilized in research and development and that are not expected to have alternative future use are expensed when incurred. For service contracts entered into that include a nonrefundable prepayment for service the upfront payment is deferred and recognized in the consolidated statements of operations as the services are rendered.

Accrued Expenses

The preparation of the consolidated financial statements requires management to estimate and accrue expenses, the largest of which are research and development expenses. Costs for certain development activities are recognized based on an evaluation of the progress to completion of specific tasks using information and data provided by vendors and clinical sites. The Company bases its expense accruals related to clinical trials on its estimates of the services received and efforts expended pursuant to contracts with clinical research organizations that conduct and manage clinical trials on our behalf. Actual expenses could differ from the Company's estimates. To date, the Company has not experienced significant changes in its estimates of accrued research and development expenses after a reporting period.

Patent Costs

Costs related to filing and pursuing patent applications are expensed as incurred, as recoverability of such expenditures is uncertain. These patent related legal costs are reported as a component of general and administrative expenses.

Income Taxes

The Company accounts for income taxes under the asset and liability method. Under the asset and liability method, deferred income tax assets and liabilities are recognized for the future tax consequences attributable to the differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax basis and are measured using the tax income rates that will be in effect when the differences are expected to reverse. A valuation allowance is recorded when it is more likely than not that some of the net deferred income tax asset will not be realized.

The Company determines whether a tax position is more likely than not to be sustained upon examination based on the technical merits of the position. For tax positions meeting the more-likely-than-not threshold, the tax amount recognized in the financial statements is reduced by the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement with the relevant tax authority.

Stock-Based Compensation

The Company recognizes stock-based compensation expense on stock awards granted to employees and members of the board of directors based on their estimated grant date fair value using the Black-Scholes option pricing model. This Black-Scholes option pricing model uses various inputs to measure fair value, including estimated market value of the Company’s underlying common stock at the grant date, expected term, estimated volatility, risk-free interest rate and expected dividend yields of the Company’s common stock. The Company recognizes stock-based compensation expense, net of estimated forfeitures, in the consolidated statements of operations on a straight-line basis over the requisite service period. The Company applies an estimated forfeiture rate derived from historical and expected future employee termination behavior. If the actual number of forfeitures differs from those estimated by management, adjustments to compensation expense may be required in future periods.

For stock options granted to non-employees, the fair value of the stock options is estimated using the Black-Scholes option pricing model. This model utilizes the estimated market value of the Company's underlying common stock at the measurement date, the contractual term of the option, estimated volatility, risk-free interest rates and expected dividend yields of the Company's common stock. The Company recognizes stock-based compensation expense, net of estimated forfeitures, in the consolidated statements of operations on a straight-line basis over the requisite service period. Measurement of stock-based compensation is subject to periodic adjustment for changes in the fair value of the award.

Comprehensive Income (Loss)

Comprehensive income (loss) is defined as the change in equity of a business enterprise during a period from transactions, and other events and circumstances from non-owner sources, and currently consists of net income (loss), changes in unrealized gains and losses on available-for-sale securities and gains and losses on foreign currency translation.

Recent Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update (ASU) No. 2014-09, Revenue from Contracts with Customers (Topic 606), which will replace most existing revenue recognition guidance in U.S. GAAP when it becomes effective. This ASU stipulates that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The ASU also requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and changes in judgments and assets recognized from costs incurred to obtain or fulfill a contract. In March 2016, the FASB issued ASU 2016-08, Principal versus Agent Considerations (Reporting Revenue Gross versus Net). This ASU clarifies the implementation guidance on principal versus agent considerations. In April 2016, the FASB issued ASU 2016-10, Identifying Performance Obligations and Licensing. This ASU clarifies two aspects of ASU 2014-09, Revenue from Contracts with Customers (Topic 606): identifying performance obligations and the licensing implementation guidance. In May 2016, the FASB issued ASU 2016-12, Narrow-Scope Improvements and Practical Expedients. This ASU addresses certain

issues in ASU 2014-09, Revenue from Contracts with Customers (Topic 606) regarding assessing collectability, presentation of sales taxes, noncash consideration, and completed contracts and contract modifications at transition. In December 2016, the FASB issued ASU 2016-20, Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers. This ASU amends narrow aspects of ASU 2014-09, Revenue from Contracts with Customers.

The new revenue standards are effective for annual reporting periods beginning after December 15, 2017, including interim periods within that reporting period. Early adoption is permitted for annual reporting periods beginning after the original effective date of December 15, 2016. The standards permit the use of either the full retrospective or modified retrospective method. The Company does not believe adopting this guidance will have a material impact on its financial statements as the Company is not currently generating material revenues.

In July 2015, the FASB issued ASU 2015-11, Inventory-Simplifying the Measurement of Inventory. This ASU states that the subsequent measurement of inventory should be at the lower of cost and net realizable value. This ASU will become effective for annual periods beginning after December 15, 2016. The Company does not believe adopting this guidance will have a material impact on its consolidated financial statements as the Company does not currently hold material inventory.

In January 2016, the FASB issued ASU 2016-01, Financial Instruments-Overall. This ASU addresses certain aspects of recognition, measurement, presentation, and disclosure of financial instruments. This ASU will become effective for annual periods beginning after December 15, 2017. The Company is currently evaluating the impact of the adoption of this ASU on its consolidated financial statements.

In February 2016, the FASB issued ASU 2016-02, Leases. This ASU requires the recognition of lease assets and lease liabilities on the balance sheet and disclosure of key information about leasing arrangements. This ASU will become effective for annual periods beginning after December 15, 2018. The Company expects adopting this guidance will result in an increase in the assets and liabilities on its consolidated balance sheets and will have some impact on its consolidated statements of operations and statement of cash flows.

In March 2016, the FASB issued ASU 2016-07, Simplifying the Transition to the Equity Method of Accounting. This ASU eliminates the requirement of a retroactive adjustment when an investment qualifies for use of the equity method. This ASU will become effective for annual periods and interim periods within those fiscal years beginning after December 15, 2016. The Company does not believe adopting this guidance will have a material impact on its consolidated financial statements as the Company’s investment is currently being accounted for under the equity method.

In March 2016, the FASB issued ASU 2016-09, Improvements to Employee Share-Based Payment Accounting. This ASU addresses areas for simplification in several aspects of the accounting for share-based payment including income tax consequences, classification of awards as either equity or liabilities, and classification on the statement of cash flows. This ASU will become effective for annual periods beginning after December 15, 2016. The Company does not believe adopting this guidance will have a material impact on its consolidated financial statements as the Company is currently in a net operating loss position and does not have income tax expense.

In June 2016, the FASB issued ASU 2016-13, Financial Instruments – Credit Losses. This ASU replaces the incurred loss impairment methodology with a methodology that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to inform credit loss estimates. This ASU will become effective for annual periods beginning after December 15, 2019. The Company is currently evaluating the impact of the adoption of this ASU on its consolidated financial statements.

In August 2016, the FASB issued ASU 2016-15, Statement of Cash Flows – Classification of Certain Cash Receipts and Cash Payments. This ASU addresses eight specific cash flow issues with the objective of reducing the existing diversity in practice. This ASU will become effective for annual periods beginning after December 15, 2017. The Company does not believe adopting this guidance will have a material impact as it relates to the treatment of equity distributions which are currently not material to the Company.

In October 2016, the FASB issued ASU 2016-16, Income Taxes. This ASU would require the reporting entity to recognize the income tax consequences of intra-entity transfers of assets other than inventory when the transfer occurs. This ASU will become effective for annual periods beginning after December 15, 2017. The Company does not believe adopting this guidance will have a material impact as the Company currently is in a net operating loss position.

In October 2016, the FASB issued ASU 2016-17, Consolidation – Interests Held Through Related Parties That Are Under Common Control. This ASU amends ASU 2015-02- Consolidation: Amendments to the Consolidation Analysis, which will not require the reporting entity that is the primary beneficiary to consider indirect interests held through related parties that are under common control with the reporting entity to be equivalent of direct interests in their entirety. This ASU will become effective for annual periods beginning after December 15, 2016. The Company does not believe adopting this guidance will have a material impact as the Company currently does not have indirect interests held through related parties that are under common control.

In November 2016, the FASB issued ASU 2016-18, Statement of Cash Flows – Restricted Cash. This ASU would require restricted cash and restricted cash equivalents to be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. This ASU will become effective for annual periods beginning after December 15, 2017. The Company does not believe adopting this guidance will have a material impact as the Company currently does not have restricted cash.

In December 2016, the FASB issued ASU 2016-19, Technical Corrections and Improvements. This ASU amendment represent changes to clarify, correct errors, or make minor improvements to the Accounting Standards Codification by eliminating inconsistencies and providing clarifications. This ASU is effective upon issuance of this update with the exception of six amendments that require transition guidance which allow for early adoption. The Company is currently evaluating the impact of the adoption of this ASU on its consolidated financial statements.

In January 2017, the FASB issued ASU 2017-01, Business Combinations – Clarifying the Definition of a Business. This ASU clarifies the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or business. This ASU will become effective for annual periods beginning after December 15, 2017. The Company is currently evaluating the impact of the adoption of this ASU on its consolidated financial statements.

In January 2017, the FASB issued ASU 2017-03, Accounting Changes and Error Corrections (Topic 250) and Investments-Equity Method and Joint Ventures (Topic 323). This ASU adds an SEC paragraphs and amends other Topics pursuant to an SEC Staff Announcement made at the September 22, 2016 and November 17, 2016 Emerging Issues Task Force (EITF) meeting. This ASU is effective immediately. The Company is currently evaluating the impact of the adoption of this ASU on its consolidated financial statements.

The Company has reviewed other recent accounting pronouncements and concluded that they are either not applicable to the business, or that no material effect is expected on the consolidated financial statements as a result of future adoption.

3. Net Income (Loss) Per Share

Basic net income (loss) per share is calculated by dividing net income (loss) by the weighted average common shares outstanding during the period, without consideration for common stock equivalents. Diluted net income (loss) per share is calculated by adjusting the weighted average common shares outstanding for the dilutive effect of common stock equivalents outstanding for the period, determined using the treasury-stock method.

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2016 | 2015 | 2014 |
| Net income (loss) (in thousands) | $(156,254) | $(85,470) | $8,908 |
| Denominator | | | |
| Weighted average common shares outstanding - basic | 48,407,565 | 40,586,980 | 20,506,565 |
| Dilutive effect of common shares from preferred stock | — | — | 7,276,974 |
| Dilutive effect of common shares from employee stock purchase plan | — | — | 7,854 |
| Dilutive effect of common shares from stock options | — | — | 1,635,894 |
| Weighted average common shares outstanding - diluted | 48,407,565 | 40,586,980 | 29,427,287 |
| Net income (loss) per share - basic | $(3.23) | $(2.11) | $0.43 |
| Net income (loss) per share - diluted | $(3.23) | $(2.11) | $0.30 |

The following weighted average numbers of shares of outstanding stock options and awards under the employee stock purchase plan were excluded from the calculation of diluted net loss per share for 2016, 2015 and 2014 because including them would have had an anti-dilutive effect. The convertible preferred stock numbers shown in the table are on a common stock equivalent basis.

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2016 | 2015 | 2014 |
| Stock options | 4,350,900 | 2,890,409 | 209,460 |
| Employee stock purchase plan | 102,485 | 114,937 | — |
| | 4,453,385 | 3,005,346 | 209,460 |

4. Fair Value Disclosures

The following table presents the Company's financial instruments by level within the fair value hierarchy:

| | Fair Value Measurement Using | | | |
|---|---|---|---|---|
| | Level 1 | Level 2 | Level 3 | Total |
| | (in thousands) | | | |
| As of December 31, 2016 | | | | |
| Cash equivalents | | | | |
| Money market funds | $111,149 | $— | $ — | $111,149 |
| Short-term investments | | | | |
| Negotiable certificates of deposit | — | 10,997 | — | 10,997 |
| U.S. government agency obligations | — | 224,654 | — | 224,654 |
| | $111,149 | $235,651 | $ — | $346,800 |
| | | | | |
| As of December 31, 2015 | | | | |
| Cash equivalents | | | | |
| Money market funds | $203,330 | $— | $ — | $203,330 |
| Short-term investments | | | | |
| Negotiable certificates of deposit | — | 17,236 | — | 17,236 |
| U.S. government agency obligations | — | 81,444 | — | 81,444 |
| Long-term investments | | | | |
| Negotiable certificates of deposit | — | 999 | — | 999 |
| U.S. government agency obligations | — | 74,841 | — | 74,841 |
| | $203,330 | $174,520 | $ — | $377,850 |

The Company's negotiable certificates of deposit and U.S. government agency obligations are valued using fair value measurements that are considered to be Level 2. The investment custodian provides the Company with valuations of its securities portfolio. The primary source for the security valuation is Interactive Data Corporation ("IDC"), which evaluates securities based on market data. IDC utilizes evaluated pricing models that vary by asset class and include available trade, bid, and other market information. Generally, the methodology includes broker quotes, proprietary models, vast descriptive terms and conditions databases, as well as extensive quality control programs. The custodian utilizes proprietary valuation matrices for valuing all negotiable certificates of deposit.

Accounts payable and accrued liabilities are carried at cost, which approximates fair value due to the short-term nature of these financial instruments.

5. Investments

Short-term and long-term investments consisted of the following securities available-for-sale for the date indicated:

| | Amortized Cost | Gross unrealized gains | Gross unrealized losses | Fair Value |
|---|---|---|---|---|
| | (in thousands) | | | |
| Type of security as of December 31, 2016 | | | | |
| Negotiable certificates of deposit maturing in one year or less | $11,000 | $ 1 | $ (4) | $10,997 |
| U.S. government agency obligations maturing in one year or less | 224,697 | 27 | (70) | 224,654 |
| Total available-for-sale securities | $235,697 | $ 28 | $ (74) | $235,651 |
| Type of security as of December 31, 2015 | | | | |
| Negotiable certificates of deposit maturing in one year or less | $17,250 | $ — | $ (14) | $17,236 |
| Negotiable certificates of deposit maturing after one year through two years | 1,000 | — | (1) | 999 |
| U.S. government agency obligations maturing in one year or less | 81,582 | — | (138) | 81,444 |
| U.S. government agency obligations maturing after one year through two years | 75,166 | — | (325) | 74,841 |
| Total available-for-sale securities | $174,998 | $ — | $ (478) | $174,520 |

All short-term investments had a contractual maturity of one year or less.

The decreases in value of these investments are primarily related to changes in interest rates and are considered to be temporary in nature. The Company evaluates, among other things, the duration and extent to which the fair value of a security is less than its cost, the financial condition of the issuer, and the intent to sell, or whether it is more likely than not that the Company will be required to sell the security before recovery of the amortized cost basis. The Company's realized gains and realized losses on sales of available-for-sale securities were not material for the years ended

December 31, 2016, 2015 and 2014. No securities have been in a continuous unrealized loss position for more than 12 months as of December 31, 2016.

6. Prepaid Expenses and Other Assets

Prepaid expenses and other assets consisted of the following for the dates indicated:

| | December 31, | |
|---|---|---|
| | 2016 | 2015 |
| | (in thousands) | |
| Current assets: | | |
| Advance payments for research and development | $39,274 | $16,287 |
| Prepaid insurance, other prepaid general and administrative expenses and other assets | 1,106 | 742 |
| | $40,380 | $17,029 |
| Long-term assets: | | |
| Advance payments for research and development | $8,000 | $— |
| Other long-term assets | 30 | 12 |
| | $8,030 | $12 |

Long-term assets include an $8.0 million reservation fee paid to a third party to secure additional production capacity, which may become non-refundable if the Company does not fulfill an obligation to negotiate a contract manufacturing agreement in good faith. The outcome of the negotiation could affect the realizability of this asset. In addition, upon execution of a contract manufacturing agreement with such third party, the Company may be obligated to pay additional manufacturing reservation fees and make purchase commitments.

7. Property and Equipment

Property and equipment consisted of the following for the dates indicated:

| | December 31, | |
|---|---|---|
| | 2016 | 2015 |
| | (in thousands) | |
| Computer equipment and software | $1,098 | $891 |
| Laboratory equipment | 6,858 | 5,392 |
| Furniture and fixtures | 1,167 | 231 |

| | | |
|---|---|---|
| Leasehold improvements | 5,269 | 1,850 |
| | 14,392 | 8,364 |
| Less: Accumulated depreciation and amortization | (7,316 ) | (6,390) |
| | $7,076 | $1,974 |

Depreciation and amortization expense totaled $1.7 million, $0.8 million, and $0.7 million for the years ended December 31, 2016, 2015 and 2014, respectively.

8. Investment in Unconsolidated Entity

In May 2016, the Company licensed the exclusive worldwide rights to its product candidate clazakizumab to Vitaeris, Inc. (“Vitaeris”), a newly formed company based in Vancouver, British Columbia, that is pursuing innovative therapeutic indications in chronic inflammatory diseases. In exchange for the rights to clazakizumab, the Company received an equity stake in Vitaeris and is eligible to receive royalties and certain other payments. In addition, Randall C. Schatzman, Ph.D., the Company’s president and chief executive officer, joined Vitaeris’ board of directors. Since clazakizumab was developed internally by the Company, all previous expenditures to develop the compound were recognized as expense in the period incurred and there was no carrying value on the Company’s consolidated balance sheet. As of December 31, 2016, the Company recognized a gain on the license agreement of $1.1 million, which was determined as the fair value of the Company’s equity stake in Vitaeris. The Company recognized $0.1 million in revenue and cost of sales for the year ended December 31, 2016 related to the sale of drug supply inventory to Vitaeris at cost.

As of December 31, 2016, the Company held $0.9 million in inventory of finished goods related to clazakizumab on its consolidated balance sheet. Clazakizumab has not received regulatory approval for commercial sale and the related inventory is currently held only for resale associated with the Vitaeris agreement. The Company values inventory at the lower of cost or market value which is determined using the specific identification basis. Inventory is reduced to net realizable value for excess, obsolete or unsalable inventory.

Vitaeris is a VIE for which the Company is not the primary beneficiary as the Company does not have the power to direct the activities that most significantly influence the economic performance of the entity. In addition to the Company's exchange of license rights for clazakizumab, Vitaeris was capitalized through cash investments by other parties. The investment in Vitaeris is accounted for under the equity method of accounting because the Company holds common stock of Vitaeris and has significant influence over the operating and financial policies of Vitaeris through its ownership, license arrangement and representation on the board of directors. Therefore, the Company records its share of any loss or income generated by Vitaeris, which is recorded on a three-month lag, within the consolidated statement of operations. The investment is reflected as an investment in unconsolidated entity on the Company's consolidated balance sheet which represents the investment in Vitaeris, net of the Company's portion of any generated loss or income. The Company recorded $0.2 million in net loss with respect to Vitaeris for the year ended December 31, 2016. This net loss reduced the Company's carrying value of the Company's investment in Vitaeris to $0.9 million which is classified as a non-current asset as of December 31, 2016. The Company has no implied or unfunded commitments related to Vitaeris and its maximum exposure to loss is limited to the current carrying value of the investment.

9. Accrued Liabilities

Accrued liabilities consisted of the following for the dates indicated:

| | December 31, | |
|---|---|---|
| | 2016 | 2015 |
| | (in thousands) | |
| Compensation and benefits | $4,833 | $3,156 |
| Contracted research and development | 9,837 | 3,675 |
| Professional services and other | 767 | 752 |
| | $15,437 | $7,583 |

10. Collaboration and License Agreements

Revenues recognized and cash payments received under collaboration and license agreements with pharmaceutical and biotechnology companies were as follows:

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2016 | 2015 | 2014 |
| | (in thousands) | | |
| Revenues recognized: | | | |
| Bristol-Myers Squibb: | | | |
| Amortization of deferred revenue from upfront payments | $— | $— | $35,403 |
| Recognition of milestone payments | — | — | 7,706 |
| Recognition of reimbursed clinical supply and development costs | — | — | 11,431 |
| Bristol-Myers Squibb total | — | — | 54,540 |
| Other | 113 | — | 165 |
| Total revenues recognized | $113 | $— | $54,705 |
| Cash payments received: | | | |
| Bristol-Myers Squibb: | | | |
| Reimbursed clinical supply and development costs | $— | $113 | $320 |
| Bristol-Myers Squibb total | — | 113 | 320 |
| Other | 113 | — | 265 |
| Total cash payments received | $113 | $113 | $585 |

Termination of License and Collaboration Agreement with Bristol-Myers Squibb

In November 2009, the Company entered into a license and collaboration agreement with Bristol-Myers Squibb, or BMS, for the development and commercialization of clazakizumab, an antibody product candidate for the treatment of rheumatoid arthritis, psoriatic arthritis and cancer. Under the terms of the agreement, the Company received a non-refundable upfront payment of $85 million and granted BMS worldwide exclusive rights to develop and commercialize clazakizumab for all indications other than cancer. On August 29, 2014, the Company received written notice that BMS elected to terminate the license and collaboration agreement effective as of December 29, 2014 (the “Termination Date”), at which time all rights to clazakizumab were returned to the Company.

In addition to the upfront payment of $85 million, the Company received an aggregate of $18.5 million in milestone payments from BMS and was reimbursed for clinical supply and development costs of $26.9 million. The Company recognized revenue relating to the deliverables in the agreement as a single unit of accounting using a time-based proportional performance model. The proportional performance model results in the recognition of the upfront license

fee and other payments received under the arrangement over the estimated performance period based on the passage of time. As a result of the termination of the agreement, the estimated development period was adjusted to conclude as of the Termination Date, which was accounted for prospectively as a change in accounting estimate. In 2014, the Company recognized revenue related to the BMS agreement in the amount of $54.5 million. The acceleration of revenue recognition as a result of the early termination of the collaboration agreement resulted in the Company reporting net income for 2014.

BMS was responsible through June 29, 2015 for all costs of the clinical trials that were initiated prior to August 29, 2014. On the Termination Date, all rights granted to BMS with respect to clazakizumab terminated and reverted to the Company, and BMS granted to our wholly owned subsidiary, AlderBio Holdings LLC (“AlderBio”), an exclusive license, with the right to grant sublicenses, under certain BMS intellectual property solely to make, have made, use, import, export, offer for sale, and sell clazakizumab. BMS transferred to the Company the Investigational New Drug Application that BMS filed for clazakizumab with the U.S. Food and Drug Administration and all material data related to clazakizumab. The Company has agreed to purchase a certain portion of BMS’ existing manufactured drug supply of clazakizumab with an option to purchase additional drug supply at cost.

The Company will be required to pay a low single-digit royalty to BMS on sales of clazakizumab unless the regulatory approval of clazakizumab is not based in whole or in part upon data from BMS’s Phase 2b clinical trial(s) in rheumatoid arthritis and psoriatic

arthritis. Aside from those clinical trial expenses that BMS is obligated to pay after the Termination Date, the Company is responsible for performing and funding any new clazakizumab development and clinical trial activities, which could significantly delay or result in the discontinuation of the development of clazakizumab.

Other Collaborations

In 2016 and 2014, the Company recognized revenue under agreements with biotechnology companies in accordance with the Company's revenue recognition policy.

11. Common and Convertible Preferred Stock

There were 50,368,206 and 43,706,789 shares of common stock issued and outstanding as of December 31, 2016 and 2015, respectively. In connection with the IPO, the Company amended and restated its Amended and Restated Certificate of Incorporation to change the authorized capital stock to 200,000,000 shares designated as common stock and 10,000,000 shares designated as preferred stock, all with a par value of $0.0001 per share.

The Company has reserved for future issuance the following number of shares of common stock:

| | December 31, 2016 |
|---|---|
| Stock options outstanding | 4,918,052 |
| Reserved for stock incentive plan | 2,080,483 |
| Reserved for employee stock purchase plan | 793,995 |
| | 7,792,530 |

Common Stock

Each share of common stock is entitled to one vote. The holders of common stock are also entitled to receive dividends whenever funds are legally available and when declared by the board of directors, subject to the prior rights of holders of other classes of stock outstanding.

In May 2014, the Company completed an initial public offering ("IPO") of its common stock. In connection with its IPO, the Company issued and sold 8,875,396 shares of its common stock, which included 875,396 shares the Company issued pursuant to the underwriters' partial exercise of their over-allotment option, at a price to the public of $10.00 per share. The Company's shares of common stock began trading on the NASDAQ Global Market on May 8, 2014. As a result of the IPO, the Company received approximately $80.3 million in net proceeds, after deducting underwriting discounts and commissions of $6.2 million and offering expenses of $2.2 million. At the closing of the IPO, 20,914,137 shares of outstanding convertible preferred stock were automatically converted into 20,914,137 shares of common stock. Following the IPO, there were no shares of preferred stock outstanding.

In January 2015, the Company completed an underwritten public offering of 6,900,000 shares of common stock, including 900,000 shares the Company issued pursuant to the underwriters' exercise of their option to purchase additional shares, at a price to the public of $29.50 per share, for a total net proceeds of $190.7 million, after deducting underwriting discounts and commissions of $12.2 million and offering expenses of $0.6 million.

In June 2015, the Company completed an underwritten public offering of 5,168,539 shares of common stock, including 674,157 shares the Company issued pursuant to the underwriters' exercise of their option to purchase additional shares, at a price to the public of $44.50 per share, for a total net proceeds of $215.9 million, after deducting underwriting discounts and commissions of $13.8 million and offering expenses of $0.3 million.

In April 2016, the Company completed an underwritten public offering of 6,182,795 shares of common stock, including 806,451 shares the Company issued pursuant to the underwriters' exercise of their option to purchase additional shares, at a price to the public of $23.25 per share, for a total net proceeds of $134.9 million, after deducting underwriting discounts and commissions of $8.6 million and offering expenses of $0.3 million.

Convertible Preferred Stock

Prior to the completion of the Company's IPO, the Company issued Series A, Series B, Series C and Series D convertible preferred stock (collectively, the "preferred stock"). The preferred stock contained a provision that upon a change of control of the Company, the preferred stock was redeemable at the holder's option and, therefore, the balances were classified outside of stockholders' equity (deficit) in the accompanying consolidated balance sheets. The shares of preferred stock were convertible at the

option of the holder at any time, or would automatically convert into shares of common stock at the effective conversion rate upon the closing of an initial public offering in which the public offering proceeds exceeded $40 million, or upon the affirmative vote by holders of at least two-thirds of the outstanding shares of preferred stock. No dividends were declared or paid.

At the closing of the IPO, 20,914,137 shares of outstanding convertible preferred stock were automatically converted into 20,914,137 shares of common stock. Following the IPO, there were no shares of preferred stock outstanding.

12. Stock-based Compensation

2014 Equity Incentive Plan

In April 2014, the Company's stockholders approved the 2014 Equity Incentive Plan (the "2014 Plan"), which became effective in May 2014 at which time the 2005 Stock Plan (the "2005 Plan") was terminated. Until its termination, the 2005 Plan authorized the issuance of up to 2,661,818 shares of the Company's common stock pursuant to the exercise of stock options and other forms of equity compensation. The 2014 Plan authorizes the grant of stock options, other forms of equity compensation, and performance cash awards. The number of shares of common stock reserved for issuance under the 2014 Plan automatically increases on January 1 of each year, beginning on January 1, 2015 and ending on and including January 1, 2024, by 4% of the total number of shares of the Company's capital stock outstanding on December 31 of the preceding calendar year, or a lesser number of shares determined by the Company's board of directors. All options granted under both the 2005 Plan and the 2014 Plan have a maximum 10-year term and generally vest and become exercisable over four years of continued employment or service as defined in each option agreement. A majority of the unvested stock options will vest upon the sale of all or substantially all of the stock or assets of the Company. The board of directors determines the option exercise price and may designate stock options granted as either incentive or nonstatutory stock options. The Company generally grants stock options with exercise prices that equal or exceed the fair value of the common stock on the date of grant.

At December 31, 2016, options to purchase up to 4,918,052 shares of common stock were outstanding and 2,080,483 shares were reserved for future grants under the 2014 Plan. On January 1, 2017, an additional 2,014,728 shares of common stock became available for future grants under the 2014 Plan.

Employee Stock Purchase Plan

In April 2014, the Company's stockholders approved the 2014 Employee Stock Purchase Plan (the "ESPP") which became effective in May 2014. Under the ESPP, eligible employees can authorize payroll deductions for amounts up

to the lesser of 15% of their qualifying wages or the statutory limit under the U.S. Internal Revenue Code. The ESPP provides for offering periods of up to 27 months in duration. Each offering period is comprised of four consecutive purchase periods. The first offering period commenced on May 7, 2014 with four purchase periods ending on the last trading days of November and May through May 2016. Subsequent offering periods and purchase periods will begin on December 1 and June 1 of each year. Participants enrolled in an offering period will continue in that offering period until the earlier of the end of the offering period or the reset of the offering period. A reset occurs if the fair market value of the Company's common shares on any purchase date is less than it was on the first day of the offering period. Participants in an offering period will be granted the right to purchase common shares at a price per share that is 85% of the lesser of the fair market value of the shares at (i) the first day of the offering period or (ii) the end of each purchase period within the offering period. A maximum of 2,000 shares of common stock may be purchased by each participant at each of four purchase dates during the offering period. The fair value of the ESPP options granted is determined using a Black-Scholes model and is amortized on a straight-line basis. The initial number of shares of common stock that may be issued under the ESPP was 274,000 shares and the number of shares reserved for the ESPP automatically increases each year, beginning on January 1, 2015 and continuing through and including January 1, 2024, by the lesser of (1) 1% of the total number of shares of common stock outstanding on December 31 of the preceding calendar year; (2) 750,000 shares of common stock; or (3) such lesser number as determined by the Company's board of directors.  Activity under the ESPP for the years ended December 31, was as follows:

| | Number of shares purchased | | |
|---|---|---|---|
| Purchase price | 2016 | 2015 | 2014 |
| $ 8.50 | 63,291 | 89,440 | 32,101 |
| $ 13.87 | 2,865 | 2,540 | — |
| $ 20.02 | 30,389 | — | — |
| $ 25.56 | 5,158 | — | — |
| $ 36.14 | — | 1,253 | — |
| | 101,703 | 93,233 | 32,101 |

As of December 31, 2016, 793,995 shares of common stock were reserved for future grants under the ESPP. On January 1, 2017, an additional 503,682 shares of common stock became available for future grants under the ESPP.

As of December 31, 2016, the total unrecognized compensation cost related to the ESPP was $1.9 million and will be recognized on a straight-line basis over the weighted average remaining service period of 1.1 years.

The Company uses the Black-Scholes option pricing model to estimate the fair value of stock awards using various assumptions that require management to apply judgment and make estimates, including:

Volatility

The expected volatility has been determined using a weighted average of the historical volatilities of a representative group of publicly traded biopharmaceutical companies for a period equal to the expected term of the option grant.

Expected Term

For purposes of determining the expected term of the options in the absence of sufficient historical data relating to stock-option exercises, the Company uses the “simplified method” as prescribed by the Securities and Exchange Commission to estimate the expected term of stock option grants. Under this approach, the weighted average expected life is presumed to be the average of the contractual term (10 years) and the vesting term (generally four years) of the Company’s stock options, taking into consideration multiple vesting tranches and expectations of the future employee behavior.

Risk-free Rate

The risk-free interest rates used in the Black-Scholes option pricing model are based on the implied yield currently available for U.S. Treasury securities with maturities similar to the expected term of the stock options being valued.

Dividends

The Company has not declared or paid any dividends and does not currently expect to do so in the foreseeable future, and therefore uses an expected dividend yield of zero in the Black-Scholes option pricing model.

In determining the fair value of stock awards granted, the following weighted average assumptions were used in the Black-Scholes option pricing model for awards granted in the periods indicated:

| | Stock Options Years Ended December 31, | | | Employee Stock Purchase Plan Year Ended December 31, | | |
|---|---|---|---|---|---|---|
| | 2016 | 2015 | 2014 | 2016 | 2015 | 2014 |
| Volatility | 60.5% | 59.5% | 66.1% | 68.0% | 57.0% | 59.1% |
| Expected term (years) | 6.1 | 6.1 | 6.1 | 1.4 | 0.9 | 0.6 |
| Risk-free interest rate | 1.4% | 1.6% | 1.9% | 0.8% | 0.3% | 0.1% |
| Dividend rate | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

Stock-Based Compensation

The Company recognizes compensation expense for stock options granted to employees and directors for only the portion of awards expected to vest, on a straight-line basis over the requisite service period. Management has applied an estimated forfeiture rate that was derived from historical employee termination behavior. If the actual number of forfeitures differs from these estimates, additional adjustments to compensation expense may be required in future periods.

The Company records stock-based compensation for awards to non-employees using a fair value measured determined using the Black-Scholes option pricing model which reflects the same assumptions as applied to employee options in each of the reported periods, except for the expected term, for which it uses the remaining contractual life of the option. Stock-based compensation expense for non-employee awards is subject to remeasurement as the underlying equity instruments vest and is recognized as an expense over the period during which services are received. In 2016, 2015 and 2014, the Company recognized $0.1 million, $0.3 million, and $0.2 million of expense, respectively, relating to stock options granted to non-employees.

The following table presents stock-based compensation expense included in the Company’s consolidated statements of operations:

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2016 | 2015 | 2014 |
| | (in thousands) | | |
| Research and development | $7,578 | $3,449 | $701 |
| General and administrative | 6,379 | 2,690 | 549 |
| | $13,957 | $6,139 | $1,250 |

As of December 31, 2016, the total unrecognized compensation cost relating to stock options was $39.1 million and will be recognized on a straight-line basis over the weighted average remaining service period of 2.9 years.

Stock option activity

A summary of the Company’s stock option activity and related information follows:

| | Shares | Weighted average exercise price per share | Weighted average remaining contractual life (years) | Aggregate intrinsic value (in thousands) |
|---|---|---|---|---|
| Options, Outstanding at beginning of period | 2,961,107 | $ 14.29 | 6.7 | $ 57,281 |
| Granted | 2,362,075 | 25.95 | | |
| Exercised | (376,919 ) | 2.44 | | |
| Forfeited and expired | (28,211 ) | 28.44 | | |
| Options, Outstanding at end of period | 4,918,052 | $ 20.72 | 7.8 | $ 23,098 |
| Exercisable at December 31, 2016 | 1,800,362 | $ 11.43 | 5.6 | $ 21,310 |
| Vested and expected to vest at December 31, 2016 | 4,843,599 | $ 20.62 | 7.8 | $ 23,087 |

The following table summarizes the Company’s stock option values:

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2016 | 2015 | 2014 |
| | (in thousands, except per share data) | | |
| Weighted average fair value of option shares granted during the period | $14.63 | $17.43 | $7.25 |
| Total intrinsic value of stock options exercised | 10,179 | 20,389 | 2,590 |
| Total fair value of stock options vested | 9,207 | 2,133 | 683 |

13. Income Taxes

Income (loss) before income taxes consisted of the following:

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2016 | 2015 | 2014 |
| | (in thousands) | | |
| Domestic | $(156,409) | $(85,595) | $8,826 |
| Foreign | 155 | 125 | 82 |
| Income (loss) before income taxes | $(156,254) | $(85,470) | $8,908 |

The effective income tax rate of the Company's provision for income taxes differed from the federal statutory rate of 34% as follows:

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2016 | 2015 | 2014 |
| Federal statutory income tax rate | 34.0 % | 34.0 % | 34.0 % |
| Stock-based compensation | (1.0 %) | (1.0 %) | 0.9 % |
| Research and development credits | 2.4 % | 2.4 % | (13.6%) |
| Other | (0.1 %) | (0.1 %) | 0.9 % |
| Change in valuation allowance | (35.3%) | (35.3%) | (22.2%) |
| Effective tax rate | 0.0 % | 0.0 % | 0.0 % |

The Company's net deferred income tax assets and liabilities are as follows:

| | December 31, | |
|---|---|---|
| | 2016 | 2015 |
| | (in thousands) | |
| Deferred income tax assets: | | |

| | | |
|---|---|---|
| Net operating loss carryforwards | $119,810 | $71,805 |
| Research and development credits | 11,540 | 7,910 |
| Other | 5,443 | 1,961 |
| Total deferred income tax assets | 136,793 | 81,676 |
| Less: Valuation allowance | (136,793) | (81,676) |
| Net deferred income tax assets | $— | $— |

At December 31, 2016, the Company had U.S. net operating loss carryforwards of $379.9 million, which may be used to offset future taxable income. Of this amount, $27.5 million are related to excess tax benefits associated with stock option exercises which are recorded directly to stockholder's equity only when realized. The net operating loss carryforwards expire from 2025 to 2036 if not utilized. In addition, the Company has U.S. research and development tax credit carryforwards of $13.1 million, which will expire from 2024 to 2036. The Company establishes reserves or reduces deferred tax assets to address potential uncertain tax positions that it believes could be challenged by taxing authorities even though the Company believes the positions it has taken are appropriate. The Company reviews the uncertain tax positions as circumstances warrant and adjusts them as events occur that affect the potential liability for additional taxes. It is often difficult to predict the final outcome or timing of resolution of any particular tax matter. Various events, some of which cannot be predicted, such as clarification of tax law by administrative or judicial means, may occur and would require the Company to increase or decrease its uncertain tax positions and effective income tax rate.

In certain circumstances, where there is a change in control, utilization of net operating losses and tax credit carryforwards are subject to certain limitations under Section 382 and 383 of the Internal Revenue Code of 1986, as amended. A change in control is

generally defined as a cumulative change of 50% or more in the ownership positions of certain stockholders during a rolling three-year period. The Company performed a Section 382 analysis and determined that an ownership change occurred and is applicable to NOLs and tax credits created prior to 2016. However, based on the analysis, the Company does not believe that the Section 382 annual limitation will impact the Company's ability to utilize the tax attributes that existed as of the date of the ownership change in a material manner. NOLs and tax credits created after 2015 are not subject to an ownership change. The Company continues to monitor ownership change for purposes of Section 382. If it is determined that Section 382 ownership changes have occurred subsequent to 2015, the net operating losses and tax credit carryforwards may be subject to an additional limitation such that a portion may not be utilizable.

The Company records a valuation allowance to reduce deferred tax assets to the extent it believes more likely than not that a portion of such assets will not be realized. In making such determinations, the Company considers all available positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax planning strategies, and the ability to carry back losses to prior years. Currently the Company believes that it is not more likely than not that it will realize its current and long-term deferred tax assets. Accordingly, a valuation allowance has been recorded against the full value of the deferred income tax assets.

The table below summarizes changes in the deferred tax valuation allowance:

| | Balance at Beginning of Year | Charged to Costs and Expenses | Write-offs | Balance at End of Year |
|---|---|---|---|---|
| | (in thousands) | | | |
| Deferred income tax valuation allowance: | | | | |
| For year ended December 31, 2014 | 53,428 | (1,978) | — | 51,450 |
| For year ended December 31, 2015 | 51,450 | 30,226 | — | 81,676 |
| For year ended December 31, 2016 | 81,676 | 55,117 | — | 136,793 |

The Company determines whether a tax position is more likely than not to be sustained upon examination based on the technical merits of the position in accordance with ASC 740. For tax positions meeting the more likely than not threshold, the tax amount recognized in the financial statements is reduced by the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement with the relevant taxing authority.

The total balance of unrecognized gross tax benefits was as follows:

Years Ended
December 31,

| | 2016 | 2015 | 2014 |
|---|---|---|---|
| | (in thousands) | | |
| Unrecognized tax benefits at beginning of year | $952 | $592 | $383 |
| Additions based on tax positions taken in prior years | 35 | — | 43 |
| Additions based on tax positions taken in the current year | 606 | 360 | 166 |
| Unrecognized tax benefits at end of year | $1,593 | $952 | $592 |

In addition to any uncertain tax positions, it is the Company's policy to recognize potential accrued interest and/or penalties related to such positions within income tax expense. For 2016, 2015 and 2014, the Company has not recognized any liability related to uncertain tax positions and does not anticipate that the amount of existing unrecognized tax benefits will significantly change within the next 12 months.

The Company is subject to U.S. federal income tax audit for tax years after 2012. However, carryforward attributes that were generated prior to 2013 may still be adjusted by the taxing authority upon examination if the attributes have been or will be used in a future period. The Company is also subject to examination of foreign returns tax years 2014 to present as the statute of limitations is still open.

14. Defined Contribution Plan

The Company sponsors a defined contribution plan (the "401(k) Plan") for its full time employees, with eligibility commencing on the month following an employee's date of hire. Employee contributions to the 401(k) Plan are based on a percentage of the employee's gross compensation, limited by Internal Revenue Service guidelines for such plans. The 401(k) Plan provides for matching and discretionary contributions by the Company, which were $0.8 million, $0.4 million, and $0.3 million for the years ended December 31, 2016, 2015 and 2014, respectively.

15. Commitments and Contingencies

The Company had contract manufacturing and purchase obligations totaling $219.9 million at December 31, 2016 related to manufacturing its product candidates for use in clinical trials, including long-term stability studies.

The Company leases office space in four adjacent buildings in Bothell, Washington, for its research and development and administrative activities. In November and December 2016, the Company and the landlords for three of the four buildings which constitute approximately 90% of the total square footage, entered into amendments to the leases under which, among other things, the lease terms were extended to July 31, 2023. The Company also leased approximately 13,000 additional square feet in one of the buildings commencing August 1, 2017, or earlier as the space becomes available and the Company has an option to lease additional space. Rent expense totaled $1.6 million, $0.8 million, and $0.8 million for years ended December 31, 2016, 2015 and 2014, respectively.

Future aggregate minimum payments under noncancelable operating leases as of the date indicated are as follows:

| | December 31, 2016 (in thousands) |
|---|---|
| Years Ending December 31, | |
| 2017 | $ 1,166 |
| 2018 | 1,504 |
| 2019 | 1,434 |
| 2020 | 1,477 |
| 2021 | 1,521 |
| Thereafter | 2,507 |
| Total minimum lease payments | $ 9,609 |

From time to time, the Company may become involved in litigation relating to claims arising from the ordinary course of business. Management believes that there are currently no claims or actions pending against the Company where the ultimate disposition could have a material adverse effect on the Company's results of operations, financial condition or cash flows.

16. Condensed Quarterly Financial Data (unaudited)

The following table contains selected unaudited financial data for each quarter of 2016 and 2015. The unaudited information should be read in conjunction with the Company's financial statements and related notes included elsewhere in this report. The Company believes that the following unaudited information reflects all normal recurring adjustments necessary for a fair presentation of the information for the periods presented. The operating results for any quarter are not necessarily indicative of results for any future period.

| | Three months ended | | | |
|---|---|---|---|---|
| | March 31, | June 30, | September 30, | December 31, |
| | (in thousands, except per share data) | | | |
| 2016 | | | | |
| Total revenues | $— | $113 | $— | $— |
| Net loss | (33,363) | (38,866) | (35,134) | (48,891) |
| Net loss per share - basic and diluted | $(0.76) | $(0.79) | $(0.70) | $(0.97) |
| | | | | |
| 2015 | | | | |
| Total revenues | $— | $— | $— | $— |
| Net loss | (14,653) | (17,655) | (26,997) | (26,165) |
| Net loss per share - basic and diluted | $(0.40) | $(0.46) | $(0.62) | $(0.60) |

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

(a) Evaluation of disclosure controls and procedures. Our management, with the participation of our Chief Executive Officer and our Executive Vice President and Principal Accounting Officer, our principal financial officer, have evaluated our disclosure controls and procedures (as defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, as amended) prior to the filing of this annual report. Based on that evaluation, they have concluded that, as of the end of the period covered by this annual report, our disclosure controls and procedures were, in design and operation, effective at a reasonable assurance level.

(b) Changes in internal control over financial reporting. There have not been any changes in our internal control over financial reporting during the quarter ended December 31, 2016 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

(c) Management's Annual Report on Internal Control Over Financial Reporting. Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) under the Securities Exchange Act of 1934, as amended. Our management conducted an evaluation of the effectiveness of our internal control over financial reporting based on the 2013 framework in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on its evaluation under the framework in Internal Control—Integrated Framework, our management concluded that our internal control over financial reporting was effective as of December 31, 2016.

The effectiveness of our internal control over financial reporting as of December 31, 2016 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which is included in Item 8 in this Annual Report on Form 10-K.

(d) Inherent limitation on the effectiveness of internal control. The effectiveness of any system of internal control over financial reporting, including ours, is subject to inherent limitations, including the exercise of judgment in designing, implementing, operating, and evaluating the controls and procedures, and the inability to eliminate misconduct completely. Accordingly, any system of internal control over financial reporting, including ours, no matter how well designed and operated, can only provide reasonable, not absolute assurances. In addition, 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.

Item 9B. Other Information

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

(1) The information required by this Item concerning our executive officers and our directors and nominees for director will be either included in an amendment to this Annual Report on Form 10-K or found under the section entitled “Proposal No. 1—Election of Directors,” “Information Regarding the Board of Directors and Corporate Governance,” and “Executive Officers” appearing in the 2017 Proxy Statement. Such information is incorporated herein by reference.

(2) The information required by this Item concerning our code of ethics will be either included in an amendment to this Annual Report on Form 10-K or found under the section entitled “Information Regarding the Board of Directors and Corporate Governance” appearing in the 2017 Proxy Statement. Such information is incorporated herein by reference.

(3) The information required by this Item concerning compliance with Section 16(a) of the Securities Exchange Act of 1934 will be either included an amendment to this Annual Report on Form 10-K or found in the section entitled “Section 16(a) Beneficial Ownership Reporting Compliance” appearing in the 2017 Proxy Statement. Such information is incorporated herein by reference.

Item 11. Executive Compensation

The information required by this Item will be either included in an amendment to this Annual Report on Form 10-K or found under the sections entitled “Director Compensation”, “Executive Compensation,” “Executive Compensation—Compensation Discussion and Analysis” and “Equity Compensation Plan Information” appearing in the 2017 Proxy Statement. Such information is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

(1) The information required by this Item with respect to security ownership of certain beneficial owners and management will be either included in an amendment to this Annual Report on Form 10-K or found under the section entitled “Security Ownership of Certain Beneficial Owners and Management” appearing in the 2017 Proxy Statement. Such information is incorporated herein by reference.

(2) The information required by this Item with respect to securities authorized for issuance under our equity compensation plans will be either included in an amendment to this Annual Report on Form 10-K or found under the sections entitled “Equity Compensation Plan Information” appearing in the 2017 Proxy Statement. Such information is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

(1) The information required by this Item concerning related party transactions will be either included in an amendment to this Annual Report on Form 10-K or found under the section entitled “Transactions with Related Persons” appearing in the 2017 Proxy Statement. Such information is incorporated herein by reference.

(2) The information required by this Item concerning director independence will be either included in an amendment to this Annual Report on Form 10-K or found under the sections entitled “Information Regarding the Board of Directors and Corporate Governance— Independence of the Board of Directors” and “Information Regarding the Board of Directors and Corporate Governance—Information Regarding Committees of the Board of Directors” appearing in the 2017 Proxy Statement. Such information is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services

The information required by this Item will be either included in an amendment to this Annual Report on Form 10-K or found under the section entitled “Proposal No. 3—Ratification of Selection of Independent Registered Public Accounting Firm” appearing in the 2017 Proxy Statement. Such information is incorporated herein by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a)(1) Financial Statements—The financial statements filed as part of this Annual Report on Form 10-K are listed on the Index to Consolidated Financial Statements in Item 8.

(a)(2) Financial Statement Schedules

All schedules are omitted because they are not applicable or the required information is shown in the financial statements or the notes thereto.

(a)(3) Exhibits

The exhibits required by Item 601 of Regulation S-K are listed in paragraph (b) below.

(b) Exhibits

The exhibits listed on the Exhibit Index (following the Signatures section of this report) are filed herewith or are incorporated by reference to exhibits previously filed with the SEC.

Item 16. Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

ALDER BIOPHARMACEUTICALS, INC.

By: /s/ Randall C. Schatzman
Randall C. Schatzman, Ph.D.
President and Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1934, this Annual Report on Form 10-K has been signed by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

| Signature | Title | Date |
|---|---|---|
| /s/ Randall C. Schatzman<br>Randall C. Schatzman, Ph.D. | President, Chief Executive Officer and Director (Principal Executive Officer) | February 23, 2017 |
| /s/ Larry K. Benedict<br>Larry K. Benedict | Executive Vice President and Principal Accounting Officer (Principal Financial and Accounting Officer) | February 23, 2017 |
| /s/ Stephen M. Dow<br>Stephen M. Dow | Chairman of the Board of Directors | February 23, 2017 |
| /s/ Paul Carter<br>Paul Carter | Director | February 23, 2017 |
| /s/ Paul Cleveland<br>Paul Cleveland | Director | February 23, 2017 |
| | Director | |

| | | |
|---|---|---|
| /s/ A. Bruce Montgomery<br>A. Bruce Montgomery, M.D. | | February 23, 2017 |
| /s/ Deepa R. Pakianathan<br>Deepa R. Pakianathan, Ph.D. | Director | February 23, 2017 |
| /s/ Heather Preston<br>Heather Preston, M.D. | Director | February 23, 2017 |
| /s/ Clay B. Siegall<br>Clay B. Siegall, Ph.D. | Director | February 23, 2017 |

EXHIBIT INDEX

| Exhibit | | Incorporated by Reference | | | | Filed |
|---|---|---|---|---|---|---|
| Number | Description | Form | File No. | Exhibit | Filing Date | Herewith |
| 3.1 | Amended and Restated Certificate of Incorporation. | 8-K | 001-36431 | 3.1 | May 13, 2014 | |
| 3.2 | Amended and Restated Bylaws. | S-1 | 333-194672 | 3.5 | April 25, 2014 | |
| 4.1 | Amended and Restated Investors' Rights Agreement, dated as of April 16, 2012, by and among Alder BioPharmaceuticals, Inc. and certain of its stockholders. | S-1 | 333-194672 | 4.1 | March 19, 2014 | |
| 4.2 | Amendment No. 1 to Amended and Restated Investors' Rights Agreement, dated as of April 7, 2014, by and among Alder BioPharmaceuticals, Inc. and certain of its stockholders. | S-1 | 333-194672 | 4.2 | April 25, 2014 | |
| 4.3 | Form of Common Stock Certificate. | S-1 | 333-201201 | 4.3 | December 22, 2014 | |
| 10.1 | Form of Indemnity Agreement between the Alder BioPharmaceuticals, Inc. and its directors and officers. | S-1 | 333-194672 | | April 25, 2014 | |
| 10.2+ | 2005 Stock Plan, as amended. | S-1 | 333-194672 | 10.2 | March 19, 2014 | |
| 10.3+ | Forms of Notice of Stock Option Grant, Stock Option Agreement and Exercise Notice and Restricted Stock Purchase Agreement for 2005 Stock Plan. | S-1 | 333-194672 | 10.3 | March 19, 2014 | |
| 10.4+ | 2014 Equity Incentive Plan. | S-1 | 333-194672 | 10.4 | April 25, 2014 | |
| 10.5+ | Form of Stock Option Grant Notice and Option Agreement for the 2014 Equity Incentive Plan. | S-1 | 333-194672 | 10.5 | April 25, 2014 | |
| 10.6+ | 2014 Employee Stock Purchase Plan. | S-1 | 333-194672 | 10.6 | May 1, 2014 | |
| 10.7+ | Amended and Restated Executive Severance Benefit Plan. | | | | | X |
| 10.8+ | Compensation Information for Non-Employee Directors | 10-Q | 001-36431 | 10.1 | November 5, 2015 | |
| 10.9 | License Agreement by and between Alder BioPharmaceuticals, Inc. and the Keck Graduate Institute of Applied Life Sciences, dated October 15, 2004. | S-1 | 333-194672 | 10.11 | May 1, 2014 | |
| 10.10 | Lease by and between Alder BioPharmaceuticals, Inc. and RREEF American REIT II Corp. KK, dated August 5, 2005. | S-1 | 333-194672 | 10.12 | March 19, 2014 | |
| 10.11 | First Amendment to Lease by and between Alder BioPharmaceuticals, Inc. and RREEF American Reit II Corp. KK, dated February 1, 2008. | S-1 | 333-194672 | 10.13 | March 19, 2014 | |

| | | | | | |
|---|---|---|---|---|---|
| 10.12 | Second Amendment to Lease by and between Alder BioPharmaceuticals, Inc. and KBS North Creek, LLC, as successor-in-interest to RREEF American REIT II Corp. KK, dated September 23, 2010. | S-1 | 333-194672 | 10.14 | March 19, 2014 |
| 10.13 | Third Amendment to Lease by and between Alder BioPharmaceuticals, Inc. and KBS North Creek, LLC, as successor-in-interest to RREEF American REIT II Corp. KK, dated August 21, 2013. | S-1 | 333-194672 | 10.15 | March 19, 2014 |
| 10.14 | Fourth Amendment to Lease by and between Alder BioPharmaceuticals, Inc. and KBS North Creek, LLC, as successor-in-interest to RREEF American REIT II Corp. KK, dated November 12, 2015. | 10-K | 001-36431 | 10.17 | February 23, 2016 |
| 10.15 | Fifth Amendment to Lease by and between KBS North Creek LLC, as successor-in-interest to RREEF American REIT II Corp. KK, and Alder Biopharmaceuticals, Inc. dated as of November 18, 2016. | 8-K | 001-36431 | 10.1 | November 21, 2016 |
| 10.16+ | Amended and Restated Offer Letter by and between Alder BioPharmaceuticals, Inc. and Randall C. Schatzman, Ph.D. dated as of July 19, 2005. | S-1 | 333-194672 | 10.16 | March 19, 2014 |

| Exhibit | | Incorporated by Reference | | | | |
|---|---|---|---|---|---|---|
| Number | Description | Form | File No. | Exhibit | Filing Date | Filed Herewith |
| 10.17+ | Amendment to Amended and Restated Offer Letter by and between Alder BioPharmaceuticals, Inc. and Randall C. Schatzman, Ph.D. dated as of April 13, 2012. | S-1 | 333-194672 | 10.17 | March 19, 2014 | |
| 10.18+ | Amended and Restated Offer Letter by and between Alder BioPharmaceuticals, Inc. and John A. Latham, Ph.D., dated as of July 19, 2005. | S-1 | 333-194672 | 10.18 | March 19, 2014 | |
| 10.19+ | Amendment to Amended and Restated Offer Letter by and between Alder BioPharmaceuticals, Inc. and John A. Latham, Ph.D., dated as of April 13, 2012. | S-1 | 333-194672 | 10.19 | March 19, 2014 | |
| 10.20+ | Amended and Restated Offer Letter by and between Alder BioPharmaceuticals, Inc. and Mark J. Litton, Ph.D., MBA, dated as of July 19, 2005. | S-1 | 333-194672 | 10.20 | March 19, 2014 | |
| 10.21+ | Amendment to Amended and Restated Offer Letter by and between Alder BioPharmaceuticals, Inc. and Mark J. Litton, Ph.D., MBA, dated as of April 13, 2012. | S-1 | 333-194672 | 10.21 | March 19, 2014 | |
| 10.22+ | Amended and Restated Offer Letter by and between Alder BioPharmaceuticals, Inc. and Jeffrey T.L. Smith, M.D., FRCP, dated as of July 19, 2005. | S-1 | 333-194672 | 10.22 | March 19, 2014 | |
| 10.23+ | Amendment to Amended and Restated Offer Letter by and between Alder BioPharmaceuticals, Inc. and Jeffrey T.L. Smith, M.D., FRCP, dated as of April 13, 2012. | S-1 | 333-194672 | 10.23 | March 19, 2014 | |
| 10.24+ | Offer Letter by and between Alder BioPharmaceuticals, Inc. and Timothy M. Whitaker, M.D., dated as of June 3, 2016. | | | | | X |
| 10.25+ | Offer Letter by and between Alder BioPharmaceuticals, Inc. and Elisabeth A. Sandoval, dated as of July 26, 2016. | | | | | X |
| 10.26† | Master Product Development and Clinical Supply Agreement by and between Alder BioPharmaceuticals, Inc. and Althea Technologies, Inc., dated March 21, 2011. | S-1 | 333-194672 | 10.24 | May 1, 2014 | |
| 10.27 | First Amendment to Master Product Development and Clinical Supply Agreement between Alder BioPharmaceuticals, Inc. and Althea Technologies, Inc., dated March 15, 2013 | S-1 | 333-194672 | 10.25 | May 1, 2014 | |
| 21.1 | List of subsidiaries of the Registrant. | S-1 | 333-194672 | 21.1 | March 19, 2014 | |
| 23.1 | Consent of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm. | | | | | X |
| 31.1 | Certification of Principal Executive Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended. | | | | | X |
| 31.2 | | | | | | X |

| | | |
|---|---|---|
| | Certification of Principal Financial Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended. | |
| 32.1* | Certification of Principal Executive Officer and Principal Financial Officer Required Under Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. §1350. | X |
| 101.INS | XBRL Instance Document. | X |
| 101.SCH | XBRL Taxonomy Extension Schema Document. | X |
| 101.CAL | XBRL Taxonomy Extension Calculation Linkbase Document. | X |
| 101.DEF | XBRL Taxonomy Extension Definition Linkbase Document | X |
| 101.LAB | XBRL Taxonomy Extension Label Linkbase Document | X |
| 101.PRE | XBRL Taxonomy Extension Presentation Linkbase Document | X |

+Indicates a management contract or compensatory plan.

† Pursuant to a request for confidential treatment, portions of this exhibit have been redacted from the publicly filed document and have been furnished separately to the Securities and Exchange Commission as required by Rule 24b-2 under the Securities Exchange Act of 1934.

* Document has been furnished, is not deemed filed and is not to be incorporated by reference into any of the Company's filings under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, irrespective of any general incorporation language contained in any such filing.

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