

**UNITED STATES SECURITIES AND EXCHANGE COMMISSION**  
Washington, D.C. 20549

**FORM 10-K**

☒ **Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934**

**For the fiscal year ended December 31, 2019**

**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: 001-38241**



**OPTINOSE, INC.**

(Exact name of registrant as specified in its charter)

**Delaware**

(State of other jurisdiction of  
incorporation or organization)

**42-1771610**

(I.R.S. Employer Identification Number)

**1020 Stony Hill Road, Suite 300  
Yardley, Pennsylvania 19067**

(Address of principal executive offices, including zip code)

**(267) 364-3500**

(Registrant's telephone number, including area code)

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

<b>Title of Each Class</b>	<b>Trading Symbol(s)</b>	<b>Name of each exchange on which registered</b>
Common Stock, \$0.001 par value	OPTN	The Nasdaq Global Select Market

Securities registered pursuant to Section 12(g) of the Act: None

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

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

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted 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 such files). Yes ☒ No ☐

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

Large accelerated filer ☐

Accelerated filer ☒

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

Smaller reporting company ☒

Emerging growth company ☒

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

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

As of June 28, 2019 (the last business day of the registrant's most recently completed second fiscal quarter), the aggregate market value of the registrant's common stock held by non-affiliates was approximately \$174.1 million based on the last reported sale price of the registrant's common stock on the Nasdaq Global Select Market on June 28, 2019.

The number of shares of common stock outstanding at March 1, 2020 was 45,906,162 shares.

#### DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement for its 2020 annual meeting of stockholders are incorporated by reference into Part III of this Form 10-K where indicated. Such definitive proxy statement will be filed with the U.S. Securities and Exchange Commission within 120 days after the year ended December 31, 2019.

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Unless the context otherwise requires, all references in this Form 10-K to "Optinose," "Company," "we," "us," and "our" refer to OptiNose, Inc. and its subsidiaries.

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#### Trademark Notice

This Form 10-K contains references to our trademarks and to trademarks belonging to other entities. OPTINOSE® and XHANCE® are registered trademarks of Optinose in the United States. All other trademarks, trade names and service marks appearing in this Form 10-K are the property of their respective owners. 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.

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## NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Form 10-K contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. These statements include, among others, statements relating to:

- the potential uses for and advantages of XHANCE®, our product candidates and Exhalation Delivery System (EDS) devices and technologies;
- the potential to expand into the primary care segment;
- our belief that the current practice of postoperative intranasal steroid (INS) use could support XHANCE’s adoption as a maintenance therapy to improve outcomes following sinus surgery;
- planned product development activities, studies and clinical trials in pursuit of a follow-on indication for chronic sinusitis;
- our expectation that top line results from both of our ongoing chronic sinusitis trials will be available in the second half of 2021;
- our expectation that our GAAP operating expenses in 2020 will be between \$148.0 million and \$153.0 million and that our non-cash stock-based compensation expense will be approximately \$12.0 million;
- our expectation that XHANCE net revenues for the full year of 2020 will more than double compared to full year 2019 and our expectation that XHANCE net revenues for the first quarter 2020 will decrease compared to fourth quarter 2019 XHANCE net revenues;
- our expectation that the average net revenue per prescription for XHANCE in the first quarter of 2020 will be between \$120 and \$140 and our expectation that the average net revenue per prescription will improve substantially for the remainder of 2020;
- the size and growth potential of the markets for XHANCE and our product candidates, and our ability to service those markets;
- the rate and degree of market acceptance and market opportunity of XHANCE and our product candidates;
- our expectation that XHANCE prescription demand will be adversely impacted by INS market seasonality and the seasonal variation in patient visits with their doctor resulting in reduced XHANCE prescription demand in the third quarter;
- our expectation that first quarter prescription demand and average net revenue per prescription for XHANCE will be adversely impacted by the annual resetting of patient healthcare insurance plan deductibles and changes in individual patients’ healthcare insurance coverage, both of which often occur in January;
- our ability to maintain regulatory approval of XHANCE and our product candidates;
- our ability to attract collaborators with development, regulatory and commercialization expertise;
- regulatory developments in the United States and foreign countries;
- our ability to operate our business without infringing the intellectual property rights of others;
- the scope and duration of patent protection and other barriers to entry that we expect to benefit XHANCE and our product candidates;
- the performance of our third-party suppliers, manufacturers, wholesalers, distributors and preferred pharmacy network (PPN) partners;
- the success of competing products that are or become available;
- our belief that our facilities meet our needs and that we could obtain alternative space on commercially reasonable terms;
- the potential for XHANCE to be the first product approved for the treatment of chronic sinusitis;

- our expectation that we can submit an efficacy supplement to our NDA for the potential expansion of XHANCE's indication;
- the potential for XHANCE to be the standard of care for the treatment of chronic rhinosinusitis with and without nasal polyps;
- our expectations regarding our ability to obtain and adequately maintain sufficient intellectual property protection for XHANCE and our other product candidates;
- our expectations regarding the period during which we qualify as an emerging growth company under the JOBS Act; and
- the accuracy of our estimates regarding expenses, future revenue, capital requirements and need for additional financing;

as well as other statements relating to our future operations, financial performance and financial condition, prospects, strategies, objectives or other future events. Forward-looking statements appear primarily in the sections of this Form 10-K entitled "Item 1 - Business," "Item 1A - Risk Factors," "Item 7 - Management's Discussion and Analysis of Financial Condition and Results of Operations," and "Item 7 - Quantitative and Qualitative Disclosures About Market Risk." In some cases, you can identify forward-looking statements by words such as "may," "will," "could," "would," "should," "expect," "intend," "plan," "anticipate," "target," "believe," "estimate," "predict," "project," "potential," "continue," "ongoing," "scheduled" and similar expressions, although not all forward-looking statements contain these identifying words.

Forward-looking statements are based upon our current expectations and assumptions and are subject to a number of known and unknown risks, uncertainties and other factors that could cause actual results to differ materially and adversely from those expressed or implied by such statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed under section "Item 1A - Risk Factors" of this Form 10-K. As a result, you should not place undue reliance on forward-looking statements.

Additionally, the forward-looking statements contained in this Form 10-K represent our views only as of the date of this Form 10-K (or any earlier date indicated in such statement). While we may update certain forward-looking statements from time to time, we specifically disclaim any obligation to do so, even if new information becomes available in the future. However, you are advised to consult any further disclosures we make on related subjects in the reports that we file with the SEC.

The foregoing cautionary statements are intended to qualify all forward-looking statements wherever they may appear in this Form 10-K. For all forward-looking statements, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

## **MARKET, INDUSTRY AND OTHER DATA**

This Form 10-K contains estimates, projections, market research and other information concerning our industry, our business, markets for XHANCE and our product candidates and the size of those markets, the prevalence of certain medical conditions, XHANCE market access, prescription data and other physician, patient and payor data. Unless otherwise expressly stated, we obtain this information from reports, research surveys, studies and similar data prepared by market research firms and other third parties, industry, medical and general publications, government data and similar sources as well as from our own internal estimates and research and from publications, research, surveys and studies conducted by third parties on our behalf. Information that is based on estimates, projections, market research or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances that are reflected in this information. As a result, you are cautioned not to give undue weight to such information.

## PART I

### ITEM 1. BUSINESS

#### Overview

##### *Our Company*

We are a specialty pharmaceutical company focused on the development and commercialization of products for patients treated by ear, nose and throat (ENT) and allergy specialists. Our first commercial product, XHANCE® (fluticasone propionate) nasal spray, 93 microgram (mcg), is a therapeutic utilizing our proprietary Exhalation Delivery System (EDS) that delivers a topically-acting corticosteroid for the treatment of chronic rhinosinusitis with nasal polyps and, if approved, chronic rhinosinusitis without nasal polyps (also known as chronic sinusitis). Chronic rhinosinusitis is a serious nasal inflammatory disease that is treated using therapies, such as intranasal steroids (INS), which have significant limitations. We believe XHANCE has a differentiated clinical profile with the potential to become part of the standard of care for this disease because it is able to deliver medication to the primary site of inflammation high and deep in the nasal passages in regions not adequately reached by conventional INS.

In September 2017, the U.S. Food and Drug Administration (FDA) approved XHANCE for the treatment of nasal polyps in patients 18 years of age or older. XHANCE was made widely available through commercial channels in April 2018. For the year ended December 31, 2019, XHANCE net revenues were \$30.4 million and, based on third-party prescription data, as well as, data from Preferred Pharmacy Network (PPN) partners, we estimate 154,000 prescriptions for XHANCE were filled. We have initiated two Phase 3b clinical trials of XHANCE for a follow-on indication for the treatment of chronic sinusitis and expect top-line results in the second half of 2021 from both trials. If successful, we believe XHANCE would be the first drug therapy product approved by the FDA for the treatment of chronic sinusitis.

##### *The Unmet Need*

Chronic rhinosinusitis is a serious nasal inflammatory disease characterized by chronic inflammation affecting tissues high and deep in the nasal passages, including the area where the openings from the sinuses normally ventilate and drain. This disease significantly impacts the quality of life and daily functioning of an estimated 30 million adults in the U.S. The U.S. healthcare system spends approximately \$60 billion annually in direct costs treating patients with chronic rhinosinusitis and its associated symptoms, including an estimated \$5 billion on sinus surgeries. In the U.S., physicians perform over 500,000 sinus surgeries each year, and we estimate that over seven million adults have undergone sinus surgery to treat chronic rhinosinusitis with and without nasal polyps.

In medical literature and medical practice, chronic rhinosinusitis is commonly divided into two subgroups: chronic rhinosinusitis with nasal polyps and chronic rhinosinusitis without nasal polyps. Chronic rhinosinusitis patients with and without nasal polyps suffer from chronic inflammation of the lining of the deep nasal passages and sinuses. Patients with chronic rhinosinusitis with nasal polyps also develop non-cancerous polyps on these chronically inflamed surfaces, typically originating in the deep crevices or sinus cavities on both sides of the nose. We estimate that up to 10 million adults in the U.S. have chronic rhinosinusitis with nasal polyps.

Both subgroups of chronic rhinosinusitis share the same four defining diagnostic symptoms: nasal congestion/obstruction; facial pain and pressure; purulent runny nose and postnasal drip; and loss of sense of smell and taste. Additional symptoms may include headaches, chronic sleep problems, fatigue, frequent episodes of acute rhinosinusitis and mood disorders. There is evidence suggesting that the harm to a sufferer's quality of life from chronic rhinosinusitis, as measured in multiple domains, such as bodily pain, social functioning and mental health, is comparable to or worse than other serious diseases, including chronic obstructive pulmonary disease, congestive heart failure and angina. As a result, many patients eventually seek surgery for symptom relief.

Although the term chronic rhinosinusitis is often used in medical literature and medical practice, the FDA did not historically recognize chronic rhinosinusitis as an indication for drug development purposes. Instead, the FDA recognized chronic sinusitis, defined as inflammation of the sinuses with a duration longer than eight weeks, and nasal polyps, defined as non-cancerous polyps on the inflamed tissue of the nasal passages and sinuses, as separate indications for drug development purposes. For purposes of this 10-K, we use the terms chronic sinusitis and nasal polyps when referring to drug product treatment indications and our clinical trials and use the term chronic rhinosinusitis with and without nasal polyps when referring to disease and economic data reported in the medical literature, medical practice and our estimates of XHANCE's market opportunity.

### ***Limitations of Therapies***

Multiple clinical practice guidelines specify the use of INS early in the treatment algorithm for chronic rhinosinusitis with and without nasal polyps. Steroids are generally pharmacologically effective at treating inflammation. However, conventional INS, including nasal sprays and nasal aerosols, are topically-acting and unable to effectively and consistently place the steroids onto the primary site of inflammation and nasal polyp origin, high and deep in the nasal passages. These products deposit a majority of the drug in the front of the nose or on the floor of the nasal passages, reducing their effectiveness and leaving many patients without sufficient symptomatic relief. These recognized limitations cause some physicians to seek out alternative treatment regimens such as high-volume steroid nasal rinses. This approach, however, has not been well studied, is difficult to administer, can be costly and may risk systemic side effects. Physicians may also prescribe oral steroids on an episodic basis to patients who have not received sufficient symptomatic relief from INS. Oral steroids, which are often effective in reducing inflammation and nasal polyps, offer only temporary benefit and are limited by the risk of significant systemic side effects associated with both short- and long-term use. Additionally, in June 2019, the FDA approved the first monoclonal antibody as an add-on maintenance treatment (to an INS) in adult patients with inadequately controlled chronic rhinosinusitis with nasal polyposis, and other monoclonal antibodies are in development. The cost of the currently approved monoclonal antibody is approximately \$40,000 per year. We believe the high costs of these monoclonal antibodies, the need for subcutaneous injection or intravenous administration and the systemic nature of these treatments, which target components of the immune response, may limit the use by certain physicians and patients.

In cases where patients remain symptomatic despite medical management, physicians often recommend various forms of sinus surgery to help restore normal sinus ventilation or drainage. The effectiveness of sinus surgery can vary significantly, many patients experience persistent or recurrent symptoms, and surgery may not address the underlying cause of inflammation. In patients with nasal polyps, regrowth of the nasal polyps has been reported in as high as 60% of cases within four years. In addition, it has been reported that up to 80% of patients continue to have symptoms within two years of surgery. Because sinus surgery is often not curative and may not address the underlying cause of the inflammation, many patients continue to receive short- and long-term courses of INS after surgery.

### ***Our Solution***

XHANCE combines our EDS with a liquid formulation of fluticasone propionate, a well-characterized, second-generation corticosteroid. XHANCE is designed to deliver medication into the high and deep regions of the nasal passages where both nasal polyps and inflamed and swollen membranes can obstruct normal sinus ventilation and drainage. In multiple studies utilizing advanced imaging, our EDS produced a differentiated pattern of drug delivery in healthy subjects with significant drug deposited in the high and deep regions of the nasal passages, areas not well accessed by conventional INS delivery mechanisms. We believe XHANCE has the potential to become part of the standard of care for the treatment of patients with chronic rhinosinusitis before they progress to more costly treatment alternatives. We also believe that the current treatment practice of postoperative INS use could support XHANCE's adoption as a maintenance therapy to improve outcomes following sinus surgery.

We conducted five clinical trials evaluating over 1,500 adult patients, including two randomized, double-blinded, placebo-controlled Phase 3 pivotal clinical trials in adults with nasal polyps and two supportive open-label Phase 3 clinical trials in adults with symptoms of chronic sinusitis with or without nasal polyps. In both Phase 3 pivotal clinical trials, patients treated with XHANCE experienced statistically significant reductions of both nasal congestion/obstruction symptoms and total polyp grade, which were the co-primary endpoints. Treatment benefits were also observed in all four defining symptoms of chronic rhinosinusitis, as well as in polyp elimination (reduction of polyp to grade 0), quality of life measures, need for sinus surgery based on study-defined criteria and patient global impression of change. In addition, the magnitude of improvement for patients treated by XHANCE in our Phase 3 pivotal clinical trials, as measured by the Sinonasal Outcome Test-22, a validated clinical outcome assessment, was comparable to the reported benefits in third-party studies of endoscopic sinus surgery (ESS) and balloon sinus dilation. In our supportive open-label Phase 3 clinical trials, which evaluated approximately 900 patients with symptoms of chronic sinusitis with and without nasal polyps for a period of up to one year, XHANCE was generally well tolerated and produced results on efficacy endpoints similar to those observed in our Phase 3 pivotal clinical trials. In these supportive trials, we observed comparable symptom improvements in patients with and without nasal polyps and continuing incremental polyp reduction and symptom improvement through 12 months. XHANCE had an adverse event profile generally comparable to the profile reported in similarly designed trials with conventional INS. The most common adverse reactions (incidence  $\geq 3\%$ ) are epistaxis, nasal septal ulceration, nasopharyngitis, nasal mucosal erythema, nasal mucosal ulcerations, nasal congestion, acute sinusitis, nasal septal erythema, headache, and pharyngitis.



We believe XHANCE offers a cost-effective treatment solution to payors who are increasingly being asked to pay for multiple high-cost therapies for a variety of diseases priced at tens of thousands of dollars per year. As of January 1, 2020, the wholesale acquisition cost for XHANCE was \$514.63. XHANCE is priced comparable to the only other branded INS that is currently approved to treat nasal polyps, but at a price significantly higher than generic INS and over-the-counter INS products. We expect XHANCE to be adopted by physicians at a natural point in the care pathway for use in patients with chronic rhinosinusitis with or without nasal polyps before they progress to costly surgical interventions or monoclonal antibodies. We estimate that sinus surgery costs on average \$13,500 per procedure, and monoclonal antibodies cost approximately \$40,000 per year based on the wholesale acquisition cost and recommended dosing for DUPIXENT® (dupilumab).

### ***U.S. Market Opportunity***

Our initial target market for XHANCE consists of ENT physicians, allergists and primary care physicians in the U.S. that most frequently prescribe INS. This group of approximately 5,000 primary care physicians, which we refer to as "specialty-like" primary care physicians, account for approximately 25% of all INS prescriptions written by primary care physicians. We refer to these ENT physicians, allergists and high-decile INS-prescribing primary care physicians collectively as the "specialty segment" of our target market. We believe the approximately 15,000 physicians in this specialty segment together treat an estimated 3.5 million U.S. patients with chronic rhinosinusitis, an estimated 1.2 million of whom have chronic rhinosinusitis with nasal polyps. We believe the total annual U.S. market opportunity for XHANCE in this specialty segment is over \$3.4 billion, of which approximately one-third consists of patients with chronic rhinosinusitis with nasal polyps. If we obtain approval for the follow-on indication of chronic sinusitis, we intend to broaden our commercialization efforts to target additional primary care physicians that we believe treat an additional estimated 6.25 million U.S. patients with chronic rhinosinusitis, an estimated one-third of whom have chronic rhinosinusitis with nasal polyps. We refer to these additional primary care physicians as the "primary care segment" of our target market. We believe the total additional annual U.S. market opportunity for XHANCE in this primary care segment is over \$6.0 billion, of which approximately one-third consists of patients with chronic rhinosinusitis with nasal polyps. Therefore, we estimate the total annual U.S. market opportunity for the combined specialty and primary care segments is over \$9.5 billion, of which approximately one-third consists of patients with chronic rhinosinusitis with nasal polyps.

### ***Intellectual Property and Barriers to Entry***

XHANCE benefits from substantial intellectual property and other technical barriers to entry, including regulatory and drug delivery complexities. Our XHANCE U.S. patent portfolio consists of 16 issued device and method of use patents expiring from 2020 through 2035 and three issued design patents expiring through 2030, as well as pending patent applications. The 16 issued device and method of use patents are published in the FDA's Approved Drug Products with Therapeutic Equivalence Evaluations, commonly known as the Orange Book.

We believe the unique features of our EDS, as well as its delivery of a topically-acting drug, will present generic and 505(b)(2) new drug application (NDA) competitors of XHANCE with human factors engineering challenges specific to drug-device combination products and chemistry, manufacturing and controls challenges unique to suspension and respiratory products. We also believe that any future substitutable generic competitors may be required to conduct, among other things, non-inferiority clinical trials demonstrating equivalent efficacy and safety outcomes to establish clinical bioequivalence to XHANCE. We believe these clinical trials would require a significant amount of time and capital investment and present clinical development uncertainties.

### ***Our Growth Strategy***

Our goal is to become a leading specialty pharmaceutical company dedicated to developing proprietary products that become a part of the standard of care for diseases in the ENT and allergy segments. We also plan to expand the use of our EDS devices into additional indications with significant unmet needs, including potential nose-to-brain drug delivery for central nervous system disorders. The key elements of our strategy are to:

- ***Commercialize XHANCE in the ENT and allergy specialty segments in the U.S.*** We believe that approximately 15,000 targeted physicians treat an estimated 3.5 million chronic rhinosinusitis patients, an estimated 1.2 million of whom have chronic rhinosinusitis with nasal polyps. We have a sales force of approximately 100 territory managers who target over 10,000 ENT and allergy specialists and "specialty-like" primary care physicians. With data suggesting that prescribing continues to be suitably responsive to promotion, we may continue to increase the size of our deployed sales team.
- ***Pursue pipeline development of XHANCE for chronic sinusitis and expansion into the primary care segment to broaden our market opportunity.*** We have initiated two Phase 3b clinical trials in pursuit of a

follow-on indication for XHANCE for the treatment of chronic sinusitis and expect top-line data in the second half of 2021 from both trials. If successful, we believe XHANCE would be the first drug therapy product approved by the FDA for the treatment of chronic sinusitis. In the future, as appropriate, we plan to broaden our marketing to additional primary care physicians that we believe treat an additional estimated 6.25 million patients in the U.S. with chronic rhinosinusitis, an estimated one-third of whom have chronic rhinosinusitis with nasal polyps. In addition, at some point in the future, we intend to consider directing promotional resources to an additional estimated 20 million adult chronic rhinosinusitis sufferers who are not regularly under the care of physicians for this disease using programs such as direct-to-consumer and direct-to-patient promotion.

- **Develop a pipeline of additional products focused on the ENT and allergy specialty segments.** We plan to evaluate strategic licensing, acquisition, development and commercial partnerships that could increase our commercial efficiencies.
- **Explore business development activities for our EDS outside of the ENT and allergy segments.** We evaluate potential opportunities for additional uses of our EDS to support development and commercialization outside of ENT and allergy, with a focus on central nervous system treatments, particularly those enabled by nose-to-brain drug delivery. We currently have two agreements in place that include an out-license of our EDS technology. In January 2019, OptiNose AS, our wholly-owned subsidiary, completed a licensing agreement (Inexia License Agreement) with Inexia Limited (Inexia) whereby we granted Inexia an exclusive license to our EDS devices and other intellectual property for the research, development and commercialization of products containing orexin receptor agonist and/or orexin receptor positive modulator molecules. In September 2019, OptiNose AS, our wholly-owned subsidiary, entered into a licensing agreement (Currax License Agreement) with Currax Pharmaceuticals LLC (Currax) whereby we granted Currax an exclusive license to certain OptiNose patents and a non-exclusive license to certain OptiNose know-how related to Onzetra® Xsail® (sumatriptan nasal powder) in the US, Canada and Mexico.
- **Expand XHANCE into international markets.** We intend to remain opportunistic in pursuit of select international opportunities. Upon receipt of additional data in the chronic sinusitis indication, we intend to more aggressively explore strategic collaboration opportunities in Europe and the rest of the world in order to maximize the commercial potential and the availability of XHANCE to patients.

## Chronic Rhinosinusitis and Market Opportunity

### Chronic Rhinosinusitis

Chronic rhinosinusitis is a serious nasal inflammatory disease significantly impacting patients' quality of life and daily functioning. Chronic rhinosinusitis, unlike allergic rhinitis, is characterized by chronic inflammation affecting tissues high and deep in the nasal passages, including the area where the openings from the sinuses normally ventilate and drain, causing symptoms that persist for a period of 8 to 12 weeks or longer. Chronic rhinosinusitis patients typically suffer from these symptoms four to six months a year, with symptoms often persisting for many years.

In medical literature and medical practice, chronic rhinosinusitis is commonly divided into two subgroups: chronic rhinosinusitis with nasal polyps and chronic rhinosinusitis without nasal polyps. Chronic rhinosinusitis patients with and without nasal polyps suffer from chronic inflammation of the lining of the deep nasal passages and sinuses. Patients with chronic rhinosinusitis with nasal polyps also develop non-cancerous polyps on these chronically inflamed surfaces, typically originating in the deep crevices or sinus cavities on both sides of the nose. We estimate that up to 10 million adults in the U.S. have chronic rhinosinusitis with nasal polyps. Both subgroups of chronic rhinosinusitis share the same four defining diagnostic symptoms: nasal congestion/obstruction; facial pain and pressure; purulent runny nose, and postnasal drip; and loss of sense of smell and taste. Additional symptoms may include headaches, chronic sleep problems, fatigue, frequent episodes of acute rhinosinusitis and mood disorders. There is evidence suggesting that the harm to a sufferer's quality of life from chronic rhinosinusitis, as measured in multiple domains, such as bodily pain, social functioning and mental health, is comparable to or worse than other serious diseases, including chronic obstructive pulmonary disease, congestive heart failure and angina. As a result, many patients eventually seek surgery for symptom relief.

The American Academy of Otolaryngology-Head and Neck Surgery estimates that approximately 30 million adults in the U.S. have chronic rhinosinusitis, and it is estimated that up to 10 million adults have chronic rhinosinusitis with nasal polyps. Chronic rhinosinusitis imposes a significant healthcare burden on insurers and employers. It has been reported that the U.S. healthcare system spends approximately \$60 billion annually in direct costs treating patients with chronic rhinosinusitis and its associated symptoms, including an estimated \$5 billion on sinus surgeries. In the

U.S., physicians perform over 500,000 sinus surgeries each year, and we estimate that over seven million adults have undergone sinus surgery to treat chronic rhinosinusitis with and without nasal polyps. Chronic rhinosinusitis has been reported to account for an aggregate of 73 million restricted activity days per year. Additionally, people with chronic rhinosinusitis have been reported to be absent from work because of this disease 6.5% of the time and to suffer a 38% loss of productivity.

### **U.S. Market Opportunity**

We estimate that approximately 9.75 million chronic rhinosinusitis patients are currently being treated in physician offices in the U.S. We derived this estimate from a large patient claims database that reflects actual treatment patterns of chronic rhinosinusitis over a two-year period from 2010 to 2012. We also estimate that approximately 10,000 ENT and allergy specialists, as well as approximately 5,000 "specialty-like" primary care physicians, treat approximately 36% of all chronic rhinosinusitis patients in the U.S., or approximately 3.5 million patients, an estimated 1.2 million of whom have chronic rhinosinusitis with nasal polyps. In accordance with multiple published clinical practice guidelines, physicians typically medically manage chronic rhinosinusitis patients by prescribing INS despite the fact that there are no FDA-approved products for the treatment of chronic sinusitis without nasal polyps. We have a specialty sales force of approximately 100 territory managers who target over 10,000 ENT and allergy specialists and "specialty-like" primary care physicians. If we obtain FDA approval for the follow-on indication for the treatment of chronic sinusitis, we intend to broaden our marketing outreach to additional primary care physicians that treat an additional estimated 6.25 million U.S. patients with chronic rhinosinusitis, an estimated one-third of whom have chronic rhinosinusitis with nasal polyps. We may also direct promotional resources to an additional estimated 20 million chronic rhinosinusitis sufferers who are not regularly under the care of physicians for this disease using programs such as direct-to-consumer and direct-to-patient promotion.

Based on internal estimates, we believe the total annual U.S. market opportunity for XHANCE in the specialty segment is over \$3.4 billion, of which approximately one-third consists of patients with chronic rhinosinusitis with nasal polyps. Based on these same estimates, we believe the total additional annual U.S. market opportunity for XHANCE in the primary care segment is over \$6.0 billion, of which approximately one-third consists of patients with chronic rhinosinusitis with nasal polyps. Therefore, we estimate the total annual U.S. market opportunity for the combined specialty and primary care segments is over \$9.5 billion, of which approximately one-third consists of patients with chronic rhinosinusitis with nasal polyps.

### **Treatment Landscape**

The treatment of chronic rhinosinusitis with and without nasal polyps typically begins with medical management. In cases where patients remain symptomatic despite medical management, physicians often recommend various forms of sinus surgery to help restore normal sinus ventilation and drainage. The following is a brief description of the current treatment landscape and product candidates in development for chronic rhinosinusitis with and without nasal polyps:

#### *Current Therapies*

- **Intranasal Steroids.** Multiple published clinical practice guidelines generally recommend topically-acting INS as the first line of prescription therapy for the treatment of chronic rhinosinusitis with and without polyps. As a result, physicians typically prescribe INS nasal sprays or nasal aerosols despite the fact that there are no FDA-approved products for the treatment of chronic sinusitis without nasal polyps. Therefore, the majority of chronic rhinosinusitis sufferers being treated have tried INS. We estimate that physicians in the U.S. prescribe approximately 17 million INS prescriptions each year for the treatment of chronic rhinosinusitis, which includes, among other INS products, a generic fluticasone propionate nasal spray. Nasonex, or mometasone furoate nasal spray, is currently the only other branded INS approved by the FDA for the treatment of nasal polyps. A generic version of Nasonex, mometasone furoate monohydrate, was approved by the FDA for, among other indications, the treatment of nasal polyps and launched in 2016. Physicians not only prescribe INS as a standalone therapy, but also typically prescribe INS following sinus surgery as some third-party clinical trials suggest that INS treatment can improve symptoms and delay symptom recurrence. In lieu of prescription INS nasal sprays, physicians may recommend use of over-the-counter INS nasal sprays.
- **Oral steroids.** Physicians may prescribe oral steroids on an episodic basis to patients who have not received sufficient symptomatic relief from INS. Oral steroids are often effective at treating the underlying inflammation associated with the disease and reducing postoperative scarring, but the benefit is temporary. As inflammation returns, many patients resume INS therapy.

- **Monoclonal antibodies.** In June 2019, the FDA approved DUPIXENT as an add-on maintenance treatment (to an INS) in adult patients with inadequately controlled chronic rhinosinusitis with nasal polyposis.
- **Other medical management.** Physicians commonly employ a variety of other non-surgical treatments in the medical management of chronic rhinosinusitis, including nasal saline rinses, multi-week courses of antibiotics, leukotriene antagonists, decongestants, aspirin desensitization and antifungals. The recognized limitations of drug deposition with current INS cause some physicians to seek out alternative treatment regimens, such as high doses of locally compounded liquid budesonide in high-volume nasal rinses. Chronic rhinosinusitis is one of the most common reasons for adult outpatient antibiotic use in the U.S., comprised of approximately 37 million prescriptions per year.
- **Sinus surgery and other procedures.** Physicians generally recommend surgical treatment of chronic rhinosinusitis with and without nasal polyps only after patients fail medical management. The primary surgical alternative is Endoscopic Sinus Surgery (ESS), which attempts to open the sinus drainage pathways while preserving as much bone and sinus tissue lining as possible. The physician typically uses rigid steel instruments and powered cutting tools to remove inflamed tissue, including any nasal polyps, and underlying bone and cartilage to create a larger passage through the nasal anatomy to the sinuses. At the conclusion of the procedure, patients often have their nasal passages packed with a material that acts as a spacer to prevent surgical adhesions and control bleeding. Patients typically require one or more follow-up debridement treatments in which the physician may remove more tissue, crusting, scabs or scar tissue at the area of surgery in order to keep the sinus drainage pathway open and promote proper healing.

Several companies have developed less invasive technologies for the treatment of chronic rhinosinusitis since the introduction of ESS, such as balloon sinus dilation devices and steroid-releasing sinus implants. Balloon sinus dilation employs a high pressure inflated balloon to open blocked sinus pathways to increase ventilation and mucus drainage. Steroid-releasing sinus implants are used to hold open the surgically enlarged sinus, while releasing a steroid over a period of time in order to reduce postoperative sinus inflammation and scarring. SINUVA® (mometasone fuorate) sinus implant is a commercially available corticosteroid-eluting implant indicated for the treatment of nasal polyps in adult patients who have had ethmoid sinus surgery that can be placed in the ethmoid sinus under endoscopic visualization for up to 90 days. In the SINUVA clinical studies, patients were advised to use nasal steroid sprays and sinus rinses for the duration of the study.

#### *Potential Future Therapies*

Several monoclonal antibodies, some of which are already approved for other indications, are being developed for the treatment of nasal polyps, and are believed to inhibit specific pathways of inflammation present in nasal polyps. These monoclonal antibodies include omalizumab, benralizumab, and mepolizumab.

In addition, there are new small molecules, including fevipiprant, being developed for the treatment of nasal polyps, that are also believed to inhibit specific pathways of inflammation present in nasal polyps.

#### *Limitations of Therapies*

The current and potential future therapies to treat patients suffering from chronic rhinosinusitis with and without nasal polyps have a number of limitations, including:

- **Limited efficacy of INS treatments using traditional nasal sprays and nasal aerosols.** Although steroids are generally pharmacologically effective, conventional INS, including nasal sprays and nasal aerosols, are unable to effectively and consistently place the steroids onto the primary site of inflammation and nasal polyp origin, high and deep in the nasal passages. These products deposit a majority of the drug in the front of the nose or on the floor of the nasal passages, reducing their effectiveness and leaving many patients without sufficient symptomatic relief.
- **Short-term benefits of oral steroids outweighed by significant side effects.** Oral steroids offer only temporary benefit and are limited by the risk of significant systemic side effects associated with both short- and long-term use. These side effects include, among others, weight gain; increased risk of infections; loss of bone mineral density; death of bone tissue; cataract formation; glaucoma; adrenal suppression; and psychiatric complications, including mania, depression, and psychosis.

- **Varying degrees of efficacy with other medical management.** Other non-surgical treatments have varying degrees of supporting data and efficacy. In addition, high-volume steroid nasal rinses are difficult to administer, can be costly, may risk systemic side effects due to the absorption of the steroid into the body, can be associated with fluid draining from the nose after the procedure and are difficult for patients to comply with over prolonged courses of outpatient therapy.
- **Sinus surgery and other procedures are costly and may not be a complete solution.** The effectiveness of sinus surgery varies significantly and many patients experience persistent or recurrent symptoms. Reports indicate that nasal polyp regrowth following surgery occurs in as high as 60% of cases within four years. In addition, it has been reported that up to 80% of patients continued to have symptoms within two years of surgery. Because sinus surgery is often not curative and may not address the underlying cause of the inflammation, many patients receive short- and long-term courses of INS after surgery and approximately 20% of patients elect surgical revisions. Postoperative scarring and persistent inflammation are common and can compromise symptom outcomes and also negatively impact the ability of the sinuses to heal. Sinus surgery is also a costly procedure, with estimated costs on average \$13,500 per procedure. While balloon sinus dilation has the ability to open sinuses in a less invasive manner, it also may not address the underlying cause of the inflammation associated with chronic rhinosinusitis and is costly. Similarly, steroid-releasing sinus implants have limited duration of anti-inflammatory effect, are costly and face reimbursement challenges.
- **Treatment with monoclonal antibodies is costly, difficult to administer and may have negative side effects.** The only currently FDA-approved monoclonal antibody for the treatment of nasal polyps costs approximately \$40,000 per year. Monoclonal antibodies also require subcutaneous injections or intravenous administration. We believe the systemic nature of these treatments, which target components of the immune response, may result in more adverse side effects than treatments with topically-acting steroids.

## Our Solution

### XHANCE

XHANCE combines our EDS with a liquid formulation of fluticasone propionate, a potent, well-characterized, second-generation anti-inflammatory corticosteroid for the treatment of serious nasal diseases characterized by chronic inflammation, such as chronic rhinosinusitis. XHANCE is designed to deliver fluticasone propionate into the high and deep regions of the nasal passages where nasal polyps or inflamed and swollen membranes can obstruct normal sinus ventilation and drainage. In September 2017, the FDA approved our NDA for XHANCE for the treatment of nasal polyps in patients 18 years of age or older. We have initiated two phase 3b clinical trials of XHANCE for a follow-on indication for the treatment of chronic sinusitis and expect top-line results in the second half of 2021 from both trials. If successful, we anticipate submitting a prior approval efficacy supplement to support the approval of a new indication under our currently approved 505(b)(2) NDA for XHANCE for the treatment of chronic sinusitis.

We believe XHANCE could become a part of the standard of care for the treatment of patients with chronic rhinosinusitis with and without nasal polyps before they progress to more costly treatment alternatives and could also be adopted as a maintenance therapy to improve outcomes following sinus surgery.

### Optinose EDS

Our EDS devices enable the development of drug-device combination products intended for self-administration. We have developed both a liquid delivery system and a powder delivery system utilizing natural functional behaviors of the upper nasal airways intended to offer better drug deposition. These systems are designed to overcome many limitations inherent in conventional nasal spray and nasal aerosol delivery systems, most notably, enabling higher and deeper intranasal drug delivery.

#### Liquid EDS

The liquid EDS depicted below, which is the EDS used in XHANCE, consists of the primary drug container for the liquid drug formulation, an amber glass vial sealed by a crimp-fitted metering spray pump, enclosed within a proprietary liquid delivery subassembly. The nasal spray applicator, which is a component of the subassembly, is attached to the pump and extends to the top of the nosepiece of the liquid delivery subassembly. The EDS includes a flexible mouthpiece and an asymmetrically-shaped nosepiece as part of a mechanism that uses the patient's exhaled breath to naturally seal closed the soft palate and to facilitate delivery of drug to the nasal passages

through the sealing nosepiece. The nosepiece is designed to create a seal with the nostril and also to expand and stent the upper part of the nasal valve, which is an important anatomical structure that is the narrowest part of the entire respiratory tract and a barrier that causes most medication delivered by conventional INS to deposit in the front part of the nose.



#### *Powder EDS*

The powder EDS depicted below, which is the EDS used in Onzetra® Xsail®, consists of a reusable device body incorporating a flexible mouthpiece to adjust to individual anatomic variations, and a white button piercing assembly to pierce the medication capsule. Disposable nosepieces are provided in a foil pouch to be inserted into the drug delivery device body. Each pre-filled nosepiece section contains a medication capsule containing a dry powder formulation and a clear release tab. The capsule is pierced by pressing and releasing the white button piercing assembly. The flexible mouthpiece and an asymmetrically-shaped nosepiece are part of the mechanism that uses the patient's exhaled breath to naturally seal closed the soft palate and to facilitate delivery of drug to the nasal passages through the sealing nosepiece. The medication capsule is intended for single dose administration and is not refillable or removable from the nosepiece.

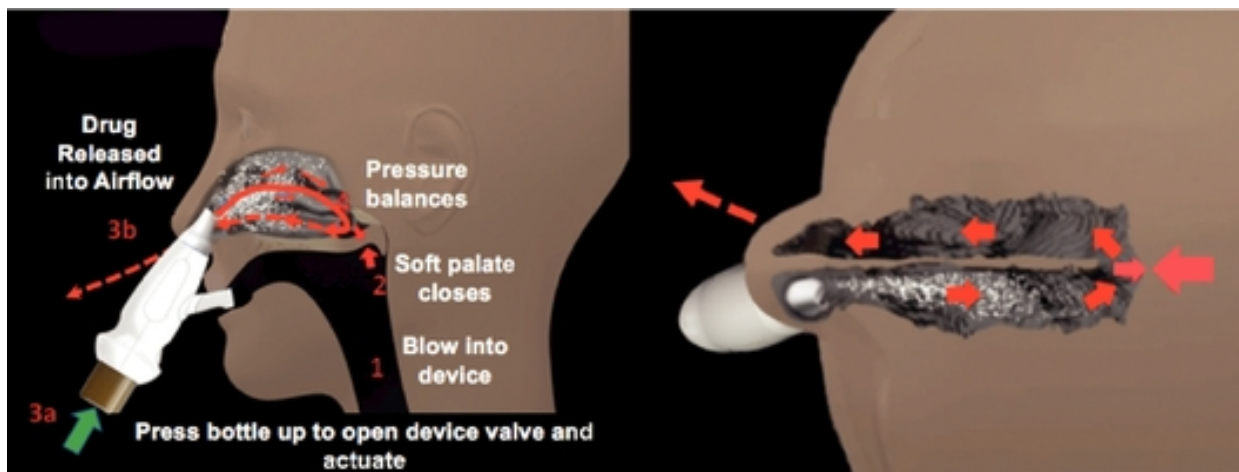
Following drug administration, the disposable nosepiece, including the dose-expended medication capsule, is then removed and discarded.





#### *How an Optinose EDS works*

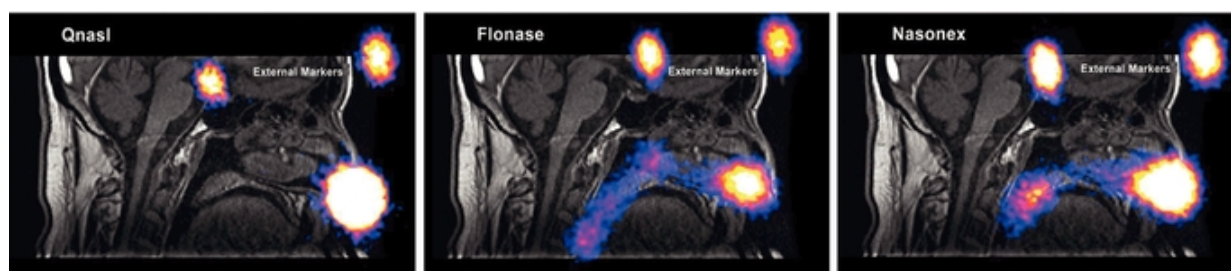
When exhaling into our EDS, the soft palate automatically elevates and creates an air-tight seal separating the nasal cavity from the throat and lungs. This natural action is the same as that which prevents air from escaping from the nose when trying to blow up a balloon or blow a trumpet. The exhaled air is then routed through our EDS which introduces medication into the air flow and then directs the air and medication through the sealing nosepiece. The positive air pressure, which is the opposite of the negative pressure produced by sniffing with ordinary nasal sprays, acts to dynamically expand the nasal valve and the narrowed nasal passages, helping to deliver the drug around obstructing anatomic barriers and fill one side of the nasal cavity. This enables high and deep deposition of medication in the nasal passages. The positive air pressure, proportional to the pressure on the other side of the soft palate, helps to open a passage between the two sides of the nasal cavity, behind the back edge of the nasal septum. The picture below illustrates this action, which allows the exhaled air pressure to escape from the opposite nostril.



The drug delivery mechanism of our EDS is designed to overcome the drug deposition shortcomings of conventional nasal sprays and nasal aerosols. In conventional nasal sprays and nasal aerosols, the medication is inhaled or sniffed into the nose creating negative pressure within the nasal passages, which does not facilitate the

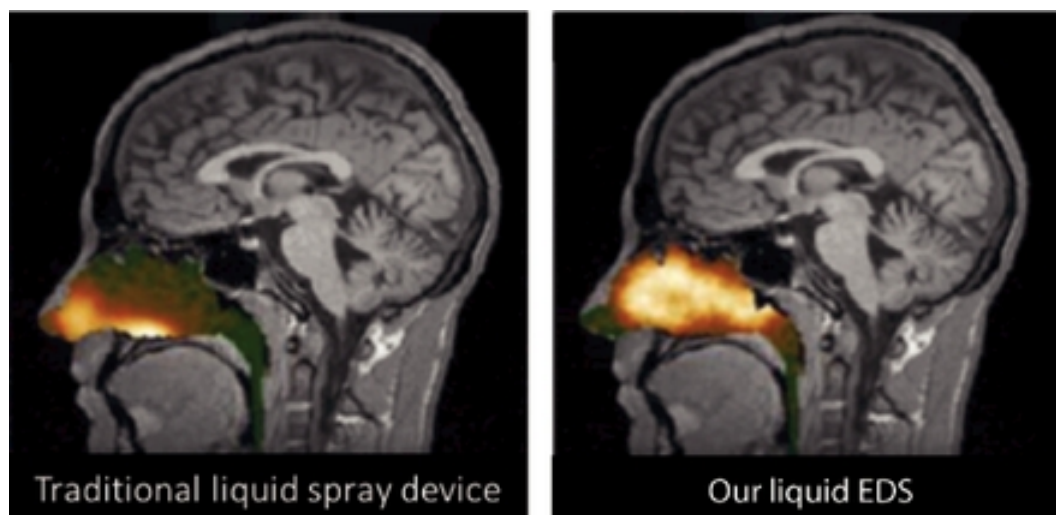
expansion of the nasal valve or the nasal passages and may obstruct the drug from reaching deep into the nose where most nasal polyps and inflamed and swollen sinus membranes exist.

The pattern of drug deposition produced by conventional nasal sprays and our EDS has been evaluated in multiple studies using a combination of advanced imaging modalities to depict the regions of the nasal passages where drug is deposited after administration in healthy human volunteers. In an open label, crossover study conducted by a third party in nine patients with allergic rhinitis, investigators examined the nasal deposition of radio-labeled materials that allow for traceability following use of Qnasl (HFA-beclomethasone, nasal aerosol), Flonase (fluticasone propionate, nasal spray) and Nasonex (mometasone furoate monohydrate, nasal spray). In this study, gamma cameras were used to capture emitted radiation from these tracers to create two-dimensional images in a similar process to the capture of x-ray images. These gamma images were merged with magnetic resonance images (MRI) to quantify regional deposition within the nasal passages. The images below illustrate how the pattern of drug deposition in the nasal passages produced by Qnasl, Flonase and Nasonex was concentrated in the front and lower regions of the nasal passages, as opposed to the high and deep regions of the nasal passages targeted in the treatment of chronic rhinosinusitis.



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We conducted six deposition studies evaluating 53 healthy subjects that produced approximately 250 images. As depicted in the representative figures below, our EDS produced a differentiated pattern of drug delivery with significantly more drug deposited in the high and deep regions of the nasal passages.

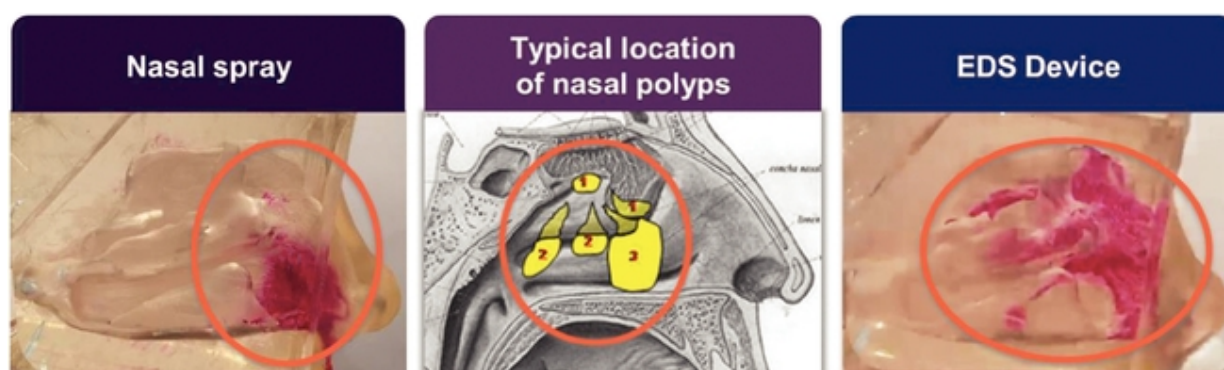


The pictures above use gamma camera image information, which was then superimposed on the corresponding MRI section. These images represent deposition in healthy subjects two minutes after delivery using a traditional liquid nasal spray and a version of our liquid EDS device. Deposition with traditional liquid nasal spray was greatest in the front parts of the nose, whereas deposition with an Optinose EDS was greatest in the high and deep regions of the nose.

The pictures below illustrate how our EDS (with exhalation) places medication higher and deeper in the nasal passages than a conventional nasal spray (without sniffing) in nasal cast models. As depicted below, although conventional nasal spray systems can reach, and therefore treat, large nasal polyps, they are not generally suitable



for reaching nasal polyps or inflammation in the higher and deeper regions where obstruction of the sinus openings occurs.



Our EDS is also designed to address user dissatisfaction with conventional nasal delivery by reducing drug drip-out from the front and back of the nose and the bad taste that often accompanies drug entering the throat. By reducing the loss of drug to non-targeted sites, such as the gastrointestinal tract by swallowing, or lungs, our EDS has the potential to improve the efficiency of drug activity and to improve tolerability by reducing off-target effects.

## Our Pipeline

<u>Optinose Programs</u>	<u>Indication or Mechanism of Action</u>	<u>Status</u>
XHANCE	Nasal Polyps	FDA-approved
XHANCE	Chronic Sinusitis	Phase 3b trials enrolling
OPN-300	Prader-Willi	Available for partnering
OPN-300	Rare diseases on the Autism Spectrum	Available for partnering
<u>Partner Programs</u>		
Currax Pharmaceuticals	ONZETRA XSAIL - Migraine in Adults with or without Aura	FDA-approved
Inexia Limited	Orexin Agonists	Pre-clinical

## ***XHANCE for Chronic Sinusitis***

In addition to XHANCE's existing indication for the treatment of nasal polyps, in order to broaden our U.S. market opportunity, we initiated a clinical trial program in pursuit of a follow-on indication for the treatment of chronic sinusitis in the U.S. We believe XHANCE has the potential to be the first drug therapy approved by the FDA for the treatment of chronic sinusitis. We expect the program will be comprised of two phase 3b clinical trials, the first of which was initiated in the fourth quarter of 2018 and is estimated to enroll approximately 378 subjects and the second of which was initiated in the second quarter of 2019 and is estimated to enroll approximately 399 subjects. Estimated enrollment for both trials is subject to change for factors that may include an interim analysis intended to inform the statistical powering of both trials. We expect top-line results from both of our ongoing chronic sinusitis trials in the second half of 2021.

In the future, as appropriate, we intend to broaden our commercialization efforts to additional primary care physicians that we believe treat an additional estimated 6.25 million U.S. patients with chronic rhinosinusitis, an estimated one-third of whom have chronic rhinosinusitis with nasal polyps. In addition, at some point in the future, we intend to consider directing promotional resources to an additional estimated 20 million adults who are not regularly under the care of physicians for this disease using programs such as direct-to-consumer and direct-to-patient promotion.

## **Other Product Candidates**

Although our current focus is to prioritize the successful commercialization of XHANCE for the ENT and allergy specialty segment and the continued development of XHANCE for chronic sinusitis, we have applied our EDS to other product candidates in our pipeline across a broad range of disease areas. By placing drug high and deep in the nose, in regions where cranial nerves connect directly with the brain, we believe it may be possible to deliver medications directly into the brain and avoid the difficulties of getting drug past the blood-brain barrier. This may enable treatment of brain diseases using small or large molecules that otherwise do not readily enter the nervous system.

### *OPN-300*

We have engaged in early clinical development activities for OPN-300, which combines our EDS with oxytocin. Oxytocin is a small, naturally occurring peptide currently used to stimulate lactation in breastfeeding women. Oxytocin acts as a neurotransmitter in the brain and has recently been considered a potential novel treatment alternative in several brain disorders due to a growing body of evidence of its critical role in social cognition and behavior. Because oxytocin is a peptide with poor oral bioavailability, nasal administration with our EDS may allow for improved delivery. With conventional liquid nasal spray delivery, only a small amount of the drug reaches systemic circulation. It is estimated that less than 0.01% of oxytocin in the blood enters the brain across the blood-brain barrier.

OPN-300 has been developed to target two orphan indications: Prader-Willi syndrome, a rare genetic disorder that is the leading genetic cause of obesity; and rare diseases on the autism spectrum. We conducted a Phase 1 clinical trial in late 2013 using OPN-300 in healthy volunteers. In that trial, a low dose of oxytocin delivered using our EDS produced a statistically significantly greater social-cognitive effect as measured with functional magnetic resonance imaging, performance on cognitive tests, and physiological markers, than intravenous administration of the same active ingredient that produced blood levels that were not statistically different. We believe this clinical trial supports the possibility of direct nose-to-brain activity of medication delivered using our EDS. In a second pilot clinical trial of OPN-300 in adult male patients with autism spectrum disorder, adult men with autism spectrum disorder receiving nasal oxytocin showed statistically significant differences in interpretation of facial expressions. We have completed planned internal development activities and in the future may pursue external partnerships for further development.

### *Other*

We are evaluating the use of our EDS to deliver other drugs or drug combinations to treat diseases primarily managed by ENT and allergy specialists, and we opportunistically evaluate opportunities to develop product candidates using our EDS intellectual property for indications and markets outside of our ENT and allergy focus through business development and partnering activities.

## **Sales and Marketing**

We have established a commercial infrastructure designed to drive adoption and sales of XHANCE with healthcare professionals who treat patients with nasal polyps. We believe that approximately 15,000 physicians treat an estimated 3.5 million chronic rhinosinusitis patients, an estimated 1.2 million of whom have chronic rhinosinusitis with nasal polyps.

**Customer Model.** In April 2019, we changed our model from a contract sales team to an internal sales team, and at the same time we hired and deployed additional sales representatives (whom we refer to as territory managers) into “XHANCE naïve” geographies, increasing the number of territories in our deployment plan from 80 to 100, to expand our reach among our target physician audience. These territory managers target over 10,000 ENTs, allergists and “specialty-like” primary care physicians, and we target additional physicians through digital and non-personal promotion in areas where we do and do not have territory managers. Our sales team is equipped with educational materials demonstrating the benefit and safety profile of XHANCE. In the future we may increase the number of geographic territories as well as hire additional territory managers in order to increase the number of called-on target physicians and frequency of calls. We believe that in the long term, direct to consumer (DTC) advertising could be an effective way to increase XHANCE prescription growth. In the second half of 2019 we conducted a single-season, multi-channel, pilot DTC advertising program in three markets. We intend to extend the pilot in the same markets during the early part of 2020 in order to test ways to increase the efficiency of such a program.

**XHANCE Co-Pay Savings Program.** We believe our co-pay savings program provides an affordability solution for patients that physicians will support. This program provides patient co-pay assistance including a first prescription at

no out-of-pocket cost (\$0 co-pay) to eligible commercially insured patients and low subsequent co-pays for refills ranging from \$0 to \$50 per XHANCE unit.

**Market Access.** Based on currently available third-party data and our internal analyses as of December 31, 2019, we believe that approximately 75% of commercially insured lives are currently in a plan in which we have contracted for XHANCE coverage. However, payors may change coverage levels for XHANCE, positively or negatively, at any time. Additionally, payors generally impose restrictions on access to or usage of XHANCE, such as by requiring prior authorizations or "step-edits". For example, insurers may require that a patient first use a generic INS prior to becoming eligible for coverage for XHANCE. Some healthcare providers may not complete the administrative process required to demonstrate or document that the patients for whom XHANCE has been prescribed meet the payors' utilization management criteria (i.e., prior authorizations or step-edits) and, as a result, patients may not gain access to XHANCE treatment. In our contract negotiations with payors we seek to balance patient access and affordability, breadth of coverage, payor utilization management and rebates levels. We have also contracted with the Centers for Medicare and Medicaid Services for coverage of certain government insured lives and continue to expand XHANCE market access for other government-insured populations.

## **Distribution**

We currently sell XHANCE primarily to PPN partners. We established this channel to offer patients the option of filling prescriptions through a network of preferred pharmacies that may be able to better serve the needs of patients through services including delivery of XHANCE by mail and performing certain patient services such as patient insurance benefit verification. We also sell XHANCE to wholesale pharmaceutical distributors, who, in turn, sell XHANCE to pharmacies, hospitals and other customers. We have contracted with a third-party logistics provider for key services related to logistics, warehousing and inventory management, and distribution. Further, our third-party logistics provider provides customer order fulfillment services and accounts receivable management.

## **Customers**

Approximately 79% of our XHANCE net revenues during the fiscal year ended December 31, 2019 were to PPN partners; Foundation Care LLC was the leading customer in this channel. Additionally, approximately 20% of our XHANCE net revenues during the fiscal year ended December 31, 2019 were to the three largest wholesale pharmaceutical distributors, Cardinal Health, McKesson Corporation, and AmerisourceBergen Drug Corporation. The remaining approximately 1% of our XHANCE net sales were to regional pharmaceutical distributors.

## **Manufacturing**

We contract with third parties for the manufacture, testing and storage of XHANCE. In our experience, contract manufacturers (CMOs) are generally cost-efficient and reliable and therefore we currently have no plans to build our own clinical or commercial manufacturing capabilities. Because we rely on CMOs, we employ personnel with extensive technical, manufacturing, analytical and quality experience to oversee contract manufacturing and testing activities, and to compile manufacturing and quality information for our regulatory submissions. Manufacturing is subject to extensive regulations that impose various procedural and documentation requirements, and which govern record-keeping, manufacturing processes and controls, personnel, quality control and quality assurance, among other activities. Our systems and our contractors are required to comply with these regulations, and we assess this compliance regularly through monitoring of performance and a formal audit program.

We have entered into the following key supply agreements for the commercial manufacture and supply of XHANCE:

- A supply agreement with Hovione Inter Ltd (Hovione) for the supply of fluticasone propionate, the active pharmaceutical ingredient included in the liquid suspension formulation. This agreement terminates in February 2023, subject to earlier termination or extension in accordance with the terms of the agreement.
- A manufacture and supply agreement with Contract Pharmaceuticals Limited Canada (CPL) for the formulation and assembly of the finished drug product during the fill/pack operation. This agreement terminates in September 2022, subject to earlier termination or extension in accordance with the terms of the agreement.
- A manufacturing services agreement with Advance Mold & Manufacturing, Inc. (Flex) for the manufacture of the liquid delivery sub-assembly, which consists of injection molded parts and other purchased components. The initial term of the agreement expires on October 24, 2021 (subject to earlier termination in accordance with its terms) but will automatically renew for successive one-year terms unless either party provides at least ninety days prior written notice to the other that it does not intend to renew the agreement.

We believe our third-party manufacturers have adequate capacity to manufacture sufficient quantities of XHANCE to meet anticipated commercial demands.

## Competition

Our industry is highly competitive and subject to rapid and significant technological change as research provides a deeper understanding of the pathology of diseases and new technologies and treatments are developed. We believe our scientific knowledge, technology, and development capabilities provide us with substantial competitive advantages, but we face potential competition from multiple sources, including large pharmaceutical, biotechnology, specialty pharmaceutical and, to a lesser degree, medical device companies.

XHANCE competes primarily with INS, oral steroids, monoclonal antibodies and other medical management products, including locally compounded liquid budesonide in high-volume nasal rinses. XHANCE also competes with surgical procedures, balloon sinus dilation products and steroid-releasing sinus implants. Key competitive factors affecting the commercial success of XHANCE and any other product candidates we may develop are likely to be efficacy, safety and tolerability profile, reliability, convenience of administration, price and reimbursement.

The only other branded INS on the market indicated for the treatment of nasal polyps is Nasonex, which is marketed by Merck & Co., Inc. A generic version of Nasonex, mometasone furoate monohydrate, was approved by the FDA for, among other indications, the treatment of nasal polyps and launched in 2016. In addition, Beconase AQ, which is an INS marketed by GlaxoSmithKline, is indicated for the prophylaxis of nasal polyps after surgical resection. In addition, SINUVA is a commercially available corticosteroid-eluting implant indicated for the treatment of nasal polyps in adult patients who have had ethmoid sinus surgery that can be placed in the ethmoid sinus under endoscopic visualization for up to 90 days. In the SINUVA clinical studies, patients were advised to use nasal steroid sprays and sinus rinses for the duration of the study.

There are no products approved for the treatment of chronic sinusitis without nasal polyps. There are two categories of INS: first-generation INS products, which include Rhinocort, Nasacort AQ and Qnasl; and second-generation INS products, which include Flonase, Veramyst, Omnaris and Zetonna. The primary difference between first- and second-generation INS products is that first-generation INS are absorbed into the blood to a greater extent than second-generation INS, with systemic bioavailability ranging from 10% to 50% compared to a systemic bioavailability with fluticasone propionate, a second-generation INS, of less than 2%. Many of the most widely-prescribed INS products are available in generic form and some, such as Flonase (which contains the same active pharmaceutical ingredient as XHANCE), are available over-the-counter at prices generally ranging from approximately \$15-30 per month supply.

Several companies have developed or are currently developing monoclonal antibodies for the treatment of nasal polyps. These monoclonal antibodies, which inhibit specific pathways of inflammation present in nasal polyps, include omalizumab, benralizumab, mepolizumab and DUPIXENT. In June 2019, the FDA approved DUPIXENT as an add-on maintenance treatment in adult patients with inadequately controlled chronic rhinosinusitis with nasal polyposis. In December 2019, Roche announced FDA acceptance of a supplemental Biologics License Application (sBLA) for omalizumab for the treatment of nasal polyps in adult patients with inadequate response to intranasal corticosteroids. Monoclonal antibodies could represent significant competition for XHANCE. In addition, there are new small molecules, including fevipiprant being developed for the treatment of nasal polyps, that are also believed to inhibit specific pathways of inflammation present in nasal polyps.

## XHANCE Clinical Development

### Overview

We evaluated XHANCE in the following five clinical trials comprised of over 1,500 patients:

- two randomized, double-blinded, placebo-controlled Phase 3 pivotal clinical trials designed to compare the safety and efficacy of XHANCE to a placebo EDS in adults with bilateral nasal polyps, which we refer to as NAVIGATE I and NAVIGATE II or collectively, our pivotal clinical trials. Each of NAVIGATE I and NAVIGATE II had co-primary endpoints of (i) change in subjective nasal congestion/obstruction symptoms from baseline to week 4 and (ii) change in objectively measured total (bilateral) nasal polyp grade from baseline to week 16. These trials also evaluated several secondary endpoints, including the impact of XHANCE treatment on study-defined surgical eligibility criteria and changes in Sinonasal Outcome Test 22 score, which considers the core defining signs and symptoms of nasal polyps and the impact on functioning,

quality of life and sleep. We also conducted a complete response analysis to evaluate the percentage of patients with a recorded nasal polyp grade of zero on at least one side of the nasal cavity.

- two open-label Phase 3 clinical trials which we refer to as EXHANCE-3 and EXHANCE-12 or collectively, as our supportive clinical trials, to evaluate the safety of XHANCE in adults with symptoms of chronic sinusitis with or without nasal polyps over an extended period of time (3 months in the case of EXHANCE-3 and 12 months in the case of EXHANCE-12). In these trials we also assessed a variety of objective and subjective efficacy parameters, including an assessment of each patient's symptoms and functioning and the impact of XHANCE treatment on study-defined surgical eligibility criteria.
- one Phase 1, open-label, randomized, single-dose, bioavailability study to compare the bioavailability of fluticasone propionate from XHANCE to Flonase and Flovent HFA in healthy patients and patients with mild-to-moderate asthma. We conducted this Phase 1 trial to establish a bridge between XHANCE, which consists of our fluticasone propionate formulation combined with our EDS device, and Flonase and Flovent HFA, the referenced listed drugs for our NDA. In our NDA, we relied in part on the FDA's previous findings of safety for Flonase and Flovent HFA, including non-clinical toxicology findings and finding related to hypothalamic pituitary adrenal (HPA) axis suppression, which is a known side effect of corticosteroids. To do so, we were required to establish that the systemic exposure, or the amount of drug absorbed into the body, to fluticasone propionate following use of XHANCE did not exceed the exposure produced by Flovent HFA.

### **Clinical Trial Highlights**

Our Phase 3 clinical development program included a population of patients generally reflective of our intended patient population, with approximately 90% having previously tried INS therapy and almost one-third having previously undergone sinus surgery. Key results from our Phase 3 clinical trial program include:

- In our pivotal clinical trials, XHANCE produced statistically significant benefits on both of the co-primary endpoints: a reduction of nasal congestion/obstruction symptoms at week 4 and a reduction in total polyp grade at week 16.
- In our Phase 3 clinical trials, patients with nasal polyps generally experienced greater improvements in symptoms and reductions in polyp grade with longer duration of use.
- In our pivotal clinical trials, approximately 16% of patients treated with XHANCE had nasal polyps eliminated (reduced to polyp grade 0) in at least one nostril after 16 weeks of treatment, and approximately 27% had nasal polyps eliminated in at least one nostril after an additional eight weeks of treatment. In our supportive trials, we observed complete response rates in at least one nostril of 48% of patients in EXHANCE-3 and 47.1% of patients in EXHANCE-12.
- In our pivotal clinical trials, XHANCE produced improvement across all four defining symptoms of chronic rhinosinusitis.
- Over 85% of patients receiving XHANCE across our pivotal clinical trials reported improvement, and approximately two-thirds reported being "much" or "very much" improved, compared to approximately one-third of patients in the placebo EDS group. In our supportive clinical trials, approximately 70% of patients with symptoms of chronic sinusitis, both with and without nasal polyps, reported that they were "much" or "very much" improved after treatment with XHANCE.
- On a Sinonasal Outcome Test-22, the improvement with the 186- and 372- mcg doses of XHANCE was superior to the placebo EDS in both NAVIGATE I and NAVIGATE II. The magnitude of improvement associated with treatment with XHANCE was approximately 20 points. Although cross-trial comparisons have significant limitations and must be interpreted with caution, in a previous third-party study evaluating a large cohort (n=1468) of patients who were underwent sinus surgery, the degree of change on this outcome measure was approximately 18 points.
- After 12 months of treatment with XHANCE in our supportive clinical trials, at least 50% of patients had a Sinonasal Outcome Test-22 score that was at or below 9.3, which is the average score that has been reported for healthy individuals.
- XHANCE was well tolerated and had an adverse event profile generally similar to that observed in several comparably designed third party studies with traditional INS. The most common adverse reactions (incidence  $\geq 3\%$ ) are epistaxis, nasal septal ulceration, nasopharyngitis, nasal mucosal erythema, nasal



mucosal ulcerations, nasal congestion, acute sinusitis, nasal septal erythema, headache, and pharyngitis. In connection with the approval of our NDA for XHANCE, the FDA required that we complete a clinical trial of XHANCE for the treatment of nasal polyps in pediatric patients by January 2022. Although this trial is ongoing, we will need to submit a request to the FDA to extend this deadline due to enrollment rates.

### Regulatory Exclusivity and Barriers to Entry

XHANCE benefits from substantial intellectual property and regulatory barriers to entry, including the following:

- **Strong patent protection.** Our XHANCE U.S. patent portfolio consists of 16 issued device and method of use patents expiring from 2020 through 2035, three issued design patents expiring through 2030 and pending patent applications. We rely primarily on the protections afforded by device and method of use patents. Our issued U.S. patents and patent applications for XHANCE are based on our EDS, including the combination of this technology with fluticasone propionate.
- **Complex drug-delivery system.** We believe the unique features of our EDS, as well as its delivery of a topical-acting corticosteroid, affords us significant protection against generic competition, as well as against a potential 505(b)(2) NDA, that seeks to reference XHANCE in order to obtain approval for a therapeutically equivalent, substitutable competitor product. XHANCE, utilizing our proprietary EDS, presents human factors engineering complexities for drug-device combination products and chemistry, manufacturing and controls challenges unique to suspension and respiratory products. Any future substitutable generic entrant will need to have considerable combination product know-how to develop and validate a substitutable drug delivery device or technology to compete with our EDS.
- **Clinical and regulatory complexity.** We conducted a clinical development program comprised of over 1,500 patients to support FDA approval of our NDA for XHANCE for the treatment of nasal polyps, including human factors studies and Phase 3 clinical trial assessments evaluating and validating the use of our EDS. As with other drugs that primarily have local activity, we believe the regulatory pathway for products seeking approval as substitutable generic equivalents to XHANCE will be more complex and costly than the pharmacokinetic studies generally required for systemically-acting medications. We believe current FDA guidance for substitutable INS may require the demonstration of "clinical bioequivalence," which has led developers to conduct non-inferiority clinical trials. Clinical trials in nasal polyps are different from those that have been performed to support approval of generic INS for allergic rhinitis. We believe potential generic competitors to XHANCE must not only demonstrate efficacy versus placebo, but may also be required to show equivalent efficacy and safety outcomes to establish clinical bioequivalence to XHANCE, requiring a significant amount of time and capital investment and presenting clinical development uncertainties.
- **Three-year regulatory exclusivity.** The FDA granted XHANCE a three-year period of regulatory exclusivity that will end in September 2020. This exclusivity means that we have been afforded at least three years post-NDA approval in which to market our product for the treatment of nasal polyps before FDA may grant final approval to a generic or 505(b)(2) product relying on XHANCE as a reference product.

### Intellectual Property

We strive to protect our proprietary technology that we believe is important to our business, including seeking and maintaining patents intended to cover our product candidates and technologies that are important to the development of our business. We also rely on trade secrets to protect aspects of our business that are not amenable to, or that we do not consider appropriate for, patent protection, as well as know-how, trademarks, continuing technological innovation and in-licensing opportunities to develop and maintain our proprietary position. We internally developed our intellectual property related to XHANCE, Onzetra Xsail, our product candidates and our EDS devices. We have sought and intend to continue to seek appropriate patent protection for our product candidates, as well as other proprietary technologies and their uses by filing patent applications in the U.S. and selected other countries.

### Patents

As of February 28, 2020, we owned over 50 U.S. patents expiring between 2020 and 2035, and over 20 pending U.S. patent applications. In addition to our U.S. intellectual property, we also own 200 foreign issued patents expiring between 2020 and 2033, and over 75 foreign patent applications.

Our XHANCE U.S. patent portfolio consists of 16 issued device and method of use patents expiring between 2020 and 2035, three issued design patents expiring between 2029 and 2030 and pending patent applications. The 16 device and method of use patents are published in the FDA's Approved Drug Products with Therapeutic Equivalence Evaluations, commonly known as the Orange Book. Drugs listed in the Orange Book can, in turn, be cited by potential generic competitors in support of approval of an abbreviated NDA (ANDA), or a 505(b)(2) NDA. If any of these potential generic competitors claim that their product will not infringe XHANCE's listed patents, or that such patents are invalid, then they must send notice to us once the ANDA or 505(b)(2) NDA has been accepted for filing by the FDA. We may then initiate a patent infringement lawsuit in response to the notice of the Paragraph IV certification, which would automatically prevent the FDA from approving the ANDA or 505(b)(2) NDA until the earlier of 30 months, expiration of the patent, settlement of the lawsuit, or a decision in the infringement case that is favorable to the ANDA or 505(b)(2) NDA applicant.

The rest of our patent portfolio largely relates to patents and applications owned by us and directed to Onzetra Xsail and other product candidates, including OPN-300, and our EDS devices and related technologies.

### ***Trade Secrets and Other Proprietary Information***

We seek to protect our proprietary information, including our trade secrets and proprietary know-how, by requiring our employees, consultants and other advisors to execute confidentiality agreements upon the commencement of their employment or engagement. These agreements generally provide that all confidential information developed or made known during the course of the relationship with us be kept confidential and not be disclosed to third parties except in specific circumstances. In the case of our employees, the agreements also typically provide that all inventions resulting from work performed for us, utilizing our property or relating to our business and conceived or completed during employment shall be our exclusive property to the extent permitted by law. Where appropriate, agreements we obtain with our consultants also typically contain similar assignment of invention provisions. Further, we generally require confidentiality agreements from business partners and other third parties that receive our confidential information.

### ***Trademarks***

We also rely on trademarks and trade designs to develop and maintain our competitive position. OPTINOSE® and XHANCE® are registered trademarks of ours in the U.S.

### **Licensing of Our Exhalation Delivery System (Outside of ENT/Allergy Indications)**

#### ***Currax License Agreement***

On September 25, 2019, OptiNose AS, our wholly-owned subsidiary, entered into the Currax License Agreement. Under the terms of the Currax License Agreement, we granted Currax an exclusive license to certain OptiNose patents and a non-exclusive license to certain OptiNose know-how to use, sell, offer for sale, have sold and import Onzetra® Xsail® (sumatriptan nasal powder) in the U.S., Canada and Mexico.

Under the terms of the Currax License Agreement, we received a \$3.7 million upfront payment. In addition, we are eligible to receive an additional \$0.8 million which is being held in escrow for a limited period to cover certain indemnification obligations. We are also eligible to receive a one-time 10% royalty on Onzetra net sales in excess of \$3.0 million solely for calendar year 2020, and an additional \$1.0 million milestone payment subject to the achievement of a specified regulatory milestone.

#### ***Inexia License Agreement***

On January 31, 2019, OptiNose AS, our wholly-owned subsidiary, entered into the Inexia License Agreement. Under the terms of the Inexia License Agreement, we granted Inexia an exclusive, royalty-bearing, worldwide, non-transferable, sublicensable license to our EDS and other intellectual property for the development, sale, import and manufacture of products containing orexin receptor agonist and/or orexin receptor positive modulator molecule(s) as the sole active pharmaceutical ingredient(s) for the treatment, diagnosis or prevention of human diseases or conditions associated primarily with orexin receptor agonism and orexin receptor positive modulation. The license excludes the treatment of any disease or condition affecting the ear, nose or throat, or the treatment of any disease or condition associated primarily with another receptor, other than the Orexin 1 and Orexin 2 receptors. Inexia is solely responsible for all costs and activities related to its identification, development and commercialization of products under the Inexia License Agreement.

Under the terms of the Inexia License Agreement, we received a \$0.5 million upfront payment. For each product developed under the Inexia License Agreement, we are eligible to receive up to \$8.0 million of development

milestone payments and up to \$37.0 million of sales milestone payments. In addition, we are eligible to receive tiered, low-to-mid single digit royalties based on net sales of any products successfully developed and commercialized under the Inexia License Agreement. Other than the upfront payment, we do not anticipate the receipt of any milestone or royalty payments from Inexia in the near term.

As a result of the Inexia License Agreement, we have discontinued our preclinical OPN-021 program, which combined our EDS with orexin agonist molecules for the treatment of narcolepsy and symptoms of other diseases potentially amenable to the same pharmacologic activity, such as Parkinson's disease.

### **Avanir License Agreement**

Our license agreement with Avanir Pharmaceuticals Inc. (Avanir License Agreement) for Onzetra Xsail terminated on March 10, 2019. In September 2019, as described above, OptiNose AS, our wholly-owned subsidiary, entered into the Currax License Agreement.

### **Government Regulation**

We are subject to extensive regulation by the FDA and other federal, state, and local regulatory agencies. The Federal Food, Drug and Cosmetic Act (the FD&C Act) and FDA's implementing regulations set forth, among other things, requirements for the testing, development, manufacture, quality control, safety, effectiveness, approval, labeling, storage, record-keeping, reporting, distribution, import, export, advertising and promotion of our products and product candidates. Although the discussion below focuses on regulation in the U.S., because that is currently our primary focus, we anticipate seeking approval for, and marketing, our products in other countries in the future. Generally, our activities in other countries will be subject to regulation that is similar in nature and scope as that imposed in the U.S., although there can be important differences.

### **Development and Approval**

Under the FD&C Act, FDA approval of an NDA is required before any new drug can be marketed in the U.S. NDAs require extensive studies and submission of a large amount of data by the applicant.

*Preclinical Testing.* Before testing any compound in human patients in the U.S., a company must generate extensive preclinical data. Preclinical testing generally includes laboratory evaluation of product chemistry and formulation, as well as toxicological and pharmacological studies in several animal species to assess the toxicity and dosing of the product. Certain animal studies must be performed in compliance with the FDA's Good Laboratory Practice (GLP) regulations and the U.S. Department of Agriculture's Animal Welfare Act.

*IND Application.* Human clinical trials in the U.S. cannot commence until an investigational new drug (IND) application is submitted and becomes effective. A company must submit preclinical testing results to the FDA as part of the IND, and the FDA must evaluate whether there is an adequate basis for testing the drug in initial clinical studies in human volunteers. Unless the FDA raises concerns, the IND becomes effective 30 days following its receipt by the FDA, and the clinical trial proposed in the IND may begin. Once human clinical trials have commenced, the FDA may stop a clinical trial by placing it on "clinical hold" because of concerns about the safety of the product being tested, or for other reasons.

*Clinical Trials.* Clinical trials involve the administration of a drug to healthy human volunteers or to patients, under the supervision of a qualified investigator. The conduct of clinical trials is subject to extensive regulation, including compliance with the FDA's bioresearch monitoring regulations and Good Clinical Practice (GCP) requirements, which establish standards for conducting, recording data from, and reporting the results of, clinical trials, and are intended to assure that the data and reported results are credible and accurate, and that the rights, safety, and well-being of study participants are protected. Clinical trials must be conducted under protocols that detail the study objectives, parameters for monitoring safety, and the efficacy criteria, if any, to be evaluated. Each protocol is reviewed by the FDA as part of the IND. In addition, each clinical trial must be reviewed and approved by, and conducted under the auspices of, an Institutional Review Board (IRB) for each clinical site. Companies sponsoring the clinical trials, investigators, and IRBs also must comply with, as applicable, regulations and guidelines for obtaining informed consent from the study patients, following the protocol and investigational plan, adequately monitoring the clinical trial, and timely reporting of adverse events (AEs). Foreign studies conducted under an IND must meet the same requirements that apply to studies being conducted in the U.S. Data from a foreign study not conducted under an IND may be submitted in support of an NDA if the study was conducted in accordance with GCP and the FDA is able to validate the data.



A study sponsor is required to publicly post specified details about certain clinical trials and clinical trial results on government or independent websites (e.g., <http://clinicaltrials.gov>). Human clinical trials typically are conducted in three sequential phases, although the phases may overlap or be combined:

- Phase 1 clinical trials involve the initial administration of the investigational drug to humans, typically to a small group of healthy human subjects, but occasionally to a group of patients with the targeted disease or disorder. Phase 1 clinical trials generally are intended to evaluate the safety, metabolism and pharmacologic actions of the drug, the side effects associated with increasing doses, and, if possible, to gain early evidence of effectiveness.
- Phase 2 clinical trials generally are controlled studies that involve a relatively small sample of the intended patient population, and are designed to develop initial data regarding the product's effectiveness, to determine dose response and the optimal dose range, and to gather additional information relating to safety and potential AEs.
- Phase 3 clinical trials are conducted after preliminary evidence of effectiveness has been obtained, and are intended to gather the additional information about safety and effectiveness necessary to evaluate the drug's overall risk-benefit profile, and to provide a basis for physician labeling. Generally, Phase 3 clinical development programs consist of expanded, large-scale studies of patients with the target disease or disorder to obtain statistical evidence of the efficacy and safety of the drug at the proposed dosing regimen.

The sponsoring company, the FDA, or the IRB may suspend or terminate a clinical trial at any time on various grounds, including a finding that the patients are being exposed to an unacceptable health risk. Further, success in early-stage clinical trials does not assure success in later-stage clinical trials. Data obtained from clinical activities are not always conclusive and may be subject to alternative interpretations that could delay, limit or prevent regulatory approval.

*NDA Submission and Review.* The FD&C Act provides two pathways for the approval of new drugs through an NDA. An NDA under Section 505(b)(1) of the FD&C Act is a comprehensive application to support approval of a product candidate that includes, among other things, data and information to demonstrate that the proposed drug is safe and effective for its proposed uses, that production methods are adequate to ensure its identity, strength, quality, and purity of the drug, and that proposed labeling is appropriate and contains all necessary information. A 505(b)(1) NDA contains results of the full set of preclinical studies and clinical trials conducted by or on behalf of the applicant to characterize and evaluate the product candidate.

Section 505(b)(2) of the FD&C Act provides an alternate regulatory pathway to obtain FDA approval that permits the filing of an NDA where at least some of the information required for approval comes from studies not conducted by or for the applicant and for which the applicant has not obtained a right of reference. The applicant may rely to some extent upon the FDA's findings of safety and effectiveness for an approved product that acts as the reference drug and submit its own product-specific data — which may include data from preclinical studies or clinical trials conducted by or on behalf of the applicant — to address differences between the product candidate and the reference drug. We obtained FDA approval of XHANCE through the Section 505(b)(2) regulatory approval pathway, with Flonase and Flovent HFA as the reference drugs. Flonase and Flovent HFA contain fluticasone propionate, which is also the active ingredient in XHANCE.

The submission of an NDA under either Section 505(b)(1) or Section 505(b)(2) generally requires payment of a substantial user fee to the FDA. 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. For some NDAs, the FDA may convene an advisory committee to seek insights and recommendations on issues relevant to approval of the application. Although the FDA is not bound by the recommendation of an advisory committee, the agency considers such recommendations carefully when making decisions.

Our product and product candidates include products that combine drug and device components in a manner that the FDA considers to meet the definition of a "combination product" under FDA regulations. The FDA exercises significant discretion over the regulation of combination products, including the discretion to require separate marketing applications for the drug and device components in a combination product. For XHANCE, FDA's Center for Drug Evaluation and Research (CDER) had primary jurisdiction for review of the NDA, and both the drug and device were reviewed under one marketing application. However, for a drug-device combination product CDER typically consults with the Center for Devices and Radiological Health in the NDA review process.

The FDA may determine that a Risk Evaluation and Mitigation Strategy (REMS) is necessary to ensure that the benefits of a new product outweigh its risks, and the product can therefore be approved. A REMS may include various elements, ranging from a medication guide or patient package insert to limitations on who may prescribe or dispense the drug, depending on what the FDA considers necessary for the safe use of the drug. Under the Pediatric Research Equity Act, certain applications for approval must also include an assessment, generally based on clinical study data, of the safety and effectiveness of the subject drug in relevant pediatric populations. Before approving an NDA, 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 current Good Manufacturing Practice (cGMP) requirements and adequate to assure consistent production of the product within required specifications.

Once the FDA accepts an NDA submission — which occurs, if at all, within 60 days after submission of the NDA — the FDA's goal for a non-priority review of an NDA is ten months. The review process can be and often is significantly extended, however, by FDA requests for additional information, studies, or clarification. After review of an NDA and the facilities where the product is manufactured, the FDA either issues an approval letter or a complete response letter (CRL) outlining the deficiencies in the submission. The CRL may require additional testing or information, including additional preclinical or clinical data. Even if such additional information and data are submitted, the FDA may decide that the NDA still does not meet the standards for approval. Data from clinical trials are not always conclusive and the FDA may interpret data differently than the sponsor.

Obtaining regulatory approval often takes a number of years, involves the expenditure of substantial resources, and depends on a number of factors, including the severity of the disease in question, the availability of alternative treatments, and the risks and benefits demonstrated in clinical trials. Additionally, as a condition of approval, the FDA may impose restrictions that could affect the commercial success of a drug or require post-approval commitments, including the completion within a specified time period of additional clinical studies, which often are referred to as "Phase 4" or "post-marketing" studies. For example, at the time of XHANCE approval, the FDA required us to conduct a randomized, double-blind, placebo controlled, parallel group clinical study in children and adolescents 6 to 17 years of age with bilateral nasal polyps associated with nasal congestion to assess the safety, efficacy, pharmacokinetics, and pharmacodynamics of XHANCE in improving nasal polyp grade and symptoms (nasal congestion/obstruction, sense of smell, rhinorrhea and facial pain or pressure). On October 30, 2017, the FDA notified us that in response to our request it had modified the required age range to 12 to 17 years of age. We submitted our final protocol to the FDA with respect to the pediatric study by January 2018 as required, and we have since contracted with various clinical trial sites and begun patient enrollment. We are required to complete the study by January 2022 and submit a final report with respect to the study by July 2022.

Post-approval modifications to the drug, such as changes in indications, labeling, or manufacturing processes or facilities, may require a sponsor to develop additional data or conduct additional preclinical studies or clinical trials, to be submitted in a new or supplemental NDA, which would require FDA approval.

### ***Post-Approval Regulation***

Once approved, drug products are subject to continuing regulation by the FDA. If ongoing regulatory requirements are not met or if safety or manufacturing problems occur after the product reaches the market, the FDA may at any time withdraw product approval or take actions that would limit or suspend marketing. Additionally, the FDA may require post-marketing studies or clinical trials, changes to a product's approved labeling, including the addition of new warnings and contraindications, or the implementation of other risk management measures, including distribution-related restrictions, if there are new safety information developments.

**Good Manufacturing Practices.** Companies engaged in manufacturing drug products or their components must comply with applicable cGMP requirements and product-specific regulations enforced by the FDA and other regulatory agencies. Compliance with cGMP includes adhering to requirements relating to organization and training of personnel, buildings and facilities, equipment, control of components and drug product containers and closures, production and process controls, quality control and quality assurance, packaging and labeling controls, holding and distribution, laboratory controls, and records and reports. The FDA regulates and inspects equipment, facilities, and processes used in manufacturing pharmaceutical products prior to approval. If, after receiving approval, a company makes a material change in manufacturing equipment, location, or process (all of which are, to some degree, incorporated in the NDA), additional regulatory review and approval may be required. The FDA also conducts regular, periodic visits to re-inspect equipment, facilities, and processes following the initial approval of a product. Failure to comply with applicable cGMP requirements and conditions of product approval may lead the FDA to take enforcement action or seek sanctions, including fines, issuance of warning letters, civil penalties, injunctions, suspension of manufacturing operations, operating restrictions, withdrawal of FDA approval, seizure or recall of

products, and criminal prosecution. Although we periodically monitor the FDA compliance of our third-party manufacturers, we cannot be certain that our present or future third-party manufacturers will consistently comply with cGMP and other applicable FDA regulatory requirements.

We also need to comply with some of the FDA's manufacturing regulations for devices. FDA has discretion in determining post-approval compliance requirements for products that combine a drug product with a delivery system device. In addition to cGMP, the FDA requires that our drug-device combination product comply with the Quality System Regulation (QSR), which sets forth the FDA's manufacturing quality standards for medical devices.

**Advertising and Promotion.** The FDA and other federal regulatory agencies closely regulate the marketing and promotion of drugs through, among other things, standards and regulations for direct-to-consumer advertising, advertising and promotion to healthcare professionals, communications regarding unapproved uses, industry-sponsored scientific and educational activities, and promotional activities involving the Internet. A product cannot be commercially promoted before it is approved. After approval, product promotion can include only those claims relating to safety and effectiveness that are consistent with the labeling approved by the FDA. Healthcare providers are permitted to prescribe drugs for "off-label" uses — that is, uses not approved by the FDA and not described in the product's labeling — because the FDA does not regulate the practice of medicine. However, FDA regulations impose restrictions on manufacturers' communications regarding off-label uses. Broadly speaking, a manufacturer may not promote a drug for off-label use, but under certain conditions may engage in non-promotional, balanced, scientific communication regarding off-label use. Failure to comply with applicable FDA requirements and restrictions in this area may subject a company to adverse publicity and enforcement action by the FDA, the Department of Justice, or the Office of the Inspector General of the Department of Health and Human Services, as well as state authorities. This could subject a company to a range of penalties that could have a significant commercial impact, including civil and criminal fines and agreements that materially restrict the manner in which a company promotes or distributes a drug.

**Other Requirements.** NDA holders must comply with other regulatory requirements, including submitting annual reports, reporting information about adverse drug experiences, and maintaining certain records.

### **Hatch-Waxman Act**

The Drug Price Competition and Patent Term Restoration Act of 1984 (the Hatch-Waxman Act) establishes two abbreviated approval pathways for pharmaceutical products that are in some way follow-on versions of already approved products.

**Generic Drugs.** A generic version of an approved drug is approved by means of an ANDA, by which the sponsor demonstrates that the proposed product is the same as the approved, brand-name drug, which is referred to as the reference listed drug (RLD). Generally, an ANDA must contain data and information showing that the proposed generic product and RLD (i) have the same active ingredient, in the same strength and dosage form, to be delivered via the same route of administration, (ii) are intended for the same uses, and (iii) are bioequivalent. This is instead of independently demonstrating the proposed product's safety and effectiveness, which are inferred from the fact that the product is the same as the RLD, which the FDA previously found to be safe and effective.

**505(b)(2) NDAs.** As discussed above, if a product is similar, but not identical, to an already approved product, it may be submitted for approval via an NDA under section 505(b)(2) of the FD&C Act. Unlike an ANDA, this does not excuse the sponsor from demonstrating the proposed product's safety and effectiveness. Rather, the sponsor is permitted to rely to some degree on information from investigations that were not conducted by or for the applicant and for which the applicant has not obtained a right of reference, and must submit its own product-specific data of safety and effectiveness to an extent necessary because of the differences between the products. An NDA approved under 505(b)(2) may in turn serve as an RLD for subsequent applications from other sponsors.

**RLD Patents.** In an NDA, a sponsor must identify patents that claim the drug substance or drug product or a method of using the drug. When the drug is approved, those patents are among the information about the product that is listed in the FDA publication, *Approved Drug Products with Therapeutic Equivalence Evaluations*, which is referred to as the *Orange Book*. The sponsor of an ANDA or 505(b)(2) application seeking to rely on an approved product as the RLD must make one of several certifications regarding each listed patent. A "Paragraph I" certification is the sponsor's statement that patent information has not been filed for the RLD. A "Paragraph II" certification is the sponsor's statement that the RLD's patents have expired. A "Paragraph III" certification is the sponsor's statement that it will wait for the patent to expire before obtaining approval for its product. A "Paragraph IV" certification is an assertion that the patent does not block approval of the later product, either

because the patent is invalid or unenforceable or because the patent, even if valid, is not infringed by the new product.

**Regulatory Exclusivities.** The Hatch-Waxman Act provides periods of regulatory exclusivity for products that would serve as RLDs for an ANDA or 505(b)(2) application. If a product is a "new chemical entity," or NCE — generally meaning that the active moiety has never before been approved in any drug — there is a period of five years from the product's approval during which the FDA may not accept for filing any ANDA or 505(b)(2) application for a drug with the same active moiety. An ANDA or 505(b)(2) application may be submitted after four years, however, if the sponsor of the application makes a Paragraph IV certification.

A product that is not an NCE may qualify for a three-year period of exclusivity if the NDA contains new clinical data, (other than bioavailability studies) derived from studies conducted by or for the sponsor, that were necessary for approval. In that instance, the exclusivity period does not preclude filing or review of an ANDA or 505(b)(2) application; rather, the FDA is precluded from granting final approval to the ANDA or 505(b)(2) application until three years after approval of the RLD. Additionally, the exclusivity applies only to the conditions of approval that required submission of the clinical data.

Once the FDA accepts for filing an ANDA or 505(b)(2) application containing a Paragraph IV certification, the applicant must within 20 days provide notice to the RLD NDA holder and patent owner that the application has been submitted, and provide the factual and legal basis for the applicant's assertion that the patent is invalid or not infringed. If the NDA holder or patent owner files suit against the ANDA or 505(b)(2) applicant for patent infringement within 45 days of receiving the Paragraph IV notice, the FDA is prohibited from approving the ANDA or 505(b)(2) application for a period of 30 months or the resolution of the underlying suit, whichever is earlier. If the RLD has NCE exclusivity and the notice is given and suit filed during the fifth year of exclusivity, the 30-month stay does not begin until five years after the RLD approval. The FDA may approve the proposed product before the expiration of the 30-month stay if a court finds the patent invalid or not infringed or if the court shortens the period because the parties have failed to cooperate in expediting the litigation.

**Patent Term Restoration.** A portion of the patent term lost during product development and FDA review of an NDA is restored if approval of the application is the first permitted commercial marketing of a drug containing the active ingredient. The patent term restoration period is generally one-half the time between the effective date of the IND or the date of patent grant (whichever is later) and the date of submission of the NDA, plus the time between the date of submission of the NDA and the date of FDA approval of the product. The maximum period of restoration is five years, and the patent cannot be extended to more than 14 years from the date of FDA approval of the product. Only one patent claiming each approved product is eligible for restoration and the patent holder must apply for restoration within 60 days of approval. The U.S. Patent and Trademark Office (USPTO) in consultation with the FDA, reviews and approves the application for patent term restoration. When any of our products is approved, we intend to seek patent term restoration for an applicable patent when it is appropriate.

#### **Other Exclusivities**

**Pediatric Exclusivity.** Section 505A of the FD&C Act provides for six months of additional exclusivity or patent protection if an NDA sponsor submits pediatric data that fairly respond to a written request from the FDA for such data. The data does not need to show that the product is effective in the pediatric population studied; rather, if the clinical trial is deemed to fairly respond to the FDA's request, the additional protection is granted. If reports of requested pediatric studies are submitted to and accepted by FDA within the statutory time limits, whatever statutory or regulatory periods of exclusivity or *Orange Book* listed patent protection that cover the drug are extended by six months. This is not a patent term extension, but it effectively extends the regulatory period during which the FDA cannot approve an ANDA or 505(b)(2) application owing to regulatory exclusivity or listed patents. When any product is approved, we will evaluate seeking pediatric exclusivity as appropriate.

**Orphan Drug Exclusivity.** The Orphan Drug Act provides incentives for the development of drugs intended to treat rare diseases or conditions, which generally are diseases or conditions affecting less than 200,000 individuals in the U.S. If a sponsor demonstrates that a drug product qualifies for orphan drug designation, the FDA grants orphan drug designation to the product for that use. The benefits of orphan drug designation include research and development tax credits and exemption from user fees. A drug that is approved for the orphan drug designated indication generally is granted seven years of orphan drug exclusivity. During that period, the FDA generally may not approve any other application for the same product for the same indication, although there are exceptions, most notably when the later product is shown to be clinically superior to the product with exclusivity. The FDA can revoke a product's orphan drug exclusivity under certain circumstances, including when the product sponsor is unable to assure the availability of sufficient quantities of the product to meet patient needs. Orphan drug exclusivity does not

prevent the FDA from approving a different drug for the same disease or condition, or the same drug for a different disease or condition.

### **U.S. Healthcare Reform**

The Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, which we refer to together as the Affordable Care Act, is a sweeping measure intended to expand healthcare coverage within the U.S., primarily through the imposition of health insurance mandates on employers and individuals and expansion of the Medicaid program. This law substantially changed the way healthcare is financed by both governmental and private insurers and significantly impacts the pharmaceutical industry. Changes that may affect our business include those governing enrollment in federal healthcare programs, reimbursement changes, benefits for patients within a coverage gap in the Medicare Part D prescription drug program (commonly known as the "donut hole"), rules regarding prescription drug benefits under the health insurance exchanges, changes to the Medicaid Drug Rebate program, expansion of the Public Health Service Act's 340B drug pricing program (340B Program), fraud and abuse, and enforcement. These changes impact existing government healthcare programs and have resulted in the development of new programs, including Medicare payment for performance initiatives and improvements to the physician quality reporting system and feedback program. Details of the changes to the Medicaid Drug Rebate program and the 340B Program are discussed under the risk factor *"If we fail to comply with our reporting and payment obligations under the Medicaid drug rebate program, or other governmental pricing programs, we could be subject to additional reimbursement requirements, penalties, sanctions and fines which could have a material adverse effect on our business, financial condition, results of operations and growth prospects"* in the "Risk Factors" section of this 10-K.

Some states have elected not to expand their Medicaid programs to individuals with an income of up to 133% of the federal poverty level, as is permitted under the Affordable Care Act. For each state that does not choose to expand its Medicaid program, there may be fewer insured patients overall, which could impact our sales of products and product candidates for which we receive regulatory approval, and our business and financial condition. Where new patients receive insurance coverage under any of the new Medicaid options made available through the Affordable Care Act, the possibility exists that manufacturers may be required to pay Medicaid rebates on drugs used under these circumstances, a decision that could impact manufacturer revenues.

Certain provisions of the Affordable Care Act have been subject to judicial challenges, as well as efforts to repeal or replace them or to alter their interpretation and implementation. For example, on December 22, 2017, the U.S. government signed into law comprehensive tax legislation, referred to as the Tax Cuts and Jobs Act (the Tax Act), which includes a provision repealing, effective January 1, 2019, the tax-based shared responsibility payment imposed by the Affordable Care Act on certain individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the "individual mandate." Further, the Bipartisan Budget Act of 2018, among other things, amended the Medicare statute to reduce the coverage gap in most Medicare drug plans, commonly known as the "donut hole," by raising the required manufacturer point-of-sale discount from 50% to 70% off the negotiated price effective as of January 1, 2019. Additional legislative changes, regulatory changes, and judicial challenges related to the Affordable Care Act remain possible. It is unclear how the Affordable Care Act and its implementation, as well as efforts to repeal or replace, or invalidate, the Affordable Care Act, or portions thereof, will affect our business, financial condition and results of operations. It is possible that the Affordable Care Act, as currently enacted or as it may be amended or replaced in the future, and other healthcare reform measures that may be adopted in the future, could have a material adverse effect on our industry generally and on our ability to maintain or increase sales of our products or product candidates for which we receive regulatory approval or to successfully commercialize our products and product candidates.

### **U.S. Tax Reform**

On December 22, 2017, the U.S. enacted the Tax Act. The Tax Act, among other things, imposes a repatriation tax on accumulated earnings of foreign subsidiaries, implements a territorial tax system together with a current tax on certain foreign earnings and lowers the general corporate income tax rate to 21%.



## **Coverage and Reimbursement**

Significant uncertainty exists as to the coverage and reimbursement status of our products and any product candidates for which we may obtain regulatory approval. Sales of any of our products and product candidates, if approved, will depend, in part, on the extent to which the costs of the products will be covered by third-party payors, including government healthcare programs such as Medicare and Medicaid, and private payors, such as commercial health insurers and managed care organizations. Third-party payors determine which drugs they will cover and the amount of reimbursement they will provide for a covered drug. In the U.S., there is no uniform system among payors for making coverage and reimbursement decisions. In addition, the process for determining whether a payor will provide coverage for a product may be separate from the process for setting the price or reimbursement rate that the payor will pay for the product once coverage is approved. Third-party payors may limit coverage to specific products on an approved list, or formulary, which might not include all of the FDA-approved products for a particular indication.

In order to secure coverage and reimbursement for our products we may need to conduct expensive pharmacoeconomic studies in order to demonstrate the medical necessity and cost-effectiveness of the product, in addition to the costly studies required to obtain FDA or other comparable regulatory approvals. Even if we conduct pharmacoeconomic studies, our products and product candidates may not be considered medically necessary or cost-effective by payors. Further, a payor's decision to provide coverage for a product does not imply that an adequate reimbursement rate will be approved.

In the past, payors have implemented reimbursement metrics and periodically revised those metrics as well as the methodologies used as the basis for reimbursement rates, such as average sales price (ASP), average manufacturer price (AMP), and actual acquisition cost. The existing data for reimbursement based on these metrics is relatively limited, although certain states have begun to survey acquisition cost data for the purpose of setting Medicaid reimbursement rates. The Centers for Medicare and Medicaid Services (CMS) surveys and publishes retail pharmacy acquisition cost information in the form of National Average Drug Acquisition Cost files to provide state Medicaid agencies with a basis of comparison for their own reimbursement and pricing methodologies and rates.

Participation in the Medicaid Drug Rebate Program requires us to pay a rebate for each unit of drug reimbursed by Medicaid. The amount of the "basic" portion of the rebate for each product is set by law as the larger of: (i) 23.1% of quarterly AMP, or (ii) the difference between quarterly AMP and the quarterly best price (Best Price), which, in general, represents the lowest price available from the manufacturer to any entity in the U.S. in any pricing structure, calculated to include all applicable sales and associated rebates, discounts and other price concessions. AMP must be reported on a monthly and quarterly basis, and Best Price is reported on a quarterly basis, to CMS, the federal agency that administers the Medicaid Drug Rebate Program. In addition, the rebate also includes the "additional" portion, which adjusts the overall rebate amount upward as an "inflation penalty" when the drug's latest quarter's AMP exceeds the drug's AMP from the first full quarter of sales after launch, adjusted for increases in the Consumer Price Index-Urban. The upward adjustment in the rebate amount per unit is equal to the excess amount of the current AMP over the inflation-adjusted AMP from the first full quarter of sales. The rebate amount is recomputed each quarter based on our report to CMS of current quarterly AMP and Best Price for the relevant drug. The terms of our participation in the Medicaid Drug Rebate Program require us to report revisions to AMP or Best Price within a period not to exceed 12 quarters from the quarter in which the data was originally due, and CMS may request or require restatements for earlier periods as well. Any such revisions could have the impact of increasing or decreasing our rebate liability for prior quarters, depending on the direction of the revision.

Federal law requires that any manufacturer that participates in the Medicaid Drug Rebate Program also participate in the 340B Program in order for federal funds to be available for the manufacturer's drugs under Medicaid and Medicare Part B. The 340B Program, which is administered by the Health Resource and Services Administration (HRSA) requires participating manufacturers to agree to charge statutorily defined covered entities no more than the 340B "ceiling price" for the manufacturer's covered outpatient drugs. These 340B covered entities include a variety of community health clinics and other entities that receive health services grants from the Public Health Service, as well as hospitals that serve a disproportionate share of low-income patients. The 340B ceiling price is calculated using a statutory formula, which is based on the AMP and rebate amount for the covered outpatient drug as calculated under the Medicaid Drug Rebate Program. Any changes to the definition of AMP and the Medicaid rebate amount under federal legislation could affect our 340B ceiling price calculations and negatively impact our results of operations. HRSA issued a final regulation regarding the calculation of the 340B ceiling price and the imposition of civil monetary penalties on manufacturers that knowingly and intentionally overcharge covered entities, which became effective on January 1, 2019. It is currently unclear how HRSA will apply its enforcement authority under

the regulation. HRSA also has implemented a ceiling price reporting requirement related to the 340B Program under which we are required to report 340B ceiling prices to HRSA on a quarterly basis. In addition, legislation may be introduced that, if passed, would further expand the 340B Program to additional covered entities or would require participating manufacturers to agree to provide 340B discounted pricing on drugs used in an inpatient setting.

In the U.S. Medicare program, outpatient prescription drugs may be covered under Medicare Part D. Medicare Part D is a voluntary prescription drug benefit, through which Medicare beneficiaries may enroll in prescription drug plans offered by private entities for coverage of outpatient prescription drugs. Part D plans include both stand-alone prescription drug benefit plans and prescription drug coverage as a supplement to Medicare Advantage plans provided for under Medicare Part C.

Coverage and reimbursement for covered outpatient drugs under Part D are not standardized. Part D prescription drug plan sponsors are not required to pay for all covered Part D drugs, and each drug plan can develop its own drug formulary that identifies which drugs it will cover and at what tier or level. Any formulary used by a Part D prescription drug plan must be developed and reviewed by a pharmacy and therapeutic committee. Although Part D prescription drug formularies must include drugs within each therapeutic category and class of covered Part D drugs, they have some flexibility to establish those categories and classes and are not required to cover all of the drugs in each category or class. Medicare Part D prescription drug plans may use formularies to limit the number of drugs that will be covered in any therapeutic class and/or impose differential cost sharing or other utilization management techniques.

The availability of coverage under Medicare Part D may increase demand for our products and any product candidates for which we receive marketing approval. However, in order for the products that we market to be included on the formularies of Part D prescription drug plans, we likely will have to offer pricing that is lower than the prices we might otherwise obtain. Changes to Medicare Part D that give plans more freedom to limit coverage or manage utilization, and other cost reduction initiatives in the program could decrease the coverage and price that we receive for any approved products and could harm our business.

In order to be eligible to have our products or any future products paid for with federal funds under the Medicaid and Medicare Part B programs, as applicable, and purchased by certain federal agencies and grantees, we also participate in the U.S. Department of Veterans Affairs (VA) Federal Supply Schedule (FSS) pricing program. Under this program, we are obligated to make our "innovator" drugs available for procurement on an FSS contract and charge a price to four federal agencies — the VA, U.S. Department of Defense (DoD) Public Health Service and U.S. Coast Guard — that is no higher than the statutory Federal Ceiling Price (FCP). The FCP is based on the non-federal average manufacturer price (Non-FAMP), which we calculate and report to the VA on a quarterly and annual basis. We also participate in the Tricare Retail Pharmacy program, under which we pay quarterly rebates on utilization of innovator products that are dispensed through the Tricare Retail Pharmacy network to Tricare beneficiaries. The rebates are calculated as the difference between the annual Non-FAMP and FCP.

Pricing and rebate calculations vary across products and programs, are complex, and are often subject to interpretation by us, governmental or regulatory agencies, and the courts. Significant civil monetary penalties can be applied if we are found to have knowingly submitted any false price information to the government or fail to submit the required price data on a timely basis. Such conduct also could be grounds for CMS to terminate the our Medicaid drug rebate agreement, in which case federal payments may not be available under Medicaid or Medicare Part B for our covered outpatient drugs. Civil monetary penalties could also be applied if we are found to have charged 340B covered entities more than the statutorily mandated ceiling price. In addition, claims submitted to federally-funded healthcare programs, such as Medicare and Medicaid, for drugs priced based on incorrect pricing data provided by a manufacturer can implicate the False Claims Act.

The containment of healthcare costs has become a priority of federal, state and foreign governments, and the prices of drugs have been a focus in this effort. The U.S. government, state legislatures, and foreign governments have shown significant interest in implementing cost-containment programs to limit the growth of government-paid healthcare costs, including price controls, restrictions on reimbursement, and requirements for substitution of generic products for branded prescription drugs. For example, there have been several recent U.S. Congressional inquiries and proposed federal and state legislation designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, reduce the cost of drugs, and reform government program reimbursement methodologies for drug products.

Beginning April 1, 2013, Medicare payments for all items and services, including drugs, were reduced by 2% under the sequestration (i.e., automatic spending reductions) required by the Budget Control Act of 2011, as amended by the American Taxpayer Relief Act of 2012. Subsequent legislation extended the 2% reduction, on average, to 2029.

If Congress does not take action in the future to modify these sequestrations, Medicare Part D plans could seek to reduce their negotiated prices for drugs. Other legislative or regulatory cost containment legislation could have a similar effect.

Further, the Affordable Care Act may reduce the profitability of drug products. It expanded manufacturers' rebate liability under the Medicaid program from fee-for-service Medicaid utilization to include the utilization of Medicaid managed care organizations as well, increased the minimum Medicaid rebate due for most innovator drugs, and capped the total rebate amount at 100% of AMP. The Affordable Care Act and subsequent legislation also changed the definition of AMP. On February 1, 2016, CMS issued final regulations to implement the changes to the Medicaid drug rebate program under the Affordable Care Act. These regulations became effective on April 1, 2016.

The Affordable Care Act requires pharmaceutical manufacturers of branded prescription drugs to pay a branded prescription drug fee to the federal government. Each such manufacturer pays a prorated share of the branded prescription drug fee of \$2.8 billion in 2019 and subsequent years, based on the dollar value of its branded prescription drug sales to certain federal programs identified in the law. The Affordable Care Act also expanded the Public Health Service's 340B Program to include additional types of covered entities. Substantial new provisions affecting compliance have also been enacted, which may affect our business practices with healthcare practitioners. It appears likely that the Affordable Care Act will continue the pressure on pharmaceutical pricing, especially under the Medicare and Medicaid programs, and may also increase our regulatory burdens and operating costs.

Additional legislative changes, regulatory changes and judicial challenges related to the Affordable Care Act remain possible, as discussed above under the heading "U.S. Healthcare Reform." In addition, there likely will continue to be proposals by legislators at both the federal and state levels, regulators, and third-party payors to contain healthcare costs. Thus, even if we obtain favorable coverage and reimbursement status for our products and any product candidates for which we receive regulatory approval, less favorable coverage policies and reimbursement rates may be implemented in the future.

Additional information regarding these programs is discussed under the risk factor *"If we fail to comply with our reporting and payment obligations under the Medicaid drug rebate program, or other governmental pricing programs, we could be subject to additional reimbursement requirements, penalties, sanctions and fines which could have a material adverse effect on our business, financial condition, results of operations and growth prospects"* in the "Risk Factors" section of this 10-K.

### **Healthcare Fraud and Abuse Laws**

In addition to FDA restrictions on marketing of pharmaceutical products, our business is subject to healthcare fraud and abuse regulation and enforcement by both the federal government and the states in which we conduct our business. These laws include, but are not limited to, the following:

- The federal Anti-kickback Statute prohibits, among other things, knowingly and willfully offering, paying, soliciting or receiving remuneration, directly or indirectly, in cash or in kind, to induce or in return for purchasing, leasing, ordering or arranging for or recommending the purchase, lease or order of any healthcare item or service reimbursable, in whole or in part, under Medicare, Medicaid or other federally financed healthcare programs. This statute has been interpreted to apply to arrangements between pharmaceutical manufacturers on one hand and prescribers, purchasers, and formulary managers on the other. A violation of the Anti-Kickback Statute may be established without proving actual knowledge of the statute or specific intent to violate it. 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 federal civil False Claims Act. Although there are a number of statutory exceptions and regulatory safe harbors protecting certain common activities from prosecution, the exceptions and safe harbors are drawn narrowly and practices that involve remuneration to those who prescribe, purchase, or recommend pharmaceuticals, including certain discounts, or engaging such individuals as consultants, speakers or advisors, may be subject to scrutiny if they do not fit squarely within the exception or safe harbor. Our practices may not in all cases meet all of the criteria for safe harbor protection from anti-kickback liability. Moreover, there are no safe harbors for many common practices, such as educational and research grants, charitable donations, product support and patient assistance programs. Arrangements that implicate the Anti-Kickback Statute and do not fit within an exception or safe harbor are reviewed on a case-by-case basis to determine whether, based on the facts and circumstances, they violate the statute. In October 2019, the federal government published a proposed regulation that would create new federal Anti-Kickback Statute safe harbors for (among other things) certain value-based arrangements and patient engagement tools, and modify and clarify the scope of existing safe harbors for warranties and personal



service agreements. Even if it is finalized, the impact of the proposed regulation on our operations is not yet clear.

- The federal civil False Claims Act prohibits any person from, among other things, knowingly presenting, or causing to be presented, a false or fraudulent claim for payment of government funds, or knowingly making, using, or causing to be made or used, a false record or statement material to an obligation to pay money to the government or knowingly concealing or knowingly and improperly avoiding, decreasing, or concealing an obligation to pay money to the federal government. Actions under the False Claims Act may be brought by private individuals known as qui tam relators in the name of the government, and who may share in any monetary recovery. In recent years, several pharmaceutical and other healthcare companies have faced enforcement actions under the False Claims Act for, among other things, providing free product to customers with the expectation that the customers would bill federal programs for the product, and other interactions with prescribers and other customers including interactions that may have affected customers' billing or coding practices on claims submitted to the federal government. Other companies have faced enforcement actions for causing false claims to be submitted because of the company's marketing the product for unapproved, and thus non-reimbursable, uses. Federal enforcement agencies also have shown increased interest in pharmaceutical companies' product and patient assistance programs, including reimbursement and co-pay support services, and a number of investigations into these programs have resulted in significant civil and criminal settlements.
- The Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act, which we refer to collectively as HIPAA, prohibits, among other things, knowingly and willfully executing a scheme to defraud any healthcare benefit program, including private third-party payors. HIPAA also prohibits knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false, fictitious or fraudulent statement or representation, or making or using any false writing or document knowing the same to contain any materially false, fictitious or fraudulent statement or entry in connection with the delivery of or payment for healthcare benefits, items or services. HIPAA and its implementing regulations also establish uniform standards for certain covered entities, which are healthcare providers, health plans and healthcare clearinghouses, as well as their business associates, governing the conduct of specified electronic healthcare transactions and protecting the security and privacy of protected health information. HIPAA has four tiers of civil monetary penalties and grants state attorneys enforcement authority. The Department of Justice also may impose criminal penalties. Additionally, certain states have adopted comparable privacy and security laws and regulations, some of which may be more stringent than HIPAA, and numerous federal and state laws, including state data breach notification laws, state health information privacy laws, and federal and state consumer protection laws, including, for example, Section 5 of the Federal Trade Commission Act of 1914, as amended, and the California Consumer Privacy Act (CCPA), govern the collection, use, and disclosure and protection of certain health-related and other personal information.
- We may obtain health information from third parties that are subject to privacy and security requirements under HIPAA and we could potentially be subject to criminal penalties if we, our affiliates, or our agents knowingly obtain or disclose individually identifiable health information maintained by a HIPAA-covered entity in a manner that is not authorized or permitted by HIPAA.
- The majority of states also have statutes or regulations similar to the federal anti-kickback and false claims laws, which apply to items and services reimbursed under Medicaid and other state programs, or, in several states, apply regardless of the payor. Several states now require pharmaceutical companies to report expenses relating to the marketing and promotion of pharmaceutical products in those states and to report gifts and payments to individual health care providers in those states. Some of these states also prohibit certain marketing-related activities including the provision of gifts, meals, or other items to certain health care providers. Other states have laws requiring pharmaceutical sales representatives to be registered or licensed, and still others impose limits on co-pay assistance that pharmaceutical companies can offer to patients. In addition, several states require pharmaceutical companies to implement compliance programs or marketing codes.
- The Physician Payments Sunshine Act, implemented as the Open Payments program, and its implementing regulations, requires manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) to report annually to CMS information related to direct or indirect payments and other transfers of value to physicians and teaching hospitals, as well as ownership and investment interests held in the company by

physicians and their immediate family members. Beginning in 2022, applicable manufacturers also will be required to report information regarding payments and transfers of value provided to physician assistants, nurse practitioners, clinical nurse specialists, certified nurse anesthetists and certified nurse-midwives.

Compliance with such laws and regulations will require substantial resources. Because of the breadth of these various fraud and abuse laws, it is possible that some of our business activities could be subject to challenge under one or more of such laws. Such a challenge could have material adverse effects on our business, financial condition and results of operations. In the event governmental authorities conclude that our business practices do not comply with current or future statutes, regulations or case law involving applicable fraud and abuse or other healthcare laws and regulations, they may impose sanctions under these laws, which are potentially significant and may include civil monetary penalties, damages, exclusion of an entity or individual from participation in government health care programs, criminal fines and imprisonment, additional reporting requirements if we become subject to a corporate integrity agreement or other settlement to resolve allegations of violations of these laws, as well as the potential curtailment or restructuring of our operations. Even if we are not determined to have violated these laws, government investigations into these issues typically require the expenditure of significant resources and generate negative publicity.

### **Healthcare Privacy Laws**

We may be subject to laws and regulations covering data privacy and the protection of health-related and other personal information. The legislative and regulatory landscape for privacy and data protection continues to evolve, and there has been an increasing focus on privacy and data protection issues which may affect our business. Numerous federal and state laws and regulations, including state security breach notification laws, state health information privacy laws and federal and state consumer protection laws, govern the collection, use, disclosure, and protection of personal information. Failure to comply with such laws and regulations could result in government enforcement actions and create liability for us (including the imposition of significant penalties), private litigation and/or adverse publicity that could negatively affect our business. In addition, healthcare providers who prescribe our products and research institutions we collaborate with are subject to privacy and security requirements under HIPAA.

### **Foreign Corrupt Practices Act**

In addition, the U.S. Foreign Corrupt Practices Act prohibits corporations and individuals from engaging in certain activities to obtain or retain business or to influence a person working in an official capacity. It is illegal to pay, offer to pay or authorize the payment of anything of value to any official of another country, government staff member, political party or political candidate in an attempt to obtain or retain business or to otherwise influence a person working in that capacity.

### **Employees**

As of February 21, 2020, we had a total of 221 full-time employees and three part-time employees. All of our employees are located in the U.S., with the exception of three employees located in United Kingdom and two employees located in Norway. We have no collective bargaining agreements with our employees and none are represented by labor unions. We consider our current relations with our employees to be good.

### **Properties**

Our principal office is located in Yardley, Pennsylvania, where we lease approximately 30,000 square feet of office space pursuant to a lease that expires in May 2021. We also lease facilities in Ewing, New Jersey, Oslo, Norway and Swindon, England. We believe our facilities are adequate to meet our current needs, although we may seek to negotiate new leases or evaluate additional or alternate space for our operations. We believe appropriate alternative space will be readily available on commercially reasonable terms.

### **Legal Proceedings**

We are not a party to any material pending legal proceedings.

## **Corporate Information**

We were incorporated under the laws of the State of Delaware in May 2010. Our predecessor entity OptiNose AS was formed under the laws of Norway in September 2000. In 2010, OptiNose AS became our subsidiary as part of an internal reorganization. Our corporate office is located at 1020 Stony Hill Road, Suite 300, Yardley, PA 19067. Our telephone number is (267) 364-3500. We maintain an Internet website at [www.optinose.com](http://www.optinose.com). The information contained on our website is not incorporated by reference into this Form 10-K.

We make available free of charge under the “Investors—SEC Filings” section of our website all of our filings with the SEC, including our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, proxy statements and amendments to such documents, each of which is provided on our website as soon as reasonably practicable after we electronically file the information with the SEC.

## ITEM 1A. RISK FACTORS

*Investing in our common stock involves a high degree of risk. Before deciding to invest in our common stock, you should consider carefully the risks and uncertainties described below, together with general economic and business risks and all of the other information contained in this 10-K, including our consolidated financial statements and the related notes and the section titled "Management's Discussion and Analysis of Financial Condition and Results of Operations." If any of the following risks actually occur, our business, financial condition, results of operations and prospects could be harmed. In that event, the price of our common stock could decline and you could lose all or part of your investment. This 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 specific factors, including the risks described below. See "Note Regarding Forward-Looking Statements."*

### Risks Related to Our Financial Position and Capital Resources

**We have incurred significant losses since our inception and anticipate that we will incur continued losses in the future.**

We are a specialty pharmaceutical company with a limited operating history. To date, we have focused primarily on XHANCE and Onzetra Xsail, as well as other product candidates using our proprietary EDS technology. Since inception, we have incurred significant net losses and expect to continue to incur net losses for the foreseeable future. To date, we have generated revenue from sales of XHANCE since its launch in 2018, as well as from licensing revenues. We incurred net losses of \$110.1 million and \$106.7 million for the years ended December 31, 2019 and 2018, respectively. As of December 31, 2019, we had an accumulated deficit of \$428.0 million.

We expect to incur losses for the foreseeable future as we:

- continue to commercialize XHANCE and further scale up external manufacturing and distribution capabilities to commercialize XHANCE or any other product candidate for which we may obtain regulatory approval;
- continue to focus our regulatory compliance efforts on requirements applicable to marketed drugs;
- continue clinical development activities for XHANCE, including the FDA Phase 3b clinical trials in pursuit of a follow-on indication for the treatment of chronic sinusitis and mandated pediatric studies;
- seek to discover and develop, in-license or acquire additional products, product candidates and technology;
- maintain, expand and protect our intellectual property portfolio;
- hire additional commercial, clinical and manufacturing personnel; and
- incur additional legal, accounting and other expenses in operating as a publicly traded commercial-stage company.

Because of the numerous risks and uncertainties associated with drug development and commercialization, we are unable to accurately predict the timing or amount of expenses or when, or if, we will be able to achieve profitability. If we are required by regulatory authorities to perform studies in addition to those expected, or if there are any delays in the initiation and completion of our clinical trials or the development of any of our product candidates, our expenses could increase.

### We may never achieve or maintain profitability.

Our ability to become and remain profitable will depend on our ability to generate revenue. Our ability to generate revenue depends upon our ability to successfully commercialize XHANCE and any of our other product candidates or any other product candidates, if approved, that we may in-license or acquire in the future, as well as from our ability to successfully out-license any of our products or technology. Our ability to generate revenue from our current or future products and product candidates will depend on a number of factors, including:

- our ability to successfully commercialize XHANCE for the treatment of nasal polyps;
- our ability to successfully complete required clinical trials and submit a supplemental NDA to the FDA and obtain regulatory approval for XHANCE for the treatment of chronic sinusitis;
- our ability to complete and submit applications to, and obtain regulatory approval from, foreign regulatory authorities, if we choose to commercialize XHANCE outside the U.S.;

- the size of the markets in the territories for which we gain regulatory approval;
- the performance of our sales team, in marketing and promoting XHANCE;
- our ability to maintain and further develop a commercial organization capable of sales, marketing and distribution for XHANCE and any of our other product candidates for which we may obtain marketing approval;
- our ability to maintain commercially reasonable agreements with wholesalers, distributors and other third parties in our supply chain;
- our success in establishing a commercially viable price for our products;
- our success in defending against potential generic competition and other developments in our market generally;
- our ability to have commercial quantities of our products manufactured at acceptable cost levels;
- our ability to obtain coverage and adequate reimbursement from third parties, including government payors; and
- our ability to successfully complete development activities, including the necessary clinical trials, with respect to our other product candidates.

XHANCE, as well as any of our other product candidates if approved for commercial sale, may not gain market acceptance or achieve commercial success. If our addressable market is not as significant as we estimate or the treatment population is narrowed by competition, physician choice or clinical practice guidelines, we may not generate significant revenue from sales of XHANCE. In addition, we would anticipate incurring significant costs associated with commercializing any approved product. We may not achieve profitability soon after generating product sales, if ever. If we are unable to generate enough product revenues to cover our operating expenses and service our debt, we will not become profitable and may be unable to continue operations without continued funding.

Even if we achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would depress the value of our company and could impair our ability to raise capital, expand our business, maintain our development efforts, obtain drug approvals, diversify our offerings or continue our operations. A decline in the value of our company could also cause you to lose all or part of your investment.

**We will likely require additional capital to fund our operations and, if we fail to obtain necessary financing, we may be unable to continue the commercialization of XHANCE and the development of our other product candidates.**

Our operations have consumed substantial amounts of cash. To date, we have financed our operations primarily through the sale and issuance of common and preferred stock, debt, licensing revenues, XHANCE revenue and research grants. We expect to continue to spend substantial amounts to commercialize XHANCE and to advance the clinical development of XHANCE for the treatment of chronic sinusitis and our other product candidates. As of December 31, 2019, we had cash and cash equivalents of \$147.1 million. Although it is difficult to predict our future liquidity requirements, we will likely require additional capital in the future secured through equity or debt financings, partnerships, collaborations, or other sources in order to meet our debt service obligations under our debt, and to carry out our planned development and commercial activities.

Our future funding requirements, both near and long-term, will depend on many factors, including, but not limited to:

- the success of our commercialization of XHANCE for the treatment of nasal polyps including, among other things, patient and physician acceptance of XHANCE and our ability to maintain adequate insurance coverage and reimbursement for XHANCE;
- the cost of commercialization activities for XHANCE, including product manufacturing, distribution, marketing and sales;
- net product revenues received from sales of XHANCE;
- the cost and timing of any future expansion our sales force;
- the level of co-pay assistance and other patient affordability programs offered for XHANCE;

- our clinical development plans for XHANCE, including clinical trials for the supplemental indication for the treatment of chronic sinusitis and FDA-mandated pediatric studies;
- the outcome, timing and cost of the regulatory approval process of XHANCE for chronic sinusitis by the FDA, including the potential for the FDA to require that we perform more studies and clinical trials than those that we currently expect;
- the costs involved in preparing, filing and prosecuting patent applications, and maintaining and enforcing our intellectual property rights;
- the cost of defending intellectual property disputes, including patent infringement actions brought by third parties against us;
- the initiation, progress, timing, costs and results of clinical trials and other research and development related to additional product candidates; and
- the extent to which we in-license, acquire or otherwise partner in the development of other products, product candidates or technologies.

We cannot be certain that additional funding will be available when needed on acceptable terms, or at all. If we are unable to raise additional capital in sufficient amounts, when required or on acceptable terms, we also could be required to:

- seek strategic collaborations to assist in the commercialization of XHANCE in the U.S. and other markets at an earlier stage than otherwise would be desirable or on terms that are less favorable than might otherwise be available;
- significantly delay, scale back or discontinue the development of XHANCE for the treatment of chronic sinusitis;
- relinquish or license on unfavorable terms our rights to our EDS devices and technologies or other product candidates that we otherwise would seek to develop or commercialize ourselves;
- delay, limit, reduce or terminate the drug development of our current or future product candidates, or seek collaborators for one or more of our current or future product candidates at an earlier stage than otherwise would be desirable or on terms that are less favorable than might otherwise be available; or
- significantly curtail our operations.

Although we may have the ability to obtain an additional \$40.0 million through the issuance of additional senior secured notes pursuant to the terms of our existing debt financing, the availability of this \$40.0 million is subject to certain conditions that we may not be able to meet.

**Our failure to comply with the covenants or other terms of the Note Purchase Agreement, including as a result of events beyond our control, could result in a default under the Note Purchase Agreement that could materially and adversely affect the ongoing viability of our business.**

On September 12, 2019 (the Closing Date), we entered into the Note Purchase Agreement with funds managed by Pharmakon Advisors, LP, as collateral agent (the Collateral Agent) and the purchasers party thereto (the Purchasers) that provides for the issuance of up to \$150.0 million of the Pharmakon Senior Secured Notes, of which \$80.0 million were issued on the Closing Date (the Initial Notes) and \$30.0 million were issued on February 13, 2020 (the First Delayed Draw Notes). The remaining \$40.0 million of the Pharmakon Senior Secured Notes (the Delayed Draw Notes, and together with the Initial Notes and First Delayed Draw Notes, the Notes) may be issued in 2020 and 2021 subject to the achievement of minimum XHANCE net sales and royalties and certain other conditions. The Pharmakon Senior Secured Notes bear interest at a fixed per annum rate of 10.75% and are scheduled to mature on September 12, 2024 (the Maturity Date). We are required to make quarterly interest payments until the Maturity Date. We are also required to make principal payments, which are payable in eight equal quarterly installments beginning on December 15, 2022 and continuing until the Maturity Date; provided that we may elect to postpone any such principal payment until the Maturity Date if, as of the applicable payment date, certain trailing four-quarter consolidated XHANCE net sales and royalties thresholds have been achieved. The Notes are guaranteed by OptiNose, Inc. and our subsidiaries and are secured by a pledge of substantially all of their assets.

The Note Purchase Agreement contains various covenants that limit our ability to engage in specified types of transactions without our lenders' prior consent, as well as financial covenants that require us to maintain at least \$30.0 million of cash and cash equivalents in certain deposit accounts and require us to achieve certain minimum trailing twelve-month consolidated XHANCE net sales and royalties, tested on a quarterly basis and increasing from \$15.0 million for the twelve month period ending December 31, 2019 to \$125.0 million for the twelve-month period ending December 31, 2023. For 2020, we are required to achieve consolidated XHANCE net sales and royalties of \$25.0 million, \$32.0 million, \$40.0 million and \$48.0 million for the trailing twelve-month periods ending March 31, June 30, September 30 and December 31, 2020, respectively, and \$58.0 million, \$70.0 million, \$82.0 million and \$95.0 million for the trailing twelve-month periods ending March 31, June 30, September 30 and December 31, 2021, respectively. The Note Purchase Agreement also includes minimum trailing twelve-month consolidated XHANCE net sales and royalties applicable during the term of the Notes beyond December 31, 2021.

Each holder of the Notes may elect to accelerate the repayment of all unpaid principal and accrued interest under such holder's Note upon consummation of a specified change of control transaction or occurrence of certain events of default (as specified in the Note Purchase Agreement), including, among other things:

- our default in a payment obligation under the Notes;
- our breach of the restrictive covenants or other terms of the Notes;
- our breach of reporting obligations;
- our failure to properly maintain the collateral;
- any circumstance that could reasonably be expected to have a material adverse effect (as defined in the Note Purchase Agreement) on the Issuer;
- certain regulatory and/or commercial actions that causes an ongoing delay in commercialization of XHANCE; and
- certain specified insolvency and bankruptcy-related events.

Subject to any applicable cure period set forth in the Notes, all amounts outstanding with respect to the Notes (principal and accrued interest), as well as any applicable prepayment premiums or interest "make-whole" payments, would become due and payable immediately upon an event of default at a default interest rate of 13.75%. Our assets or cash flow may not be sufficient to fully repay our obligations under the Notes if the obligations thereunder are accelerated upon any events of default. Further, if we are unable to repay, refinance or restructure our obligations under the Notes, the holders of such Notes could proceed to protect and enforce their rights under the Notes by exercising such remedies (including foreclosure on the assets securing our obligations under the Notes and the Note Purchase Agreement) as are available to the holders thereunder and in respect thereof under applicable law, either by suit in equity or by action at law, or both, whether for specific performance of any covenant or other agreement contained in the Notes or in aid of the exercise of any power granted in the Notes. The foregoing would materially and adversely affect the ongoing viability of our business.

**Our Note Purchase Agreement contains restrictions that limit our flexibility in operating our business.**

The Note Purchase Agreement contains various covenants that limit our ability to engage in specified types of transactions without our lenders' prior consent. These covenants limit our ability to, among other things:

- sell, transfer, lease or dispose of our assets;
- create, incur or assume additional indebtedness;
- encumber or permit liens on certain of our assets;
- make restricted payments, including paying dividends on, repurchasing or making distributions with respect to our common stock;
- make specified investments (including loans and advances);
- consolidate, merge, sell or otherwise dispose of all or substantially all of our assets;
- enter into certain transactions with our affiliates;



- grant certain license rights related to our products, technology and other intellectual property rights; and
- permit our cash and cash equivalents held in certain deposit accounts to be less than \$30.0 million at any time.

The covenants in our Note Purchase Agreement and related security agreements may limit our ability to take certain actions that may be in our long-term best interests. In the event that we breach one or more covenants, our lenders may choose to declare an event of default and require that we immediately repay all amounts outstanding under the Notes, plus penalties and interest, terminate their commitments to purchase additional Notes and foreclose on the collateral granted to them to secure the Notes. Such repayment could have a material adverse effect on our business, operating results and financial condition.

**Provisions of the Notes for certain potential payments to the holders of such Notes could impede a sale of the Company.**

Subject to certain exceptions, we are required to make mandatory prepayments of the Notes, with the proceeds of asset sales, extraordinary receipts and prohibited debt issuances, and upon the occurrence of a change of control (as defined in the Note Purchase Agreement). In addition, we may make voluntary prepayments of the Notes, in whole or in part. All mandatory and voluntary prepayments of the Notes are subject to the payment of prepayment premiums as follows: (i) if prepayment occurs prior to the third anniversary of the Closing Date, an amount equal to 2% of the principal prepaid, (ii) if prepayment occurs on or after the third anniversary of the Closing Date but prior to the fourth anniversary of the Closing Date, an amount equal to 1% of the principal prepaid, and (iii) if prepayment occurs on or after the fourth anniversary of the Closing Date no prepayment premium is due. Additionally, we are also required to pay a "make-whole" amount in respect of any principal payments (whether mandatory or voluntary) made prior to the 30-month anniversary of the issuance of the applicable Note, in an amount equal to the interest that would have accrued through the 30-month anniversary in respect of such Note but for such principal repayment. These provisions may make it more costly for a potential acquirer to engage in a business combination transaction with us. Provisions that have the effect of discouraging, delaying or preventing a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock and could also affect the price that some investors are willing to pay for our common stock.

**Raising additional capital may cause dilution to our existing stockholders, restrict our operations or require us to relinquish rights to our technologies or product candidates.**

We do not have any committed external source of funds other than the additional \$40.0 million that may become available under the Note Purchase Agreement in 2020 and 2021, subject to the achievement of minimum XHANCE net sales and royalties and certain other conditions. Until such time, if ever, as we can generate substantial revenue, we may seek additional capital through a combination of private and public equity offerings, debt financings, collaborations, strategic alliances and licensing arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms may include liquidation or other preferences that adversely affect your rights as a stockholder. Debt financings may be coupled with an equity component, such as warrants to purchase shares, which could also result in dilution of our existing stockholders' ownership. The incurrence of additional indebtedness would result in increased fixed payment obligations and could also result in certain restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business and may result in liens being placed on our assets and intellectual property. If we were to default on such indebtedness, we could lose such assets and intellectual property.

If we raise additional funds through collaborations, or strategic alliance, marketing, distribution or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, product candidates or future revenue streams or grant licenses on terms that are not favorable to us or at an earlier stage than would otherwise be desirable.

**Our ability to use our net operating loss carry forwards and other tax attributes may be limited.**

As of December 31, 2019, we had U.S. federal net operating loss (NOL) carry forwards of approximately \$164.9 million available to offset future U.S. taxable income and U.S. federal research and development (R&D) tax credits of \$2.4 million. While some of our federal NOL carry forwards will carry forward indefinitely, some of our U.S. NOL and credit carry forwards will expire if not utilized with the first expiration occurring in 2030. We also have state NOL carry forwards of \$90.6 million as of December 31, 2019. These state NOL carry forwards can only offset income in the same state in which they were generated and thus may not be utilized. The carry forward period varies among



the states, with the first expiration in 2028, and some may expire unutilized. In addition, our Norwegian and UK subsidiaries have total foreign NOL carry forwards of \$52.8 million as of December 31, 2019. These foreign NOL carry forwards do not expire but can only be used to offset profits generated in Norway or the United Kingdom, respectively, and may be limited in use based on the laws of those countries.

Our U.S. NOL and tax credit carry forwards could expire unused and be unavailable to offset future income tax liabilities because of their limited duration or because of other restrictions under U.S. tax law. Under Sections 382 and 383, if a corporation undergoes an “ownership change”, generally defined as a greater than 50% change, by value, in equity ownership during a three-year period, the corporation’s ability to offset pre-change tax attributes, such as NOLs and R&D tax credits, against post-change income or tax may be limited. We have not performed an analysis under Section 382 and cannot predict or otherwise determine whether utilization of our federal tax attribute carry forwards may be limited. As a result, if we have taxable income in the future, our ability to use existing U.S. NOL and R&D tax credit carry forwards to reduce U.S. taxable income or tax liability may be subject to limitation resulting in increased future tax liabilities. Similar rules at the state level may also limit our ability to use state NOLs. Also, there may be periods when the use of NOLs is suspended or otherwise limited at the state level, which could accelerate or permanently increase state taxes owed.

We may have ownership changes in the future due to additional changes in our stock ownership which could be outside of our control. If an ownership change occurs and our ability to use our historical net operating loss and tax credit carry forwards is limited, it could adversely impact our future operating results by increasing our tax obligations.

#### **Foreign exchange risks and controls may affect our financial position and results of operations.**

Through the operation of our subsidiaries based in the United Kingdom and Norway, we are exposed to foreign currency fluctuations and exchange rate risks. In addition to the operations of our foreign subsidiaries, we also contract with vendors that are located outside the U.S., and in some cases make payment of invoices denominated in foreign currencies. We are subject to fluctuations in foreign currency rates in connection with these arrangements and we do not currently hedge our foreign currency exchange rate risk. In addition, because we maintain our consolidated financial statements in U.S. dollars, our financial results are vulnerable to fluctuations in the exchange rate between the U.S. dollar and foreign currencies, such as the British pound sterling, the euro, and the Norwegian krone. In preparing our consolidated financial statements, we must convert all non-U.S. dollar results to U.S. dollars, which impacts our results of operations, is reflected as a component of our stockholders’ equity (deficit), and may be credited or charged to operations and reflected in other income (expense), net. The impact of changes in exchange rates has not been significant historically. However, changes in exchange rates could cause significant changes in our financial position and results of operations in the future.

#### **Risks Related to Commercialization of XHANCE**

##### **We have a limited history of commercializing drugs, which may make it difficult for you to evaluate the success of our business to date and to assess our future viability.**

Although our predecessor and subsidiary OptiNose AS commenced operations in 2000, our operations to date have been largely focused on raising capital and developing Onzetra Xsail and XHANCE, including undertaking preclinical studies and conducting clinical trials, as well as commercializing XHANCE since March 2018. While we conducted the pre-approval stages of clinical development for Onzetra Xsail, Avanir Pharmaceuticals, Inc. was responsible for completing the clinical development of, obtaining regulatory approval for, and initiating the initial commercial launch of that product under our former license agreement with them. Further, while we have been commercializing XHANCE since March 2018, we have limited history regarding sales, marketing, distribution and other activities necessary for successful product commercialization. Consequently, any predictions about our future success or viability may not be as accurate as they could be if we had a longer history of successfully developing and commercializing drugs.

##### **If we are unable to successfully commercialize XHANCE, our business, financial condition and results of operations may be materially adversely affected and the price of our common stock may decline.**

Our ability to successfully commercialize XHANCE depends on many factors, including:

- our ability to have commercial quantities of XHANCE manufactured at a reasonable cost and with sufficient speed to meet commercial demand;
- the ability of our sales team to market, promote and sell XHANCE;

- our success in educating physicians, patients and caregivers about the benefits, administration and use of XHANCE;
- patient and physician acceptance of XHANCE;
- the availability, perceived advantages, relative cost, relative safety and relative efficacy of competing products;
- the availability of coverage and adequate reimbursement for XHANCE;
- our ability to commercialize XHANCE at a profitable average net revenue per prescription;
- our ability to obtain and maintain contracts with wholesalers, distributors and/or PPN partners on acceptable terms;
- results from additional clinical trials and our ability to obtain regulatory approval for XHANCE for a follow-on indication for the treatment of chronic sinusitis;
- the effectiveness of our marketing campaigns;
- our ability to attract and retain qualified pharmaceutical industry personnel;
- our effective use of promotional resources;
- a continued acceptable safety profile for XHANCE;
- our ability to obtain and maintain required state licenses to sell XHANCE; and
- our ability to successfully defend any challenges to our intellectual property relating to XHANCE.

It is difficult for us to predict future performance. As we gain additional commercial experience, a number of factors over which we have limited control may contribute to fluctuations in our financial results. We expect that first quarter prescription demand and average net revenue per prescription for XHANCE will be adversely impacted by the annual resetting of patient healthcare insurance plan deductibles and changes in individual patients' healthcare insurance coverage, both of which often occur in January. Additionally, demand has historically been, and we expect will continue to be, impacted by the seasonal variation in patient visits with their doctor and INS market seasonality resulting in reduced XHANCE prescription demand in the third quarter.

Many of these matters are beyond our control and are subject to other risks described elsewhere in this "Risk Factors" section. Accordingly, we cannot assure you that we will be able to successfully commercialize or generate enough revenue from XHANCE to achieve profitability. If we cannot do so, or are significantly delayed in doing so, our business, financial condition and results of operations may be materially adversely affected and the price of our common stock may decline.

**The commercial success of XHANCE will depend upon its acceptance by multiple stakeholders, including physicians, patients and healthcare payors.**

The degree of market acceptance of XHANCE will depend on a number of factors, including:

- demonstration of clinical safety and efficacy;
- relative convenience and ease of administration;
- pricing and cost-effectiveness;
- availability of alternative treatments and perceived advantages over such alternative treatments;
- the clinical indications for which XHANCE is approved;
- the prevalence and severity of any AEs;
- limitations or warnings contained in the FDA-approved label for XHANCE;
- the effectiveness of our or any future collaborators' sales and marketing strategies;
- consolidation among healthcare providers, which increases the impact of the loss of any relationship;
- our ability to obtain and maintain sufficient third-party coverage and adequate reimbursement;

- adequacy and accessibility of our patient assistance programs; and
- the willingness of patients to pay out-of-pocket in the absence of third-party coverage.

If XHANCE does not achieve an adequate level of acceptance by physicians, patients and healthcare payors, we may not generate sufficient revenue in order to become or remain profitable.

**If third-party payors do not reimburse patients for XHANCE or if reimbursement levels are set too low for us to sell XHANCE at a profit, our ability to successfully commercialize XHANCE and our results of operations will be harmed.**

Our ability to commercialize XHANCE successfully depends in part on the extent to which coverage and adequate reimbursement for XHANCE will be available in a timely manner from third-party payors, including governmental healthcare programs such as Medicare and Medicaid, commercial health insurers and managed care organizations. Government authorities and other third-party payors, such as private health insurers and health maintenance organizations, determine which medications they will cover and establish reimbursement levels.

Reimbursement decisions by particular third-party payors depend upon a number of factors, including each third-party payor's determination that use of a product is:

- a covered benefit under its health plan;
- appropriate and medically necessary for the specific condition or disease;
- cost effective; and
- neither experimental nor investigational.

Obtaining coverage and reimbursement approval for XHANCE from government authorities or other third-party payors is a time consuming and costly process that could require us to provide supporting scientific, clinical and cost-effectiveness data, including expensive pharmacoeconomic studies beyond the data required to obtain marketing approval, for the use of XHANCE to each government authority or other third-party payor. We may not be able to provide data sufficient to gain acceptance with respect to coverage and reimbursement from government authorities or other third-party payors.

Third-party payors may deny reimbursement for covered products if they determine that a medical product was not used in accordance with cost-effective diagnosis methods, as determined by the third-party payor, or was used for an unapproved indication. Third-party payors also may refuse to reimburse for procedures and devices deemed to be experimental. Third-party payors may also limit coverage to specific products on an approved list, or formulary, which might not include all of the FDA-approved products for a particular indication.

Third-party payors are increasingly attempting to contain healthcare costs by limiting both coverage and the level of reimbursement for medical products and services. The process for determining whether a payor will provide coverage for a product may be separate from the process for setting the price or reimbursement rate that the payor will pay for the product once coverage is approved. Levels of reimbursement may also decrease in the future, and future legislation, regulation or reimbursement policies of third-party payors may adversely affect the demand for and reimbursement available for XHANCE, which in turn, could negatively impact pricing. Further, payors, including healthcare insurers, pharmacy benefit managers and group purchasing organizations, increasingly seek ways to reduce their costs. Many payors continue to adopt benefit plan changes that shift a greater portion of prescription costs to patients. Such measures include more limited benefit plan designs, higher patient co-pay or co-insurance obligations and limitations on patients' use of commercial manufacturer co-pay payment assistance programs (including through co-pay accumulator adjustment or maximization programs). Payors also increasingly seek price discounts or rebates in connection with the placement of our products on their formularies or those they manage. Payors may also control costs by imposing restrictions on access to or usage of our products, such as by requiring prior authorizations or "step-edits," and may choose to exclude certain indications for which our products are approved or even choose to exclude coverage entirely. For example, some insurers have established a step-edit system that requires a patient to first use a lower price alternative product prior to becoming eligible for reimbursement of a higher price product. Some providers may not complete the burdensome administrative process required to demonstrate or document that the patients for whom XHANCE has been prescribed meet the payors' utilization management criteria (i.e., prior authorizations or step-edits) and, as a result, patients will not gain access to XHANCE treatment. Further, other patients may obtain coverage for XHANCE but abandon their prescriptions rather than pay their co-pay payment which would result in a significant shortfall in achieving revenue expectations and negatively impact our business, prospects, results of operations and financial condition.

Significant consolidation in the health insurance industry has resulted in a few large insurers and pharmacy benefit managers exerting greater pressure in pricing and usage negotiations with drug manufacturers, significantly increasing discounts and rebates required of manufacturers and limiting patient access and usage. Further consolidation among insurers, pharmacy benefit managers and other payors, including through integrated delivery systems, would increase the negotiating leverage such entities have over us and other drug manufacturers. Ultimately, further discounts, rebates, coverage or plan changes, restrictions or exclusions as described above could have a material adverse effect on sales of our affected products.

**If we are unable to differentiate XHANCE from current and future products or existing methods of treatments, our ability to successfully commercialize XHANCE would be adversely affected.**

We are currently commercializing XHANCE for the treatment of nasal polyps and intend to seek FDA approval for a follow-on indication of XHANCE for the treatment of chronic sinusitis. Currently, Nasonex, marketed by Merck, is the only other branded drug therapy approved by the FDA for the treatment of nasal polyps. A generic version of Nasonex, mometasone furoate monohydrate, was approved by the FDA for, among other indications, the treatment of nasal polyps and launched in 2016. In addition, Beconase AQ, which is an INS marketed by GlaxoSmithKline, is indicated for the prophylaxis of nasal polyps after surgical resection, while SINUVA is a commercially available corticosteroid-eluting implant indicated for the treatment of nasal polyps in adult patients who have had ethmoid sinus surgery that can be placed in the ethmoid sinus under endoscopic visualization for up to 90 days. We are not aware of any drug product approved for the treatment of chronic sinusitis. In addition to competition from Nasonex and Beconase AQ, we will also need to differentiate XHANCE from other products and treatments identified in current clinical practice guidelines for the treatment of chronic rhinosinusitis with and without nasal polyps. Such products and treatments include the use of nasal rinses, decongestants, over-the-counter and prescription INS products, oral steroids, antibiotics, and sinus surgery and other procedures, including functional endoscopic sinus surgery, balloon sinus dilation and steroid-releasing sinus implants. In addition, several monoclonal antibodies are in clinical development or have been developed for the treatment of nasal polyps, including omalizumab, benralizumab, and mepolizumab. In June 2019, the FDA approved DUPIXENT (dupilumab) as an add-on maintenance treatment (to an intranasal steroid) in adult patients with inadequately controlled chronic rhinosinusitis with nasal polyposis. In December 2019, Roche announced the FDA's acceptance of a supplemental Biologics License Application (sBLA) for omalizumab for the treatment of nasal polyps in adult patients with inadequate response to intranasal corticosteroids. In addition, there are new small molecules, including fevipiprant, being developed for the treatment of nasal polyps, that are also believed to inhibit specific pathways of inflammation present in nasal polyps. If we are unable to achieve significant differentiation for XHANCE against these other products and treatments, including on the basis of efficacy, safety and tolerability profile, reliability, convenience of administration, price and reimbursement, the opportunity for XHANCE to be commercialized successfully would be adversely affected.

**If the market opportunities for XHANCE are smaller than we believe, our revenue may be adversely affected, and our business may suffer.**

Our current target market for XHANCE consists of ENT physicians, allergists and high-decile INS-prescribing primary care physicians that we believe treat an estimated 3.5 million U.S. patients with chronic rhinosinusitis, an estimated 1.2 million of whom have chronic rhinosinusitis with nasal polyps. If we are able to obtain a follow-on indication of XHANCE for the treatment of chronic sinusitis, we intend to broaden our reach and target primary care physicians that we believe treat an additional estimated 6.25 million patients with chronic rhinosinusitis, an estimated one-third of whom have chronic rhinosinusitis with nasal polyps.

Our projections of both the number of people who suffer from chronic rhinosinusitis with and without nasal polyps, as well as the subset of people with these diseases who have the potential to benefit from the use of XHANCE, are based on our beliefs and estimates. These estimates have been derived from a variety of sources, including scientific literature, surveys we commissioned, prescription data or other market research and may prove to be incorrect. Further, new studies may change the estimated incidence or prevalence of chronic rhinosinusitis or nasal polyps. The number of patients may turn out to be lower than expected. Additionally, the potentially addressable patient population for XHANCE may be limited or may not be amenable to treatment with XHANCE, and new patients may become increasingly difficult to identify or gain access to, which would adversely affect our results of operations and our business.

**Clinical practice guidelines and recommendations published by various organizations could have significant influence on the use of XHANCE.**

Government agencies may promulgate clinical practice guidelines directly applicable to XHANCE. In addition, professional societies, practice management groups, private health and science foundations and organizations involved in various diseases from time to time may also publish guidelines or recommendations to the healthcare and patient communities. Recommendations of government agencies or these other groups or organizations may relate to such matters as usage, dosage, route of administration and use of concomitant therapies. Recommendations or guidelines suggesting the reduced use of XHANCE or the use of competitive or alternative products as the standard of care to be followed by patients and healthcare providers could result in decreased use of XHANCE.

**A significant portion of our sales are to a limited number of PPN partners and pharmaceutical wholesalers. Changes in terms required by these wholesalers, disruptions in these relationships or a default could harm our results of operations and financial condition.**

Approximately 79% of our XHANCE net revenues during the fiscal year ended December 31, 2019 were to PPN partners, with Foundation Care LLC as the leading customer in this channel. Approximately 20% of our XHANCE net revenues during the fiscal year ended December 31, 2019 were to the three largest pharmaceutical wholesalers. If any of these PPN partners or wholesalers ceases to purchase our product for any reason, then unless and until the remaining PPN partners or wholesalers increase their purchases of XHANCE or alternative distribution channels are established:

- our commercial operations could be significantly disrupted;
- the availability of XHANCE to patients could be disrupted; and
- we may not achieve the sales of XHANCE that we expect, which could decrease our revenues.

We do not require collateral from our wholesalers or PPN partners but rather maintain credit limits and, as a result, we have an exposure to credit risk in our accounts receivable. A default by a large PPN partner or wholesaler could harm our results of operations and financial condition.

**We rely on PPN partners for distribution of XHANCE in the U.S., and the failure of those PPN partners to distribute XHANCE effectively would adversely affect sales of XHANCE.**

Our reliance on PPN partners for the distribution of XHANCE in the U.S. involves certain risks, including, but not limited to, risks that these PPN partners will:

- not provide us accurate or timely information regarding their inventories, the number of patients who are using our products or complaints about our products;
- reduce or discontinue their efforts to sell or support or otherwise not effectively sell or support our products, including, without limitation, the discontinuation of their refill programs for XHANCE and other patient support services;
- not devote the resources necessary to sell our products in the volumes and within the time frames that we expect;
- engage in unlawful or inappropriate business practices that result in legal or regulatory enforcement activity which could result in liability to our Company or damage our goodwill with patients; or
- be unable to satisfy financial obligations to us or others.

In the event that any of the PPN partners with whom we work do not fulfill their contractual obligations to us or refuse to or fail to adequately serve patients, or the agreements are terminated without adequate notice, shipments of XHANCE, and associated revenues, would be adversely affected.

**If we cannot implement and maintain effective patient affordability programs or improve formulary access for XHANCE in the face of increasing pressure to reduce the price of medications, the adoption of XHANCE by physicians and patients may decline.**

We offer patient affordability programs through traditional retail pharmacies and PPN partners to help reduce eligible patients' out-of-pocket costs for XHANCE prescriptions. The utilization of our patient affordability programs will

depend on physician and patient awareness and acceptance of the programs. Additionally, certain co-pay assistance benefits are only available through PPN partners. As a result, eligible patients' out-of-pocket cost for XHANCE, when dispensed through PPN partners, may be lower than such costs when XHANCE is dispensed from traditional retail pharmacies. However, to the extent physicians are not willing to prescribe through PPN partners or patients are not willing to receive XHANCE through PPN partners, access to and utilization of XHANCE may decline. In addition, our patient affordability programs are not available to federal health care program (such as Medicare and Medicaid) beneficiaries.

We have also contracted with certain Pharmacy Benefit Managers (PBMs) and other payors to secure formulary status and reimbursement for XHANCE, which generally require us to pay administrative fees and rebates to the PBMs and other payors for qualifying prescriptions. While we have agreements with three of the largest PBMs, as well as other PBMs and payors, in order to facilitate formulary status for XHANCE, we cannot guarantee that we will be able to agree to terms with other PBMs and payors, or that such terms will be commercially reasonable to us. Additionally, our contracts with PBMs and payors are of limited duration and PBMs and payors with whom we contract may seek to renegotiate more favorable terms prior to the expiration of such contracts or in connection with renewals. Despite our agreements with PBMs, the extent of formulary status and reimbursement will ultimately depend to a large extent upon individual healthcare plan formulary decisions. If healthcare plans that contract with PBMs with which we have agreements do not adopt formulary changes recommended by the PBMs with respect to XHANCE, we may not realize the expected access and reimbursement benefits from these agreements. Consequently, the success of our PBM contracting strategy will depend not only on our ability to expand formulary adoption among healthcare plans, but also upon the relative mix of healthcare plans that have PBM-chosen formularies versus custom formularies. If we are unable to realize the expected benefits of our contractual arrangements with the PBMs the adoption of XHANCE by physicians and patients may decline. If we are unable to increase adoption of PPN partners for filling prescriptions of XHANCE by physicians or to secure formulary status and reimbursement through arrangements with PBMs and other payors, particularly with healthcare plans that use custom formularies, our ability to achieve net sales growth for XHANCE would be impaired.

**The negative publicity regarding specialty pharmacies or patient support service providers may result in physicians being less willing to send prescriptions to PPN partners or participate in our patient affordability programs, which would limit patient access and utilization of XHANCE.**

There has been negative publicity and inquiries from Congress and enforcement authorities regarding the use of specialty pharmacies and patient support services providers and drug pricing. We contract with PPN partners (who may be considered specialty pharmacies) and patient support services providers that provide certain services in connection with our patient affordability programs. These programs are in place to assist in ensuring that when a physician determines XHANCE offers a potential clinical benefit to their patients and they prescribe it for an eligible patient, financial assistance may be available to reduce the patient's out-of-pocket costs. We do not own or possess any option to purchase an ownership stake in any pharmacy that distributes XHANCE or in any patient support services provider, and our relationship with each pharmacy and patient support services provider is non-exclusive and arm's length. All of our sales are processed through pharmacies independent of us. Despite this, the negative publicity and interest from Congress and enforcement authorities regarding specialty pharmacies or patient support services providers may result in physicians being less willing to send prescriptions to PPN partners or participate in our patient affordability programs and thereby limit patient access and utilization of XHANCE.

**We may be unable to form and maintain relationships with pharmacies that participate in our PPN and patient affordability programs, which could adversely affect the commercialization of XHANCE and our operating results.**

We may encounter difficulty in forming and maintaining relationships with pharmacies that participate in our PPN and patient affordability programs. We currently depend on a limited number of PPN partners to fulfill patient prescriptions. If these PPN partners are unable to process and fulfill the volume of patient prescriptions directed to them, our ability to maintain or increase prescriptions for XHANCE will be impaired. The commercialization of XHANCE and our operating results could be affected should any of the PPN partners choose not to continue to fulfill XHANCE prescriptions or by any adverse market events at any of the PPN partners. For example, pharmacies that dispense XHANCE could lose contracts that they currently maintain with managed care organizations (MCOs), including PBMs. Pharmacies often enter into agreements with MCOs. They may be required to abide by certain terms and conditions to maintain access to MCO networks, including terms and conditions that could limit their ability to participate in patient affordability programs like ours. Failure to comply with the terms of their agreements with MCOs could result in a variety of penalties, including termination of their agreement, which could negatively



impact the ability of those pharmacies to dispense XHANCE and collect reimbursement from MCOs for such medicines.

**Our patient affordability programs are subject to certain federal and state laws, the violation of which could have an adverse impact on our business and subject us to significant penalties.**

Our patient affordability programs may implicate certain federal and state laws related to, among other things, unlawful schemes to defraud, fraud and abuse, excessive fees for services, tortious interference with patient contracts and statutory or common law fraud. We have a comprehensive compliance program in place to address adherence with various laws and regulations relating to the selling, marketing and manufacturing of XHANCE. Despite our compliance efforts, to the extent the patient affordability programs are found to be inconsistent with applicable laws or the pharmacies that participate in our patient affordability programs do not comply with applicable laws, we may be required to restructure or discontinue such programs, terminate our relationship with certain pharmacies, or be subject to other significant penalties.

**If the cost of maintaining our patient affordability programs increases relative to our sales revenue, we could be forced to reduce or eliminate our financial assistance programs, which could have an adverse effect on our financial results.**

If the cost of maintaining our patient affordability programs increases relative to our sales revenues, we could be forced to reduce the amount of patient financial assistance that we offer or otherwise scale back or eliminate such programs, which could in turn have a negative impact on physicians' willingness to prescribe and patients' willingness to fill prescriptions of XHANCE. While we believe that our arrangements with PBMs will result in broader inclusion of XHANCE on healthcare plan formularies, and lower our cost of providing patient affordability programs, these arrangements generally require us to pay administrative and rebate payments to the PBMs and/or other payors and their effectiveness will ultimately depend to a large extent upon individual healthcare plan formulary decisions that are beyond the control of the PBMs. If our arrangements with PBMs and other payors do not result in increased prescriptions and reductions in our costs to provide our patient affordability programs that are sufficient to offset the administrative fees and rebate payments to the PBMs and/or other payors, our financial results may continue to be harmed.

**XHANCE may become associated with undesirable adverse reactions or have other properties that could result in significant negative consequences following regulatory approval.**

If we or others identify AEs associated with XHANCE, a number of potentially significant negative consequences could result, including:

- we may be forced to suspend marketing of XHANCE;
- the FDA may withdraw its approval of XHANCE or impose restrictions on its distribution;
- the FDA may require additional warnings or contradictions in the label that could diminish the usage or otherwise limit the commercial success of XHANCE;
- we may be required to conduct additional post-marketing studies;
- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

Any of these events could prevent us from achieving or maintaining market acceptance of XHANCE.

**If the FDA or other applicable regulatory authorities approve generic or similar products that compete with XHANCE, or if the FDA or other applicable regulatory authorities change or create new pathways that may expedite approval of such products, it could decrease our expected sales of XHANCE.**

Once an NDA, including a Section 505(b)(2) application, is approved, the product covered thereby becomes a "listed drug" which can, in turn, be cited by potential competitors in support of approval of an ANDA or 505(b)(2) NDA. The FD&C Act, FDA regulations and other applicable regulations and policies provide incentives to manufacturers to create modified, non-infringing versions of a drug to facilitate the approval of an ANDA for generic substitutes. Manufacturers may be able to bring a generic product to market in a much more cost-efficient pathway than we currently anticipate. If the costs involved in bringing such a product to market are significantly less than our costs with respect to the development of XHANCE, companies that produce generic equivalents to XHANCE may be able to offer their products at lower prices. Further, if the timeline for bringing such a product to market is

expedited, companies that produce generic equivalents to XHANCE may compete with XHANCE faster than we currently anticipate. For example, the FDA has communicated a priority to build on initiatives to accelerate generic entry of complex generics, which include locally acting nasal drug products. If the FDA accepts alternatives to comparative clinical endpoint bioequivalence studies for generic versions of locally-acting orally inhaled and nasal drug products, companies that produce generic equivalents to XHANCE may compete with XHANCE faster than we currently anticipate and a significant percentage of any future sales of XHANCE could be lost to such generic products. In 2019, the FDA published a draft product-specific guidance for 0.05mg/spray fluticasone propionate nasal spray that states that a comparative clinical endpoint bioequivalence study is recommended for a fluticasone propionate nasal spray product because of an inability to adequately characterize drug particle size distribution (PSD) in aerosols and sprays using commonly used analytical methods. However, the draft guidance also provides that if a product's PSD can be accurately measured using a validated analytical method such as morphology-directed Raman spectroscopy or any other advanced methodology, the product's sponsor could submit comparative PSD data as part of their drug characterization within their ANDA application as a potential alternative to a bioequivalence study. Moreover, in addition to generic competition, we could face competition from other companies seeking approval of products that are similar to ours using the Section 505(b)(2) pathway. Such applicants may be able to rely on XHANCE or other approved drug products or published literature to develop drug products that are similar to ours. The introduction of a drug product similar to our products or product candidates could expose us to increased competition, leading to a decrease in sales of XHANCE. Competition that we may face from generic or similar versions of XHANCE could materially and adversely impact our future revenue, profitability, and cash flows.

**Even though we have obtained regulatory approval for XHANCE, we will still face extensive FDA regulatory requirements and may face future regulatory difficulties.**

Even though we have obtained regulatory approval in the U.S. for XHANCE, the FDA and state regulatory authorities may still impose significant restrictions on the indicated uses or marketing of XHANCE, or impose ongoing requirements for potentially costly post-approval studies or post-marketing surveillance. For example, as part of its approval of XHANCE for the treatment of nasal polyps in adults, the FDA is requiring that we conduct a randomized, double-blind, placebo controlled clinical trial in adolescents 12 to 17 years of age with nasal polyposis to assess the safety, efficacy, and pharmacokinetics of XHANCE in this population. We have contracted with various clinical trial sites and begun patient enrollment in this trial. We are required to complete the trial by January 2022 and to submit a final report with respect to the trial by July 2022, however, due to enrollment rates, we will need to submit a request to the FDA to extend these deadlines. If the FDA declines our request, we may be in violation of this requirement relating to the FDA's approval of our NDA for XHANCE.

We are also subject to ongoing FDA requirements governing the labeling, packaging, storage, distribution, safety surveillance, advertising, promotion, record-keeping and reporting of safety and other post-marketing information. The holder of an approved NDA is obligated to monitor and report AEs and any failure of a product to meet the specifications in the NDA. The holder of an approved NDA must also submit new or supplemental applications and obtain FDA approval for certain changes to the approved product, product labeling or manufacturing process. Advertising and promotional materials must comply with FDA regulations and may be subject to other potentially applicable federal and state laws. The applicable regulations in countries outside the U.S. grant similar powers to the competent authorities and impose similar obligations on companies.

In addition, manufacturers of drug products and their facilities are subject to payment of substantial user fees and continual review and periodic inspections by the FDA and other regulatory authorities for compliance with cGMP regulations and adherence to commitments made in the NDA. Since XHANCE is a combination product, we also need to comply with some of the FDA's manufacturing regulations for devices. In addition to cGMP, the FDA requires that our drug-device combination product comply with the Quality System Regulation (QSR), which sets forth the FDA's manufacturing quality standards for medical devices, and other applicable government regulations and corresponding foreign standards. If we, or a regulatory authority, discover previously unknown problems with XHANCE, such as AEs, of unanticipated severity or frequency, or problems with a facility where the product is manufactured, a regulatory authority may impose restrictions relative to XHANCE or the manufacturing facility, including requiring recall or withdrawal of the product from the market, suspension of manufacturing, or other FDA action or other action by foreign regulatory authorities.

If we fail to comply with applicable regulatory requirements following approval of XHANCE, a regulatory authority may:

- issue a warning letter asserting that we or our manufacturing partners are in violation of the law;
- seek an injunction or impose civil or criminal penalties or monetary fines;

- suspend, modify or withdraw regulatory approval;
- suspend any ongoing clinical trials;
- refuse to approve a pending NDA or a pending application for marketing authorization or supplements to an NDA or to an application for marketing authorization submitted by us;
- seize our product or product candidate; and/or
- refuse to allow us to enter into supply contracts, including government contracts.

**Our relationships with physicians, patients, payors and pharmacies in the U.S. are subject to applicable anti-kickback, fraud and abuse laws and regulations. Our failure to comply with these laws could expose us to criminal, civil and administrative sanctions, reputational harm, and could harm our results of operations and financial conditions.**

Our current and future operations with respect to the commercialization and further development of XHANCE, as well as potential future development programs, are subject to various U.S. federal and state healthcare laws and regulations. These laws impact, among other things, our proposed sales, marketing, support and education programs and constrain our business and financial arrangements and relationships with third-party payors, healthcare professionals, pharmacies and others who may prescribe, recommend, purchase or provide XHANCE, and other parties through which we market, sell and distribute XHANCE. Finally, our current and future operations are subject to additional healthcare-related statutory and regulatory requirements and enforcement by foreign regulatory authorities in jurisdictions in which we conduct our business. The laws are described in greater detail in the previous section under "Business — Government Regulation — Healthcare Fraud and Abuse Laws," and include, but are not limited to:

- the federal Anti-Kickback Statute, prohibits persons or entities from, among other things, knowingly and willfully soliciting, offering, receiving or paying any remuneration, directly or indirectly, overtly or covertly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase, lease, order, or arranging for or recommending the purchase, lease or order of, any good or service, for which payment may be made, in whole or in part, under federal healthcare programs such as Medicare and Medicaid. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation.
- the federal civil False Claims Act (which can be enforced through "qui tam," or whistleblower actions, by private citizens on behalf of the federal government) prohibits any person from, among other things, knowingly presenting, or causing to be presented false or fraudulent claims for payment of government funds or knowingly making, using or causing to be made or used, a false record or statement material to an obligation to pay money to the government or knowingly and improperly avoiding, decreasing or concealing an obligation to pay money to the U.S. federal government.
- the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA) imposes criminal and civil liability for, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement, in connection with the delivery of, or payment for healthcare benefits, items or services by a healthcare benefit program, which includes both government and privately funded benefits programs; similar to the U.S. federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation.
- numerous federal and state laws and regulations that address privacy and data security, including state data breach notification laws, state health information privacy laws, and federal and state consumer protection laws (e.g., Section 5 of the Federal Trade Commission Act (FTC Act)), govern the collection, use, disclosure and protection of health-related and other personal information, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating relevant compliance efforts.
- a majority of states whom have adopted laws and regulations analogous to federal laws, including state anti-kickback and false claims laws, that may apply to our business practices, including but not limited to, research, distribution, sales and marketing arrangements and claims involving healthcare items or services reimbursed by any third-party payor, including private insurers. Other states have adopted laws that, among

other things, require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the U.S. federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; and state laws and regulations that require drug manufacturers to file reports relating to pricing and marketing information, which requires tracking gifts and other remuneration and items of value provided to healthcare professionals and entities. In addition, some states have laws requiring pharmaceutical sales representatives to be registered or licensed, and still others impose limits on co-pay assistance that pharmaceutical companies can offer to patients.

- the Physician Payments Sunshine Act, implemented as the Open Payments program, and its implementing regulations, requires manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid, or the Children's Health Insurance Program (with certain exceptions) to report annually to CMS information related to direct or indirect payments and other transfers of value to physicians and teaching hospitals, as well as ownership and investment interests held in the company by physicians and their immediate family members. Beginning in 2022, applicable manufacturers also will be required to report information regarding payments and transfers of value provided to physician assistants, nurse practitioners, clinical nurse specialists, certified nurse anesthetists and certified nurse-midwives.

The shifting commercial compliance environment and the need to build and maintain robust and expandable systems to comply with different compliance or reporting requirements in multiple jurisdictions increase the possibility that a healthcare or pharmaceutical company may fail to comply fully with one or more of these requirements. Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations may involve substantial costs. It is possible that governmental authorities will conclude that our business practices do not comply with applicable fraud and abuse or other healthcare laws and regulations or guidance. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, damages, fines, imprisonment, exclusion from government funded healthcare programs, such as Medicare and Medicaid, additional oversight and reporting requirements if we become subject to a corporate integrity agreement or other settlement agreement to resolve allegations of non-compliance with these laws and the curtailment or restructuring of our operations. If any of the physicians or other providers or entities with whom we expect to do business is found not to be in compliance with applicable laws, they may be subject to the same criminal, civil or administrative sanctions, including exclusions from government funded healthcare programs. Even if we are not determined to have violated these laws, government investigations into these issues typically require the expenditure of significant resources and generate negative publicity, which could harm our financial condition and divert resources and the attention of our management from operating our business.

The occurrence of any event or penalty described above may inhibit our ability to commercialize and further develop XHANCE and generate revenues which would have a material adverse effect on our business, financial condition and results of operations.

**If we fail to comply with our reporting and payment obligations under the Medicaid Drug Rebate Program, or other governmental pricing programs, we could be subject to additional reimbursement requirements, penalties, sanctions and fines which could have a material adverse effect on our business, financial condition, results of operations and growth prospects.**

We participate in the Medicaid Drug Rebate Program, and other governmental pricing programs, and therefore we are obligated to pay certain specified rebates and report pricing information with respect to XHANCE. Pricing and rebate calculations vary across product and programs, are complex and are often subject to interpretation by us, governmental and regulatory agencies and the courts. We cannot assure you that our submissions will not be found by CMS to be incomplete or incorrect. Governmental agencies may also make changes in program interpretations, requirements or conditions of participation, some of which may have implications for amounts previously estimated or paid. The Medicaid rebate amount is computed each quarter based on our submission to CMS of our current average manufacturer price (AMP) and Best Price for the quarter. If we become aware that our reporting for a prior quarter was incorrect, or has changed as a result of recalculation of the pricing data, we are obligated to resubmit the corrected data for a period not to exceed twelve quarters from the quarter in which the data originally were due, and CMS may request or require restatements for earlier periods as well. Such restatements and recalculations increase our costs for complying with the laws and regulations governing the Medicaid Drug Rebate Program. Any corrections to our rebate calculations could result in an overage or underage in our rebate liability for past quarters, depending on the nature of the correction. Price recalculations also may affect the ceiling price at which we are required to offer our products to certain covered entities, such as safety-net providers, under the Public Health

Service's 340B Program and under other similar government pricing programs. These programs are described in greater detail in the previous section under "Business — Government Regulation — Coverage and Reimbursement."

Our failure to comply with our reporting and payment obligations under the Medicaid Drug Rebate Program and other governmental programs could negatively impact our financial results. The issuance of federal regulations and coverage expansion by various governmental agencies relating to the Medicaid Drug Rebate Program has increased and will continue to increase our costs and the complexity of compliance, has been and will continue to be time-consuming to implement, and could have a material adverse effect on our results of operations, particularly if CMS challenges the approach we take in our implementation of federal regulation.

We also are liable for errors associated with our submission of pricing data. In addition to retroactive rebates and the potential for 340B Program refunds, if we are found to have knowingly submitted false AMP or Best Price information to the government, we may be liable for significant civil monetary penalties. Such failure also could be grounds for CMS to terminate our Medicaid drug rebate agreement, pursuant to which we participate in the Medicaid Drug Rebate Program. In the event that CMS terminates our rebate agreement, federal payments may not be available under Medicaid or Medicare Part B for XHANCE.

HRSA issued a final regulation regarding the calculation of the 340B ceiling price and the imposition of civil monetary penalties on manufacturers that knowingly and intentionally overcharge covered entities, which became effective on January 1, 2019. It is currently unclear how HRSA will apply its enforcement authority under the new regulation. HRSA also has implemented a ceiling price reporting requirement related to the 340B Program under which we are required to report 340B ceiling prices to HRSA on a quarterly basis. In addition, legislation may be introduced that, if passed, would further expand the 340B Program to additional covered entities or would require participating manufacturers to agree to provide 340B discounted pricing on drugs used in an inpatient setting.

Federal law requires that a company must participate in the U.S. Department of Veterans Affairs (VA) Federal Supply Schedule (FSS) pricing program to be eligible to have its products paid for with federal funds. As part of this program, we are obligated to make XHANCE available for procurement on an FSS contract under which we must comply with standard government terms and conditions and charge a price that is no higher than the statutory Federal Ceiling Price (FCP) to four federal agencies (VA, U.S. Department of Defense (DOD) Public Health Service, and U.S. Coast Guard). The FCP is based on the Non-Federal Average Manufacturer Price (Non-FAMP), which we calculate and report to the VA on a quarterly and annual basis. If we overcharge the government in connection with our FSS contract or Section 703 Agreement, whether due to a misstated FCP or otherwise, we are required to refund the difference to the government. Failure to make necessary disclosures and/or to identify contract overcharges can result in allegations against us under the U.S. civil False Claims Act and other laws and regulations. Unexpected refunds to the government, and responding to a government investigation or enforcement action, would be expensive and time-consuming, and could have a material adverse effect on our business, financial condition, results of operations and growth prospects.

**Regulatory approval for any approved product is limited by the FDA to those specific indications and conditions for which clinical safety and efficacy have been demonstrated.**

Our promotional materials, statements and training methods must comply with applicable laws and regulations, including FDA's prohibition of the promotion of unapproved, or off-label, use. Physicians may use our products off-label, as the FDA does not restrict or regulate a physician's independent choice of treatment within the practice of medicine. As healthcare professionals frequently prescribe corticosteroids for the treatment of chronic nasal inflammatory diseases, such as chronic rhinosinusitis, doctors often prescribe XHANCE for the treatment of chronic rhinosinusitis and other chronic nasal inflammatory diseases, even though the FDA has granted approval of XHANCE only for the treatment of nasal polyps and we promote the use of XHANCE only for the treatment of nasal polyps. If the FDA determines that our promotional materials, statements or activities constitute promotion of an off-label use, we could be required to modify our promotional materials, statements or training methods or subject us to regulatory or enforcement actions, such as the issuance of an untitled letter, a warning letter, injunction, seizure, civil fine, disgorgement of money, operating restrictions or criminal penalties. We may also be subject to actions by other governmental entities or private parties, such as the U.S. civil False Claims Act, civil whistleblower or "qui tam" actions. It is also possible that other federal, state or foreign enforcement authorities might take action if they consider our promotional, materials or activities to constitute promotion of an off-label use, which could result in significant fines or penalties under other statutory authorities. In that event, our reputation could be damaged and market adoption of XHANCE could be impaired.

**Even though we have obtained FDA approval for XHANCE in the U.S., we may never obtain approval for or successfully commercialize XHANCE outside of the U.S., which would limit our ability to realize its full market potential.**

In order to market XHANCE outside of the U.S., we must obtain marketing authorizations and comply with numerous and varying regulatory requirements of other countries regarding quality, safety and efficacy. Clinical trials conducted in one country may not be accepted by foreign regulatory authorities, and regulatory approval in one country does not mean that regulatory approval will be obtained in any other country. Approval processes vary among countries and can involve additional product testing and validation and additional administrative review periods. Seeking foreign regulatory approval could result in difficulties and costs for us and require additional non-clinical studies or clinical trials, which could be costly and time consuming. Regulatory requirements can vary widely from country to country and could delay or prevent the introduction of XHANCE in those countries. While our management team has experience in obtaining foreign regulatory approvals at other companies, we do not have any product candidates approved for sale in any foreign jurisdiction, and we, as a company, do not have experience in obtaining regulatory approval in international markets. If we fail to comply with regulatory requirements in international markets or to obtain and maintain required approvals, or if regulatory approval in international markets is delayed, our target market for XHANCE will be reduced and we would not be able to realize the full market potential of XHANCE. Furthermore, in addition to the costs to commercialize XHANCE in international markets, the pricing of XHANCE outside of the U.S. at levels acceptable to patients, prescribing physicians or a foreign government payor may be a challenge. If we are unable to achieve, or do not believe we will be able to achieve, acceptable pricing, we may not be able to profitably commercialize XHANCE in international markets.

**The Affordable Care Act and any changes in healthcare law may increase the difficulty and cost for us to commercialize XHANCE and affect the prices we may obtain.**

The U.S. and many foreign jurisdictions have enacted or proposed legislative and regulatory changes affecting the healthcare system that could restrict or regulate post-approval activities and affect our ability to profitably sell XHANCE. The U.S. government, state legislatures and foreign governments also have shown significant interest in implementing cost-containment programs to limit the growth of government-paid healthcare costs, including price controls, restrictions on reimbursement and requirements for substitution of generic products for branded prescription drugs.

The Affordable Care Act was intended to broaden access to health insurance, reduce or constrain the growth of healthcare spending, enhance remedies against fraud and abuse, add transparency requirements for the healthcare and health insurance industries, impose new taxes and fees on the health industry and impose additional health policy reforms. These intended reforms are described in greater detail in the previous section under "Business — Government Regulation — U.S. Healthcare Reform."

Among the provisions of the Affordable Care Act that have been implemented since enactment and are of importance to the commercialization of XHANCE are the following:

- an annual, nondeductible fee on any entity that manufactures or imports specified branded prescription drugs or biologic agents;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program;
- expansion of healthcare fraud and abuse laws, including the U.S. civil False Claims Act and the Anti-Kickback Statute, new government investigative powers, and enhanced penalties for noncompliance;
- a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 70% (as of January 1, 2019) point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for a manufacturer's outpatient drugs to be covered under Medicare Part D;
- extension of manufacturers' Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- price reporting requirements for drugs that are inhaled, infused, instilled, implanted, or injected;
- expansion of eligibility criteria for Medicaid programs;



- expansion of the entity types eligible for discounts under the Public Health Service Act's 340B drug pricing program;
- a requirement to annually report certain information regarding drug samples that manufacturers and distributors provide to physicians; and
- a Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research.

Certain provisions of the Affordable Care Act have been subject to judicial challenges, as well as efforts to repeal or replace them or alter their interpretation and implementation. For example, on December 22, 2017, the U.S. government signed into law the Tax Act, which includes a provision repealing, effective January 1, 2019, the tax-based shared responsibility payment imposed by the Affordable Care Act on certain individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the "individual mandate." In December 2018, a United States District Court Judge for the Northern District of Texas ruled (i) that the "individual mandate" was unconstitutional as a result of the associated tax penalty being repealed by Congress as part of the Tax Act; and (ii) the individual mandate is not severable from the rest of the Affordable Care Act, and as a result the entire Affordable Care Act is invalid. On December 18, 2019, the U.S. Court of Appeals for the Fifth Circuit affirmed the district court's decision that the individual mandate is unconstitutional, but remanded the case to the district court to reconsider the severability question. It is unclear how the ultimate decision in this case, or other efforts to repeal, replace, or invalidate the Affordable Care Act or its implementing regulations, or portions thereof, will affect the Affordable Care Act or our business.

Further, the Bipartisan Budget Act of 2018, among other things, amended the Medicare statute to reduce the coverage gap in most Medicare drugs plans, commonly known as the "donut hole," by raising the required manufacturer point-of-sale discount from 50% to 70% off the negotiated price effective as of January 1, 2019. Additional legislative changes, regulatory changes, and judicial challenges related to the Affordable Care Act remain possible. It is unclear how the Affordable Care Act and its implementation, as well as efforts to repeal or replace, or invalidate, the Affordable Care Act, or portions thereof, will affect our business, financial condition and results of operations. We expect that the Affordable Care Act, as currently enacted or as it may be amended in the future, and other healthcare reform measures that may be adopted in the future, could have a material adverse effect on our industry generally and on our ability to maintain or increase sales of XHANCE or to successfully commercialize it.

We also expect that the Affordable Care Act, as well as other healthcare reform measures that have and may be adopted in the future, may result in more rigorous coverage criteria and in additional downward pressure on the price that we receive for XHANCE and could seriously harm our future revenues. Any reduction in reimbursement from Medicare, Medicaid, or other government programs may result in a similar reduction in payments from private payors. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenues, attain profitability or successfully commercialize XHANCE.

**Product liability lawsuits against us could cause us to incur substantial liabilities and to limit commercialization of XHANCE and any other product candidates that we may develop.**

We currently face an inherent risk of product liability exposure related to the testing of our product candidates in human clinical trials and from our commercialization of XHANCE, and this risk will increase significantly as we further commercialize XHANCE and other product candidates that we may develop. We may face product liability claims, regardless of FDA approval for commercial manufacturing and sale as product liability claims may be brought against us by patients who have used XHANCE in any of our clinical trials, future patients, healthcare providers or others using, administering or selling XHANCE and any of our product candidates, if and when approved. On occasion, large judgments have been awarded in class action lawsuits based on drugs that had unanticipated adverse effects. If we cannot successfully defend ourselves against claims that our product candidates or products caused injuries, we could incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- decreased demand for XHANCE;
- injury to our reputation and significant negative media attention;
- termination of clinical trial sites or entire trial programs that we conduct now or in the future relating to XHANCE or our other product candidates;

- withdrawal of clinical trial participants from any current or future clinical trial relating to XHANCE or our other product candidates;
- significant costs to defend the related litigation;
- substantial monetary awards to patients;
- loss of revenue;
- diversion of management and scientific resources from our business operations; and
- an increase in product liability insurance premiums or an inability to maintain product liability insurance coverage.

We currently carry product liability insurance with coverage up to \$10.0 million in the aggregate, with a per incident limit of \$10.0 million, which may not be adequate to cover all liabilities that we may incur. Further, 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. Our inability to maintain sufficient product liability insurance at an acceptable cost could adversely affect our XHANCE product revenues, result in additional liabilities, inhibit the development of XHANCE for additional indications or inhibit the development of our other product candidates. A successful product liability claim or series of claims brought against us could cause our stock price to decline and, if judgments exceed our insurance coverage, could adversely affect our financial condition, results of operations and business.

Additionally, any agreements we may enter into in the future with collaborators in connection with the development or commercialization of XHANCE, our exhalation device technology or any of our other product candidates may entitle us to indemnification against product liability losses, but such indemnification may not be available or adequate should any claim arise. In addition, several of our agreements require us to indemnify third parties and these indemnifications obligations may exceed the coverage under our product liability insurance policy.

**Business interruptions, including any interruptions resulting from COVID-19, could cause a disruption of our commercialization or development of XHANCE, and we may not carry adequate business interruption insurance to cover any such losses.**

All of our employees are located in the U.S., with the exception of three employees located in United Kingdom and two employees located in Norway. Our headquarters is located in Yardley, Pennsylvania. In addition to our employees, we rely on (i) our PPN partners, wholesalers, distributors and third party logistics provider in connection with our commercialization of XHANCE, (ii) CMOs and suppliers in the U.S., Canada and Europe in connection with the manufacture of XHANCE and (iii) CRO, clinical trial investigators and other third party partners for the conduct of clinical trials in various parts of the world. If we, or any of these third party partners encounter any disruptions to our or their respective operations or facilities, or if we or any of these third party partners were to shut down for any reason, including by fire, natural disaster, such as a hurricane, tornado or severe storm, power outage, systems failure, labor dispute, pandemic or other unforeseen disruption, then we or they may be prevented or delayed from effectively operating our or their business, respectively.

The coronavirus (COVID-19) that was reported to have surfaced in Wuhan, China in December 2019 and that has now spread to several other countries could adversely impact our operations or those of our third party partners. Additionally, the continued spread of the virus could negatively impact the manufacture, supply, distribution and sale of XHANCE, our clinical trial timelines and our financial results. The extent to which the coronavirus impacts our operations or those of our third party partners will depend on future developments, which are highly uncertain and cannot be predicted with confidence, including the duration of the outbreak, new information that may emerge concerning the severity of the coronavirus and the actions to contain the coronavirus or treat its impact, among others. While we carry insurance for certain business interruption events, we do not carry sufficient business interruption insurance to compensate us for all losses that may occur during significant business interruptions. Any losses or damages we incur could have a material adverse effect on our financial results and our ability to conduct business as expected.

**Risks Related to Clinical Development and Regulatory Approval of XHANCE for the Treatment of Chronic Sinusitis and Our Other Product Candidates**

**The design and execution of clinical trials to support FDA-approval of XHANCE for the treatment of chronic sinusitis is subject to substantial risk and uncertainty.**

We have initiated a clinical program to support a follow-on indication of XHANCE for the treatment of chronic sinusitis. We anticipate submitting a prior approval efficacy supplement to support the approval of the new indication

under our currently approved 505(b)(2) NDA. Because there is no FDA-approved product for the treatment of chronic sinusitis, we believe there is substantial risk and uncertainty in planning and conducting adequate clinical trials to meet FDA requirements to support approval for this indication. If the clinical program required by the FDA is more costly or time-consuming than anticipated, we may decide to cease the pursuit of this follow-on indication. Additionally, clinical trials for this indication may not demonstrate sufficient efficacy or safety to support FDA approval for a follow-on indication for XHANCE. If we do not obtain a follow-on indication for the treatment of chronic sinusitis, our promotion of XHANCE will be limited to nasal polyps, which would limit our potential sales of XHANCE.

**The regulatory approval processes of the FDA are lengthy, time consuming and inherently unpredictable, and if we are ultimately unable to obtain regulatory approval for our product candidates, our business may be substantially harmed.**

The time required to obtain approval by the FDA is unpredictable but typically takes many years following the commencement of clinical trials and depends upon numerous factors, including the substantial discretion of the FDA. In addition, approval policies, regulations, or the type and amount of clinical data necessary to gain approval may change during the course of a product candidate's clinical development.

Our product candidates could fail to receive regulatory approval for many reasons, including the following:

- the FDA may not accept our NDA filing or prior approval efficacy supplement;
- the FDA may disagree with the design, scope or implementation of our clinical trials;
- we may be unable to demonstrate to the satisfaction of the FDA that a product candidate is safe and effective for its proposed indication;
- we may be unable to demonstrate that a product candidate's clinical and other benefits outweigh its safety risks;
- the FDA may disagree with our interpretation of data from preclinical studies or clinical trials;
- the data collected from clinical trials of our product candidates may not be sufficient to support the approval of an NDA;
- the FDA may fail to approve the manufacturing processes or facilities of third-party manufacturers with which we contract for clinical and commercial supplies; and
- the approval policies or regulations of the FDA may change in a manner rendering our clinical data insufficient for approval.

The failure to obtain regulatory approval for a particular product candidate, could substantially harm our business.

**Clinical development is a lengthy and expensive process with an uncertain outcome, and results of earlier studies and trials may not be predictive of future trial results. Clinical failure can occur at any stage of clinical development.**

Clinical trials are expensive, can take many years to complete and have highly uncertain outcomes. Failure can occur at any time during the clinical trial process as a result of inadequate performance of a drug, inadequate adherence by patients or investigators to clinical trial protocols, investigators failure to comply with applicable laws, or other factors. Drug candidates in later stages of clinical trials may fail to show the desired safety and efficacy traits despite having progressed through earlier clinical trials. A number of companies in the pharmaceutical industry have suffered significant setbacks in advanced clinical trials as a result of a lack of efficacy or adverse safety profiles, despite promising results in earlier trials. Our clinical trials for the follow-on indication of XHANCE for the treatment of chronic sinusitis or our other product candidates may not be successful or may be more expensive or time-consuming than we currently expect. If clinical trials for this or any other product candidate fail to demonstrate safety or efficacy to the satisfaction of the FDA, the FDA may not approve the product candidate and we would not be able to commercialize it, which could substantially harm our business.

**Delays in clinical trials are common and have many causes, and any delay could result in increased costs to us and jeopardize or delay our ability to obtain regulatory approval and commence product sales.**

We may experience delays in clinical trials of our product candidates or the time required to complete clinical trials for our product candidates may be longer than anticipated. Our ongoing and future clinical trials may not begin on time, have an effective design, enroll a sufficient number of patients, timely enroll patients, or be completed on schedule, if at all. Our clinical trials can be delayed or terminated for a variety of reasons, including, but not limited to:

- inability to raise funding necessary to initiate or continue a clinical trial;
- delays in obtaining regulatory approval to commence a clinical trial;
- delays in reaching agreement with the FDA or foreign regulatory authorities on final trial design or the scope of the development program;
- imposition of a clinical hold following an inspection of our clinical trial operations or trial sites by the FDA or foreign regulatory authorities;
- delays in reaching agreement on acceptable terms with prospective contract research organizations (CROs), and clinical trial sites;
- delays in obtaining required IRB approval;
- inability to attract clinical investigators for trials;
- delays in recruiting suitable patients to participate in a clinical trial;
- delays as a result of interim analyses, if any, of clinical trials that indicate futility of the trial or necessitate an increase in the number of patients enrolled in trial;
- patients' delays or failure to complete participation in a clinical trial or return for post-treatment follow-up;
- adverse side effects;
- clinical sites dropping out of a clinical trial;
- time required to add new clinical sites;
- delays by our CMOs to produce and deliver a sufficient supply of clinical trial materials; or
- governmental or regulatory delays, or changes in approval policies or regulations.

If clinical trials for our product candidates are delayed for any of the above reasons or other reasons, our development costs may increase, our approval process could be delayed and our ability to commercialize our product candidates could be materially harmed.

**Changes in regulatory requirements and guidance may occur and we may need to amend clinical trial protocols submitted to applicable regulatory authorities to reflect these changes. Amendments may require us to resubmit clinical trial protocols to IRBs or ethics committees for re-examination, which may impact the costs, timing or successful completion of a clinical trial.**

The FDA's and other regulatory authorities' policies may change, and additional laws may be enacted or regulations may be issued that could prevent, limit or delay regulatory approval of our other product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the U.S. or abroad. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained.

If we are required to conduct additional clinical trials or other studies with respect to our product candidates beyond those that we currently contemplate, or if we are unable to successfully complete our clinical trials or other studies, we may be delayed in obtaining regulatory approval of any of our product candidates, we may not be able to obtain regulatory approval at all or we may obtain approval of indications that are not as broad as intended. Our product development costs will also increase if we experience delays in testing or approvals, and we may not have sufficient funding to complete the testing and approval process for our product candidates. Significant clinical trial delays

could allow our competitors to bring products to market before we do and impair our ability to commercialize our products if and when approved. If any of this occurs, our business would be harmed.

### **Risks Related to Our Reliance on Third Parties**

#### **If we encounter difficulties in maintaining commercial manufacturing and supply agreements with our third-party manufacturers and suppliers of XHANCE, our ability to commercialize XHANCE would be impaired.**

We do not own any manufacturing facilities. We currently have no plans to build our own clinical or commercial scale manufacturing facility. We lack the resources to manufacture and test, on a commercial scale, the technical performance of XHANCE and our other product candidates. We currently rely, and expect to continue to rely, on a limited number of experienced personnel and CMOs and suppliers who assist in the production, assembly, test, supply, storage and distribution of XHANCE and its components for commercial and clinical supplies, and we control only some of the aspects of their activities. We may not be able to maintain terms that are favorable to us. We may not be able to enter into commercial manufacturing and supply agreements with any necessary third parties, should such additional agreements become necessary. If we are unable to enter into such agreements or maintain existing agreements, each on commercially reasonable terms, our ability to commercialize XHANCE would be impaired, and our business, financial condition and results of operations would be materially adversely affected.

#### **If we encounter issues with our contract manufacturers or suppliers, we may need to qualify alternative manufacturers or suppliers, which could impair our ability to sufficiently and timely manufacture and supply XHANCE.**

We currently depend on contract manufacturers and suppliers for XHANCE and its components. Although we could obtain each of these components from other third-party suppliers, we would need to qualify and obtain FDA approval for another contract manufacturer or supplier as an alternative source for each such component, which could be costly and cause significant delays. For example, we estimate that it would take at least one year to identify and qualify an alternate contract manufacturer for XHANCE. Additionally, our commercial manufacturing and supply agreements generally include limitations on our ability to utilize alternative manufacturers or suppliers for these components above certain specified thresholds during the terms of the agreements, which impairs our ability to fully implement any future manufacturing strategies to prevent supply shortages or quality issues.

In addition, some of our suppliers, including our active pharmaceutical ingredient (API) supplier and our contract manufacturers, conduct their manufacturing operations for us at a single facility. Unless and until we qualify additional facilities, we may face limitations in our ability to respond to manufacturing and supply issues. For example, if regulatory, manufacturing or other problems require one of these manufacturers or suppliers to discontinue production at their respective facility, or if the equipment used for the production of XHANCE in these facilities is significantly damaged or destroyed by fire, flood, earthquake, power loss or similar events, the ability of such manufacturer or supplier to provide components or API needed for XHANCE, or to manufacture XHANCE may be significantly impaired. In the event that these parties suffer a temporary or protracted loss of its facility or equipment, we would still be required to obtain FDA approval to qualify a new manufacturer or supplier, as applicable, as an alternate manufacturer or source for the respective component before any components manufactured by such manufacturer or by such supplier could be sold or used.

Any production shortfall that impairs the supply of XHANCE or any of its components could have a material adverse effect on our business, financial condition and results of operations and adversely affect our ability to satisfy demand for XHANCE, which could adversely affect our product sales and operating results materially.

#### **If third-party manufacturers, wholesalers, distributors and PPN partners fail to devote sufficient time and resources to XHANCE or their performance is substandard, our product supply may be impacted.**

Our reliance on a limited number of manufacturers, wholesalers, distributors and PPN partners exposes us to the following risks, any of which could limit commercial supply of our products, result in higher costs, or deprive us of potential product revenues:

- our CMOs, or other third parties we rely on, may encounter difficulties in achieving the volume of production needed to satisfy commercial demand, may experience technical issues that impact quality or compliance with applicable and strictly enforced regulations governing the manufacture of pharmaceutical products, and may experience shortages of qualified personnel to adequately staff production operations;
- our wholesalers, distributors and PPN partners could become unable to sell and deliver XHANCE for regulatory, compliance and other reasons;

- our CMOs, wholesalers, distributors and PPN partners could default on their agreements with us to meet our requirements for commercial supply of XHANCE;
- our CMOs, wholesalers, distributors and PPN partners may not perform as agreed or may not remain in business for the time required to successfully produce, store, sell and distribute our products and we may incur additional cost; and
- if our CMOs, wholesalers, distributors and PPN partners were to terminate our arrangements or fail to meet their contractual obligations, we may be forced to delay or cease sales and ongoing development of XHANCE, or find alternatives that may be more expensive than originally anticipated.

Our reliance on third parties reduces our control over our product candidate development and commercialization activities but does not relieve us of our responsibility to ensure compliance with all required legal, regulatory and scientific standards. For example, the FDA and other regulatory authorities require that our product candidates and any products that we may eventually commercialize be manufactured according to cGMP and similar foreign standards. Any failure by our third-party manufacturers to comply with cGMP or failure to scale up manufacturing processes, including any failure to deliver sufficient quantities of product candidates in a timely manner, could lead to a delay in, or failure to obtain, regulatory approval of any of our product candidates or supply our commercial volume of XHANCE. In addition, such failure could be the basis for the FDA to issue a warning or untitled letter, withdraw approvals for product candidates previously granted to us, or take other regulatory or legal action, including recall or seizure, total or partial suspension of production, suspension of ongoing clinical trials, refusal to approve pending applications or supplemental applications, detention or product, refusal to permit the import or export of products, injunction, imposing civil penalties or pursuing criminal prosecution.

**Manufacturing issues may arise that could increase product and regulatory approval costs or delay commercialization.**

Issues may arise involving product manufacturing of XHANCE or any of our products that may be under development, including but not limited to delays in receiving finished product or product components, analytical testing issues, product-packaging problems and equipment malfunctions. These issues may require refinement or resolution in order to continue and not delay the commercialization of XHANCE or development of any of our products under development. In addition, quality issues may arise during commercial manufacturing processes or the scale-up of any of our products that may be under development. Any issues in our product or delivery devices could result in increased scrutiny by regulatory authorities, delays in our regulatory approval process, increases in our operating expenses, shortages in our products available for sales or clinical trial use, decreases in sales to customers, or failure to obtain or maintain approval for our products.

**We rely on third parties to conduct our clinical trials. If these third parties do not successfully carry out their contractual duties or meet expected deadlines, or if they terminate their agreement with us, we may not be able to obtain regulatory approval for or commercialize our product candidates.**

We have relied upon and plan to continue to rely upon CROs to monitor and manage data for our prospective preclinical and clinical programs. We rely on these parties for execution of our clinical trials, and we control only some of the aspects of their activities. Nevertheless, we are responsible for ensuring that each of our studies and clinical trials are conducted in accordance with the applicable protocol, legal, regulatory and scientific standards, and our reliance on the CROs does not relieve us of our regulatory responsibilities. We and our CROs are required to comply with federal regulations and current GCP, which are international standards meant to protect the rights and health of patients and to define the roles of clinical trial sponsors, advisors and monitors. GCPs are enforced by the FDA and foreign regulatory authorities in the form of International Conference on Harmonization (ICH) guidelines for all of our product candidates in clinical development. Regulatory authorities enforce GCP through periodic inspections of trial sponsors, principal investigators and trial sites. If we or any of our CROs fail to comply with applicable GCP and other regulations, including as a result of any recent changes in such regulations, the clinical data generated in our clinical trials may be deemed unreliable and the FDA or foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We cannot assure you that upon inspection by a given regulatory authority, such regulatory authority will determine that any of our clinical trials comply with GCP requirements. While we have agreements governing activities of our CROs, we have limited influence over their actual performance. Failure to comply with applicable regulations in the conduct of the clinical trials for our product candidates may require us to repeat preclinical studies and clinical trials, which would increase our operating expenses and delay the regulatory approval process.



Our CROs are not our employees, and except for remedies available to us under our agreements with such CROs, we cannot control whether or not they devote sufficient time and resources to our ongoing clinical and preclinical programs. If our CROs do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they need to be replaced or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols, regulatory requirements or for other reasons or if we receive additional FDA notices that do require corrective action, our clinical trials may be extended, delayed or terminated and we may not be able to obtain regulatory approval for or successfully commercialize our product candidates. As a result, the commercial prospects for our product candidates would be harmed, our costs could increase substantially and our ability to generate revenue could be delayed.

Switching or adding additional CROs involves additional cost and requires management time and focus. Identifying, qualifying and managing performance of third-party service providers can be difficult, time-consuming and cause delays in our development programs. In addition, there is a natural transition period when a new CRO commences work and the new CRO may not provide the same type or level of services as the original provider. Though we carefully manage our relationships with our CROs, there can be no assurance that we will not encounter challenges or delays in the future or that these delays or challenges will not have a material adverse impact on our business, financial condition and prospects. If any of our relationships with our CROs terminate, we may not be able to enter into arrangements with alternative CROs or to do so on commercially reasonable terms. As a result, delays may occur, which can materially impact our ability to meet our desired clinical development timelines.

Because we have relied on third parties, our internal capacity to perform these functions is limited. Outsourcing these functions involves risks that third parties may not perform to our standards, may not produce results in a timely manner or may fail to perform at all. In addition, the use of third-party service providers requires us to disclose our proprietary information to these parties, which could increase the risk that this information will be misappropriated. We currently have a small number of employees, which limits the internal resources we have available to identify and monitor our third-party providers. To the extent we are unable to identify and successfully manage the performance of third-party service providers in the future, our ability to advance our product candidates through clinical trials will be compromised. Though we carefully manage our relationships with our CROs, there can be no assurance that we will not encounter similar challenges or delays in the future or that these delays or challenges will not have a material adverse impact on our business, financial condition and prospects.

### **Risks Related to Our Business Operations and Industry**

#### **Our future success depends on our ability to retain and have the full attention of our key executives and to attract, retain and motivate other qualified personnel.**

We are highly dependent on the management, development, clinical, financial and business development expertise of our executive team and, in particular, the services of Peter K. Miller, our Chief Executive Officer, and Ramy A. Mahmoud, our President and Chief Operating Officer. Although we have employment agreements with each of Mr. Miller and Dr. Mahmoud, each is employed by us at will and is permitted to terminate his employment with us at any time. We do not maintain "key person" insurance for any of our executives or other employees. The loss of the services of Mr. Miller or Dr. Mahmoud could impede the achievement of our development and commercialization objectives.

Recruiting and retaining qualified employees for our business, including scientific, technical and sales and marketing personnel, will also be critical to our success. Competition for skilled personnel in our industry is intense and the turnover rate can be high. We may not be able to attract and retain personnel on acceptable terms given the competition among numerous pharmaceutical companies for individuals with similar skill sets. In addition, failure to succeed in our commercialization efforts or in the performance of any current or future clinical studies may make it more challenging to recruit and retain qualified personnel. The inability to recruit or loss of the services of any executive or key employee could impede the progress of our research, development and commercialization objectives.

#### **We have grown, and expect to continue to grow, the size of our organization, and we may experience difficulties in managing this growth.**

Implementation of our development and commercialization strategies has required, and will require additional, managerial, operational, sales, marketing, financial and other resources. Our current management, personnel and systems may not be adequate to effectively manage the expansion of our operations, which may result in weaknesses in our infrastructure, give rise to operational mistakes, loss of business opportunities, employee turnover and reduced productivity. Future growth could require significant capital expenditures and may divert

financial resources from other projects, such as the development of our existing or future product candidates. Future growth would impose significant added responsibilities on members of management, including:

- managing the commercialization of XHANCE and any other products for which we obtain marketing approval;
- overseeing our preclinical studies and clinical trials effectively;
- identifying, recruiting, maintaining, motivating and integrating additional employees, including any sales and marketing personnel engaged in connection with the commercialization of any approved product;
- managing our internal development efforts effectively while complying with our contractual obligations to licensors, licensees, contractors and other third parties; and
- improving our managerial, development, operational and financial systems and procedures.

As our operations expand, we will need to manage additional relationships with various strategic collaborators, suppliers and other third parties. Our future financial performance and our ability to commercialize our product candidates and to compete effectively will depend, in part, on our ability to manage any future growth effectively. To that end, we must be able to manage our development efforts and clinical trials effectively and hire, train and integrate additional management, administrative and sales and marketing personnel. Failure to accomplish any of these activities could prevent us from successfully growing our company.

**We are subject to intense competition and, if we are unable to compete effectively, our product candidates, if approved, may not reach their commercial potential.**

The development and commercialization of new drugs is highly competitive and subject to rapid and significant technological change as research provides a deeper understanding of the pathology of diseases and new technologies and treatments are developed. We face competition with respect to XHANCE from prescription and over-the-counter INS, monoclonal antibodies, oral steroids and other medical management products, and will face competition with respect to any other product candidates that we may seek to develop or commercialize in the future, from many different sources, including large pharmaceutical, biotechnology, specialty pharmaceutical and, to a lesser degree, medical device companies.

The key competitive factors that we expect to impact the commercial success of XHANCE and any other product candidates we may develop are likely to be their efficacy, safety and tolerability profile, reliability, convenience of administration, price and reimbursement. Nasonex, marketed by Merck, is currently the only other branded INS drug therapy approved by the FDA for the treatment of nasal polyps, which is our current indication for XHANCE. A generic version of Nasonex, mometasone furoate monohydrate, was approved by the FDA for, among other indications, the treatment of nasal polyps and launched in 2016. In addition, Beconase AQ, which is an INS marketed by GlaxoSmithKline, is indicated for the prophylaxis of nasal polyps after surgical resection, SINUVA is a commercially available corticosteroid-eluting implant indicated for the treatment of nasal polyps in adult patients who have had ethmoid sinus surgery that can be placed in the ethmoid sinus under endoscopic visualization for up to 90 days, and DUPIXENT, which is a monoclonal antibody marketed by Sanofi and Regeneron, is indicated as an add-on maintenance treatment in adult patients with inadequately controlled chronic rhinosinusitis with nasal polyposis. We are not aware of any drug therapy approved by the FDA or foreign regulatory agencies for the treatment of chronic sinusitis.

Even though they have not been approved for the treatment of such indications, published clinical practice guidelines do recommend the use of INS products for the treatment of chronic rhinosinusitis with and without nasal polyps in an effort to maximize medical therapy prior to surgical intervention. Currently approved branded INS products include Rhinocort, marketed by AstraZeneca, Nasacort AQ, marketed by sanofi-aventis, Beconase AQ, Flonase (which contains the same active pharmaceutical ingredient as XHANCE), and Veramyst, each marketed by GlaxoSmithKline, Qnasl, marketed by Teva Pharmaceuticals, and Omnaris and Zetonna, each marketed by Sunovion Pharmaceuticals.

Due to the limitations of current treatments, several companies are investigating or have investigated the treatment of nasal polyps with monoclonal antibodies. To date, four monoclonal antibodies have been studied in nasal polyps: omalizumab, benralizumab, mepolizumab and dupilumab. In June 2019, FDA approved DUPIXENT (dupilumab) as an add-on maintenance treatment (to an intranasal steroid) in adult patients with inadequately controlled chronic rhinosinusitis with nasal polyposis. In December 2019, Roche announced FDA acceptance of a supplemental Biologics License Application (sBLA) for omalizumab for the treatment of nasal polyps in adult patients with

inadequate response to intranasal corticosteroids. In addition, there are new small molecules, including fevipiprant, being developed for the treatment of nasal polyps, that are also believed to inhibit specific pathways of inflammation present in nasal polyps. Most of these INS and monoclonal antibody companies, as well as other potential competitors, have substantially greater financial, technical and human resources than we do and significantly greater experience in the discovery and development of product candidates, obtaining FDA and other regulatory approvals of products and the commercialization of those products.

Mergers and acquisitions in the pharmaceutical and biotechnology industries may result in even more resources being concentrated among a small number of our competitors. Accordingly, our competitors may be more successful than we may be in obtaining FDA approval of drugs and achieving widespread market acceptance. Our competitors' drugs, or drugs they may develop in the future, may be more effective, or more effectively marketed and sold, than any drug we may commercialize and may render XHANCE or any of our other product candidates we may develop obsolete or non-competitive before we can recover the expenses of developing and commercializing XHANCE or any of our other product candidates. Our competitors may also obtain FDA or other regulatory approval of products more rapidly than expected or may obtain better or preferred market access by offering large rebates to payors or by other means. We may not have accurately or completely predicted the development of new and improved or low-cost surgical interventions, alternative medical therapies or other market-disrupting events. If we are unable to manufacture, distribute, stimulate demand reaching the predicted market share, overcome barriers to access or otherwise effectively commercialize the product, all of which factors may be influenced by current or future competition, then our opportunity to generate revenue from the sale of XHANCE or any of our other product candidates, if approved, will be compromised.

**Our long-term growth depends on our ability to develop and commercialize additional ENT and allergy products.**

It is important to our business that we continue to build a more complete product offering within the ENT and allergy markets. We are evaluating the use of our proprietary EDS technology to develop new product candidates for the ENT and allergy markets. Developing additional product candidates is expensive and time-consuming and could divert management's attention away from the commercialization of XHANCE. Even if we are successful in developing additional product candidates, the success of any new product candidates or enhancement to any existing product candidates will depend on several factors, including our ability to:

- properly identify and anticipate ENT and allergy physician and patient needs;
- develop, obtain necessary regulatory clearances or approvals, and introduce new product candidates or product enhancements in a timely manner;
- demonstrate, if required, the safety and efficacy of new product candidates with data from preclinical studies and clinical trials;
- avoid infringing upon the intellectual property rights of third parties;
- comply with all regulations relating to the marketing of new product candidates, including any new or modified EDS technologies; and
- provide adequate training to potential users of our product candidates.

If we are unsuccessful in developing and commercializing additional product candidates in other areas of the ENT and allergy markets, our ability to gain and maintain profitability may be impaired.

**We may acquire other assets or businesses, or form collaborations or make investments in other companies or technologies, which could negatively impact our operating results, dilute our stockholders' ownership, increase our debt or cause us to incur significant expense.**

As part of our business strategy, we may pursue acquisitions of assets, including preclinical, clinical or commercial-stage products or product candidates, businesses or strategic alliances and collaborations, to expand our existing technologies and operations. We may not identify or complete these transactions in a timely manner, on a cost-effective basis, or at all, and we may not realize the anticipated benefits of any such transaction. We may not be able to find suitable acquisition candidates, and if we make any acquisitions, we may not be able to complete technology transfers and integrate these acquisitions successfully into our existing business and we may incur additional debt or assume unknown or contingent liabilities as part of the transaction. Integration of an acquired company or assets may also disrupt ongoing operations, require the hiring of additional personnel and the implementation of additional internal systems and infrastructure, especially the acquisition of commercial assets, and require management resources that would otherwise focus on developing our existing business. We may not be able to find suitable strategic collaborators or identify other investment opportunities, and we may experience losses related to any such investments.

To finance any acquisitions or collaborations, we may choose to issue debt or shares of our common or preferred stock as consideration. Any such issuance of shares would dilute the ownership of our stockholders. If the price of our common stock is low or volatile, we may not be able to acquire other assets or companies or fund a transaction using our stock as consideration. Alternatively, it may be necessary for us to raise additional funds for acquisitions through public or private financings. Additional funds may not be available on terms that are favorable to us, or at all.

**Our sales force and other employees, PPN partners, CMOs, CROs, principal investigators, collaborators, independent contractors, consultants and other vendors may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements.**

We are exposed to the risk that our sales force and other employees, PPN partners, CMOs, CROs, principal investigators, collaborators, independent contractors, consultants and other vendors may engage in fraudulent or other illegal activity with respect to our business. Misconduct by these employees could include intentional, reckless and/or negligent conduct or unauthorized activity that violates:

- FDA regulations, including those laws requiring the reporting of true, complete and accurate information to the FDA;
- manufacturing standards;
- federal and state healthcare fraud and abuse laws and regulations; or
- laws that require the true, complete and accurate reporting of financial information or data.

In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Misconduct by these parties could also involve individually identifiable information, including, without limitation, the improper use of information obtained in the course of clinical trials, or illegal misappropriation of drug product, which could result in regulatory sanctions and serious harm to our reputation. Any incidents or any other conduct that leads to an employee receiving an FDA debarment could result in a loss of business from third parties and severe reputational harm.

We have a Code of Business Conduct and Ethics to govern and deter such behaviors, but it is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of civil, criminal and administrative penalties, damages, monetary fines, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, contractual damages, reputational harm, diminished profits and future earnings, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, and curtailment of our operations.

**If we fail to comply with data and privacy protection laws and regulations, we could be subject to government enforcement actions, which could include civil or criminal penalties, as well as private litigation and/or adverse publicity, any of which could negatively affect our operating results and business.**

Our business is subject to complex and evolving U.S., state and international data and privacy protection laws. In the U.S., numerous federal and state laws and regulations, including state data breach notification laws, state health information privacy laws, and federal and state consumer protection laws (e.g., Section 5 of the Federal Trade Commission Act) govern the collection, use, disclosure, and protection of health-related and other personal information. Compliance with these laws is difficult, constantly evolving, and time consuming. These laws may differ from each other in significant ways, thus complicating compliance efforts. Many of the state laws enable a state attorney general to bring actions and provide private rights of action to consumers as enforcement mechanisms. Failure to comply with data protection laws and regulations could result in government enforcement actions and create liability for us (which could include civil and/or criminal penalties), private litigation and/or adverse publicity. Federal regulators, state attorneys general, and plaintiffs' attorneys have been and will likely continue to be active in this space. We may also obtain health information from third parties (e.g., healthcare providers who prescribe our products) that are subject to privacy and security requirements under HIPAA. Although we are not directly subject to HIPAA, other than potentially with respect to providing certain employee benefits, we could potentially be subject to criminal penalties if we, our affiliates, or our agents knowingly obtain, use, or disclose individually identifiable health information maintained by a HIPAA-covered entity in a manner that is not authorized or permitted by HIPAA.

Additionally, the General Data Protection Regulation (GDPR), applicable in the European Union (EU) as of May 25, 2018, applies to all of our activities conducted from an establishment in the EU or related to products and services that we may offer to EU users. The GDPR created a range of new compliance obligations, which could cause us to change our business practices, and has significantly increased financial penalties for noncompliance (including possible fines of up to 4% of global annual turnover for the preceding financial year or €20 million (whichever is higher) for the most serious infringements).

The California Consumer Privacy Act, or CCPA, took effect on January 1, 2020. The CCPA establishes certain requirements for data use and sharing transparency and creates new data privacy rights for consumers. These laws and regulations are evolving and subject to interpretation, and may impose limitations on our activities or otherwise adversely affect our business. Similarly, there are a number of legislative proposals in the European Union, the United States, at both the federal and state level, as well as other jurisdictions that could impose new obligations or limitations in areas affecting our business. In addition, some countries are considering or have passed legislation implementing data protection requirements or requiring local storage and processing of data or similar requirements that could increase the cost and complexity of delivering our services and research activities. These laws and regulations, as well as any associated claims, inquiries, or investigations or any other government actions may lead to unfavorable outcomes including increased compliance costs, delays or impediments in the development of new products, negative publicity, increased operating costs, diversion of management time and attention, and remedies that harm our business, including fines or demands or orders that we modify or cease existing business practices.

Certain of these laws and regulations are described in greater detail in the previous section under "Business — Government Regulation — Healthcare Privacy Laws." Failure to comply with applicable data protection laws and regulations could result in government enforcement actions and create liability for us, which could include civil and/or criminal penalties, as well as private litigation and/or adverse publicity that could negatively affect our operating results and business.

**Our business and operations would suffer in the event of computer system failures, cyberattacks or a deficiency in our cybersecurity or those of any business partners.**

Despite the implementation of security measures, our internal computer systems and those of our contractors, vendors, customers and consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures, cyberattacks or cyber-intrusions over the Internet, loss of funds or information from phishing or other fraudulent schemes, attachments to emails, persons inside our organization, or persons with access to systems inside our organization or those with whom we do business. The risk of a security breach or disruption, particularly through cyber-attacks or cyber intrusion, including by computer hackers, foreign governments, and cyber terrorists, has generally increased as the number, intensity and sophistication of attempted attacks and intrusions from around the world have increased. Such an event could cause interruption of our operations or loss of Company funds and have a negative financial consequence on our business. For example, the loss of data from completed or ongoing clinical trials for our product candidates could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. Although we are targeted for cyber attacks from time to time, we are only aware of one instance where an

unauthorized third party accessed certain parts of our computer systems and we believe we have addressed the matter without any known financial implication, loss of data or exposure of confidential or personal information. To the extent that any disruption or security breach were to result in a loss of or damage to our data, misappropriation of funds to unintended recipients, or inappropriate disclosure of confidential, proprietary or personal information, we could incur material legal claims and liabilities and damage to our reputation and the development and commercialization of XHANCE and our product candidates could be delayed. Additionally, breach remediation costs may be significant.

**We are subject to risks inherent in foreign operations.**

We currently operate portions of our business through our foreign subsidiaries, including through our Norwegian subsidiary, OptiNose AS, which currently owns a substantial portion of our intellectual property and conducts development activities, and our United Kingdom subsidiary, OptiNose UK Ltd., which performs research and development and regulatory activities for the Optinose EDS technology as well as other services. We have committed, and intend to continue to commit, resources to our international operations. The operations we conduct in other countries, including clinical trials, and the operations conducted by third party suppliers and vendors with whom we do business, are subject to foreign laws. We are subject to a number of risks associated with our international business operations and activities that may increase liability, costs, and require significant management attention. These risks include:

- compliance with the laws of the U.S., the United Kingdom, Norway, and other countries that apply to our international operations, including import and export legislation;
- compliance with foreign data protection laws and regulations in the United Kingdom, Norway and other countries that apply to our international operations;
- the complexities and expenses of administering a business abroad;
- complications in compliance with, and unexpected changes in, tariffs, trade barriers, price and exchange controls and other foreign regulatory requirements, including potential trade conflicts, changes to trade agreements/treaties, and the implementation of trade restrictions;
- instability in economic or political conditions, including inflation, recession and actual or anticipated military conflicts, social upheaval or political uncertainty;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad;
- uncertainties of laws and enforcement relating to the protection of intellectual property or secured technology;
- litigation in foreign court systems;
- language barriers;
- changes in tax laws and regulations in the jurisdictions in which we operate;
- compliance with tax, employment, immigration and labor laws, regulations and restrictions for employees living or traveling abroad;
- difficulties staffing and managing foreign operations; and
- workforce uncertainty in countries where labor unrest is more common than in the U.S.

There can be no assurance that the policies and procedures we implement to address or mitigate these risks will be successful, that our personnel will comply with them or that we will not experience these factors in the future or that they will not have a material adverse effect on our business, results of operations and financial condition.



**Our corporate structure and foreign operations may have adverse tax consequences and expose us to additional tax liabilities. In addition, tax returns we file are subject to examination by U.S. federal, state and foreign tax authorities.**

We have operations in Norway and the UK and a substantial portion of our intellectual property, including certain rights to XHANCE, are owned by OptiNose AS, our Norwegian subsidiary. We file tax returns in various jurisdictions and those returns are subject to examination by the tax authorities. During an examination, a tax authority could challenge positions taken on a return. Such a challenge could result in the loss of tax attributes or in the payment of tax which could have an unfavorable impact on our financial condition.

We operate pursuant to written intercompany license, service and related agreements that establish prices for intellectual property and for services provided such as production, marketing, management, and technology development activities that are performed by one group company for another group company. The amounts paid under these intercompany agreements are commonly considered for tax purposes as transfer prices. If the affiliated companies are located in different countries, the tax laws and regulations of each country generally require that transfer prices be at arm's length as if between unrelated companies. Our transfer pricing arrangements consider requirements of the jurisdictions in which we operate but are not binding on the tax authorities. If any tax authority is successful in challenging our transfer prices, there could be an increase in taxable income in that jurisdiction which could increase our tax liabilities. Further, if the tax authority in the other country does not agree with the adjustment, both countries could tax the same income, resulting in double taxation.

Any income earned by our foreign subsidiaries, including a portion of the sales of XHANCE in the U.S., may be subject to additional tax liabilities. If our foreign operations generate cash that we want to repatriate to the U.S. or if cash generated by our U.S. operations is not sufficient to fund our U.S. operations, we may face additional tax liabilities in returning or otherwise providing such cash to support our U.S. operations or other strategic opportunities in the U.S. If we are forced to repatriate any foreign-held cash, we could incur a significant tax charge, and our business, operating results or financial condition could be adversely impacted.

If foreign subsidiary income is subject to the Subpart F, investment in US property or global intangible low-taxed income provisions, or similar provisions of the U.S. Internal Revenue Code, collectively referred to in this paragraph as Subpart F, the income may be subject to U.S. corporate income tax even if there is no cash distribution of those earnings to the U.S. For example, Subpart F income includes certain "passive" income, certain income from intercompany transactions, foreign subsidiary income over a legislative threshold or income of a foreign subsidiary which makes an "investment in U.S. property", such as holding the stock in a U.S. corporation. Any foreign subsidiary income subject to the Subpart F provisions would be included in determining U.S. taxable income and potentially subject to federal corporate income tax at rates up to 21%.

**We may be exposed to liabilities under the U.S. Foreign Corrupt Practices Act and other U.S. and foreign anti-corruption anti-money laundering, export control, sanctions, and other trade laws and regulations, and any determination that we violated these laws could have a material adverse effect on our business.**

We are subject to export control and import laws and regulations, including the U.S. Export Administration Regulations, U.S. Customs regulations, and various economic and trade sanctions regulations administered by the U.S. Treasury Department's Office of Foreign Assets Control. We are also subject to the U.S. Foreign Corrupt Practices Act of 1977, as amended (FCPA), the U.S. domestic bribery statute contained in 18 U.S.C. § 201, the U.S. Travel Act, the USA PATRIOT Act, the United Kingdom Bribery Act 2010, the Proceeds of Crime Act 2002, and possibly other anti-bribery and anti-money laundering laws in countries outside of the U.S. in which we conduct our activities. Anti-corruption laws are interpreted broadly and prohibit companies and their employees and third-party intermediaries from authorizing, promising, offering, providing, soliciting, or accepting, directly or indirectly, improper payments or benefits to or from any person whether in the public or private sector. As we commercialize XHANCE and any other product candidates that we may develop, we may engage with third-party manufacturers and collaborators who operate abroad and are required to obtain certain necessary permits, licenses and other regulatory approvals with respect to our business. Our activities abroad create the risk of unauthorized payments or offers of payments by employees, consultants, sales agents or distributors, even though they may not always be subject to our control. We have implemented policies to discourage these practices by our employees, consultants, sales agents and distributors. However, our employees, consultants, sales agents, or distributors of our company may engage in conduct for which we might be held responsible, even if we do not explicitly authorize such activities.

Noncompliance with anti-corruption, anti-money laundering, export control, sanctions, and other trade laws could subject us to whistleblower complaints, investigations, sanctions, settlements, prosecution, other enforcement actions, disgorgement of profits, significant fines, damages, other civil and criminal penalties or injunctions,

suspension and/or debarment from contracting with certain persons, the loss of export privileges, reputational harm, adverse media coverage and other collateral consequences. If any subpoenas or investigations are launched, or governmental or other sanctions are imposed, or if we do not prevail in any possible civil or criminal litigation, our business, results of operations and financial condition could be materially harmed. Responding to any action will likely result in a materially significant diversion of management's attention and resources and significant defense and compliance costs and other professional fees. In addition, the U.S. government may seek to hold us liable for successor liability FCPA violations committed by companies in which we invest or that we acquire. As a general matter, enforcement actions and sanctions could harm our business, results of operations, and financial condition.

### **Risks Related to Our Intellectual Property**

**If we are unable to protect our intellectual property rights or if our intellectual property rights are inadequate to protect our technology, XHANCE or our other product candidates, our competitors could develop and commercialize technology similar to ours, and our competitive position could be harmed.**

Our commercial success will depend in large part on our ability to obtain and maintain patent and other intellectual property protection in the U.S. and other countries with respect to our proprietary technology and products. We rely on trade secret, patent, copyright and trademark laws, and confidentiality and other agreements with employees and third parties, all of which offer only limited protection. Our strategy is to seek patent protection for XHANCE, our other product candidates and their compositions, their methods of use and processes for their manufacture, and any other aspects of inventions that are commercially important to the development of our business.

The patent prosecution process is expensive and time-consuming, and we and any future licensors and licensees may not be able to apply for or prosecute patents on certain aspects of our product candidates or delivery technologies at a reasonable cost, in a timely fashion, or at all. We may not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the rights to patents licensed to third parties. Therefore, these patents and applications may not be prosecuted and enforced in a manner consistent with the best interests of our business. It is also possible that we or any future licensors or licensees, will fail to identify patentable aspects of inventions made in the course of development and commercialization activities before it is too late to obtain patent protection on them. Therefore, our patents and applications may not be prosecuted and enforced in a manner consistent with the best interests of our business. It is possible that defects of form in the preparation or filing of our patents or patent applications may exist, or may arise in the future, such as with respect to proper priority claims, inventorship, claim scope or patent term adjustments. If any future licensors or licensees, are not fully cooperative or disagree with us as to the prosecution, maintenance, or enforcement of any patent rights, such patent rights could be compromised and we might not be able to prevent third parties from making, using, and selling competing products. If there are material defects in the form or preparation of our patents or patent applications, such patents or applications may be invalid or unenforceable. Moreover, our competitors may independently develop equivalent knowledge, methods, and know-how. Any of these outcomes could impair our ability to prevent competition from third parties, which may have an adverse impact on our business, financial condition, and operating results.

The patent positions of pharmaceutical companies generally are highly uncertain, involve complex legal and factual questions and have in recent years been the subject of much litigation. As a result, the issuance, scope, validity, enforceability and commercial value of any patents that issue, are highly uncertain. The steps we have taken to protect our proprietary rights may not be adequate to preclude misappropriation of our proprietary information or infringement of our intellectual property rights, both inside and outside the U.S. Further, the examination process may require us to narrow the claims of pending patent applications, which may limit the scope of patent protection that may be obtained if these applications issue. The rights that may be granted under future issued patents may not provide us with the proprietary protection or competitive advantages we are seeking. If we are unable to obtain and maintain patent protection for our technology and products, or if the scope of the patent protection obtained is not sufficient, our competitors could develop and commercialize technology and products similar or superior to ours, and our ability to successfully commercialize our technology and products may be impaired.

As of February 28, 2020, we owned over 50 U.S. patents and over 20 pending U.S. patent applications. Our issued U.S. patents expire between 2020 and 2035. We do not know whether any of our patent applications will result in issued patents or, if any of our patent applications do issue, whether such patents will protect our technology and drugs, in whole or in part, or whether such patents will effectively prevent others from commercializing competitive technologies and products. There is no guarantee that any of our issued or granted patents will not later be found invalid or unenforceable. Furthermore, as our issued patents expire, the risk that competitors may be able to circumvent our remaining patents by developing similar or alternate technologies or products in a non-infringing manner is increased. Five of our 16 patents listed in the FDA's Orange Book for XHANCE are set to expire from

2020 to 2023. These patents cover certain aspects of our exhalation deliver system technology utilized by XHANCE.

The laws of foreign countries may not protect our rights to the same extent as the laws of the U.S. or vice versa. For example, European patent law restricts the patentability of methods of treatment of the human body more than U.S. law does. Publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the U.S. and other jurisdictions are typically not published until 18 months after filing or in some cases not at all, until they are issued as a patent. Therefore, we cannot be certain that we were the first to make the inventions claimed in our pending patent applications, that we were the first to file for patent protection of such inventions, or that we have found all of the potentially relevant prior art relating to our patents and patent applications that could invalidate one or more of our patents or prevent one or more of our patent applications from issuing. Even if patents do successfully issue and even if such patents cover our product candidates, third parties may initiate oppositions, interferences, re-examinations, post-grant reviews, inter partes reviews, nullification or derivation actions in court or before patent offices or similar proceedings challenging the validity, enforceability, or scope of such patents, which may result in the patent claims being narrowed or invalidated. Furthermore, even if they are unchallenged, our patents and patent applications may not adequately protect our intellectual property, provide exclusivity for our product candidates, or prevent others from designing around our claims. Any of these outcomes could impair our ability to prevent competition from third parties.

Furthermore, the issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our owned and licensed patents may be challenged in the courts or patent offices in the U.S. and abroad. Such challenges may result in loss of exclusivity or freedom to operate or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical technology and drugs, or limit the duration of the patent protection of our technology and drugs. Given the amount of time required for the development, testing and regulatory review of new drug 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 drugs similar or identical to ours.

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

Competitors or other third parties may infringe our patents or the patents of any party from whom we may license patents from in the future. To counter infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time-consuming. In a patent litigation in the U.S., defendant counterclaims alleging invalidity or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, for example, lack of novelty, obviousness or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant information from the USPTO or made a misleading statement, during prosecution. The outcome following legal assertions of invalidity and unenforceability during patent litigation is unpredictable. A court may decide that a patent of ours or of any of our future licensors is not valid or is 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. In addition, to the extent that we have to file patent litigation in a federal court against a U.S. patent holder, we would be required to initiate the proceeding in the state of incorporation or residency of such entity. With respect to the validity question, for example, we cannot be certain that no invalidating prior art exists. An adverse result in any litigation or defense proceedings could put one or more of our patents at risk of being invalidated, found unenforceable, or interpreted narrowly, and it could put our patent applications at risk of not issuing. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of employee resources from our business. If a defendant were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of the patent protection on one or more of our products or certain aspects of our EDS technology. Such a loss of patent protection could compromise our ability to pursue our business strategy.

Interference proceedings brought by the USPTO may be necessary to determine the priority of inventions with respect to our patents and patent applications or those of our collaborators or licensors. An unfavorable outcome could require us to cease using the technology or to attempt to license rights to it from the prevailing party. Our business could be harmed if a prevailing party does not offer us a license on terms that are acceptable to us. Litigation or interference proceedings may fail and, even if successful, may result in substantial costs and distraction of our management and other employees. We may not be able to prevent, alone, with our licensees, or with any of our future licensors, misappropriation of our proprietary rights, particularly in countries where the laws may not

protect those rights as fully as in the U.S. 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. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. 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.

Moreover, we may be subject to a third-party pre-issuance submission of prior art to the USPTO or other foreign patent offices, or become involved in opposition, derivation, reexamination, inter partes review, post-grant review or interference proceedings challenging our patent rights or the patent rights of others. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or drugs and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize drugs without infringing third-party patent rights. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, it could dissuade companies from collaborating with us to license, develop, or commercialize current or future product candidates.

**We may not be able to protect our intellectual property rights throughout the world.**

Filing, prosecuting and defending patents on XHANCE, our other product candidates and our EDS technology throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the U.S. may be less extensive than those in the U.S. In addition, the laws and practices of some foreign countries do not protect intellectual property rights, especially those relating to life sciences, to the same extent as federal and state laws in the U.S. For example, novel formulations of existing drugs and manufacturing processes may not be patentable in certain jurisdictions, and the requirements for patentability may differ in certain countries, particularly developing countries. Also, some foreign countries, including European Union countries, India, Japan and China, have compulsory licensing laws under which a patent owner may be compelled under certain circumstances to grant licenses to third parties. Consequently, we may have limited remedies if patents are infringed or if we are compelled to grant a license to a third party, and we may not be able to prevent third parties from practicing our inventions in all countries outside the U.S., or from selling or importing products made using our inventions into or within the U.S. or other jurisdictions. This could limit our potential revenue opportunities. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products, and may export otherwise infringing products to territories where we have patent protection, but where enforcement is not as strong as that in the U.S. These products may compete with our products in jurisdictions where we do not have any issued patents and our patent claims or other intellectual property rights may not be effective or sufficient to prevent them from competing with us in these jurisdictions. Furthermore, the prevalence of counterfeit medicines, which is one that has been deliberately and fraudulently mislabeled as to its identity and source, is a significant and growing industry-wide issue that could impact our revenue and our reputation for which we may have limited or no recourse. Accordingly, our efforts to enforce intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from our intellectual property. We may not prevail in any lawsuits that we initiate in these foreign countries and the damages or other remedies awarded, if any, may not be commercially meaningful.

**Obtaining and maintaining our patent protection depends on compliance with various procedural, document submission, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.**

Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and applications are required to be paid to the USPTO and various governmental patent agencies outside of the U.S. in several stages over the lifetime of the patents and applications. The USPTO and various non-U.S. governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process and after a patent has issued. There are situations in which non-compliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction.

**Third parties may initiate legal proceedings alleging that we are infringing their intellectual property rights, the outcome of which could be uncertain and could harm our business.**

Our commercial success depends upon our ability to develop, manufacture, market and sell XHANCE and our other product candidates and use our proprietary technologies without infringing the proprietary rights of third parties. While our product candidates are in preclinical studies and clinical trials, we believe that the use of our product candidates in these preclinical studies and clinical trials falls within the scope of the exemptions provided by 35 U.S.C. Section 271(e) in the U.S., which exempts from patent infringement liability activities reasonably related to the development and submission of information to the FDA. As XHANCE and Onzetra Xsail are commercialized and

our other product candidates progress toward commercialization, the possibility of a patent infringement claim against us increases. For instance, if we use the Section 505(b)(2) regulatory pathway for the follow-on indication of chronic sinusitis or any of our other product candidates will require us to provide a Paragraph IV certification to the NDA and patent holders of the RLD pursuant to the Hatch-Waxman Act if the RLD is covered by Orange Book-listed patents. If the NDA or patent holder files a patent infringement lawsuit against us within 45 days of its receipt of notice of our certification, the FDA is prevented from approving our Section 505(b)(2) NDA until the earliest of 30 months, expiration of the patents, settlement of the lawsuit or a court decision in the infringement case that is favorable to us. Accordingly, we may invest significant time and expense in the development of our product candidates only to be subject to significant delay and expensive and time-consuming patent litigation before our product candidates may be commercialized. There can be no assurance that our product candidates do not infringe other parties' patents or other proprietary rights and competitors or other parties may assert that we infringe their proprietary rights in any event.

There is considerable intellectual property litigation in the biotechnology and pharmaceutical industries. We may become party to, or threatened with, future adversarial proceedings or litigation regarding intellectual property rights with respect to our product candidates, including interference or derivation proceedings before the USPTO. Numerous U.S. and foreign issued patents and pending patent applications owned by third parties exist in the fields in which we are developing our drug candidates. Third parties may assert infringement claims against us based on existing patents or patents that may be granted in the future.

If we are found to infringe a third party's intellectual property rights, we could be required to obtain a license from such third party to continue commercializing our product candidates. However, we may not be able to obtain any required license on commercially reasonable terms or at all. Even if a license can be obtained on acceptable terms, the rights may be non-exclusive, which could give our competitors access to the same technology or intellectual property rights licensed to us. If we fail to obtain a required license, we may be unable to effectively market product candidates based on our technology, which could limit our ability to generate revenue or achieve profitability and possibly prevent us from generating revenue sufficient to sustain our operations. Alternatively, we may need to redesign our infringing products, which may be impossible or require substantial time and monetary expenditure. Under certain circumstances, we could be forced, including by court order, to cease commercializing our product candidates. In addition, in any such proceeding or litigation, we could be found liable for substantial monetary damages, potentially including treble damages and attorneys' fees, if we are found to have willfully infringed. A finding of infringement could prevent us from commercializing our product candidates or force us to cease some of our business operations, which could harm our business. Any claims by third parties that we have misappropriated their confidential information or trade secrets could have a similar negative impact on our business.

The cost to us in defending or initiating any litigation or other proceeding relating to patent or other proprietary rights, even if resolved in our favor, could be substantial, and litigation would divert our management's attention. Some of our competitors may be able to sustain the costs of complex patent litigation more effectively than we can because they have substantially greater resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could compromise our commercialization efforts, delay our research and development efforts and limit our ability to continue our operations. There could also be public announcements of the results of the hearing, motions, or other interim proceedings or developments. If securities analysts or investors perceive those results to be negative, it could cause the price of shares of our common stock to decline.

**Our competitors may be able to circumvent our patents by developing similar or alternative technologies or products in a non-infringing manner.**

Our competitors may seek to market generic versions of XHANCE or any other product for which we obtain approval by submitting ANDAs to the FDA or new products that use our approved products as the RLD, in each case where our competitors claim that our patents are invalid, unenforceable or not infringed. Alternatively, our competitors may seek approval to market their own products that are the same as, similar to or otherwise competitive with XHANCE and any future product candidates we may develop. In these circumstances, we may need to defend or assert our patents, by means including filing lawsuits alleging patent infringement requiring us to engage in complex, lengthy and costly litigation or other proceedings. In any of these types of proceedings, a court or government agency with jurisdiction may find our patents invalid, unenforceable or not infringed. We may also fail to identify patentable aspects of our research and development before it is too late to obtain patent protection. Even if we have valid and enforceable patents, these patents still may not provide protection against competing products or processes sufficient to achieve our business objectives. Furthermore, as our issued patents expire, the risk that competitors may be able to circumvent our remaining patents by developing similar or alternate technologies or products in a non-infringing manner is increased. Five of our 16 patents listed in the FDA's Orange Book for



XHANCE are set to expire from 2020 to 2023. These patents cover certain aspects of our exhalation deliver system technology utilized by XHANCE.

**Changes in either U.S. or foreign patent law or interpretation of such laws could diminish the value of patents in general, thereby impairing our ability to protect our products.**

As is the case with other pharmaceutical companies, our success is heavily dependent on intellectual property, particularly patents. Obtaining and enforcing patents in the pharmaceutical industry involve both technological and legal complexity, and it therefore is costly, time-consuming and inherently uncertain. In addition, on September 16, 2011, the Leahy-Smith America Invents Act (the AIA) was signed into law. The AIA includes a number of significant changes to U.S. patent law, including provisions that affect the way patent applications will be prosecuted and may also affect patent litigation.

An important change introduced by the AIA is that, as of March 16, 2013, the U.S. transitioned to a "first-to-file" system for deciding which party should be granted a patent when two or more patent applications are filed by different parties claiming the same invention. A third party that files a patent application in the USPTO after that date, but before us, could therefore be awarded a patent covering an invention of ours even if we had made the invention before it was made by the third party. This will require us to be cognizant going forward of the time from invention to filing of a patent application.

Among some of the other changes introduced by the AIA are changes that limit where a patentee may file a patent infringement suit and providing opportunities for third parties to challenge any issued patent in the USPTO. This applies to all of our U.S. patents, even those issued before March 16, 2013. Because of a lower evidentiary standard necessary to invalidate a patent claim in USPTO proceedings compared to the evidentiary standard in U.S. federal court, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action. Accordingly, a third party may attempt to use the USPTO procedures to invalidate our patent claims that would not have been invalidated if first challenged by the third party as a defendant in a district court action.

Depending on decisions by the U.S. Congress, the federal courts, the USPTO, or similar authorities in foreign jurisdictions, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future.

**We may be subject to claims asserting that our employees, consultants, independent contractors and advisors have wrongfully used or disclosed confidential information and/or alleged trade secrets of their current or former employers or claims asserting ownership of what we regard as our own intellectual property.**

Although we try to ensure that our employees, consultants, independent contractors and advisors do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that these individuals or we have inadvertently or otherwise used or disclosed confidential information and/or intellectual property, including trade secrets or other proprietary information, of the companies that any such individual currently or formerly worked for or provided services to. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to our business.

In addition, while we require our employees and contractors who may be involved in the conception or development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who, in fact, conceives or develops intellectual property that we regard as our own. The assignment of intellectual property rights may not be self-executing or the assignment agreements may be breached, and we may be forced to bring claims against third parties, or defend claims that they may bring against us, to determine the ownership of what we regard as our intellectual property.

**Intellectual property rights do not prevent all potential threats to competitive advantages we may have.**

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



The following examples are illustrative:

- Others may be able to make drug and device components that are the same as or similar to XHANCE and our other product candidates but that are not covered by the claims of the patents that we own or have exclusively licensed;
- We or any of our licensors or collaborators might not have been the first to make the inventions covered by the issued patent or pending patent application that we own or have exclusively licensed;
- We or any of our licensors or collaborators might not have been the first to file patent applications covering certain of our inventions;
- Others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our intellectual property rights;
- The prosecution of our pending patent applications may not result in granted patents;
- Granted patents that we own or have licensed may not cover our products or may be held not infringed, invalid or unenforceable, as a result of legal challenges by our competitors;
- With respect to granted patents that we own or have licensed, especially patents that we either acquire or in-license, if certain information was withheld from or misrepresented to the patent examiner, such patents might be held to be unenforceable;
- Patent protection on our product candidates may expire before we are able to develop and commercialize the product, or before we are able to recover our investment in the product;
- Our competitors might conduct research and development activities in the U.S. and other countries that provide a safe harbor from patent infringement claims for such activities, as well as in countries in which we do not have patent rights, and may then use the information learned from such activities to develop competitive products for sale in markets where we intend to market our product candidates;
- We may not develop additional proprietary technologies that are patentable;
- The patents of others may have an adverse effect on our business; and
- We may choose not to file a patent application for certain technologies, trade secrets or know-how, and a third party may subsequently file a patent covering such intellectual property.

Should any of these events occur, they could significantly harm our business, financial condition, results of operations and prospects.

**If we are unable to protect the confidentiality of our trade secrets, our business and competitive position would be harmed.**

In addition to seeking patent protection for certain aspects of our product candidates and delivery technologies, we also consider trade secrets, including confidential and unpatented know-how important to the maintenance of our competitive position. We protect trade secrets and confidential and unpatented know-how, in part, by customarily entering into non-disclosure and confidentiality agreements with parties who have access to such knowledge, such as our employees, outside scientific and commercial collaborators, CROs, CMOs, consultants, advisors and other third parties. We also enter into confidentiality and invention or patent assignment agreements with our employees and consultants that obligate them to maintain confidentiality and assign their inventions to us. Despite these efforts, any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. In addition, our trade secrets may otherwise become known, including through a potential cybersecurity breach, or may be independently developed by competitors.

Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, some courts in the U.S. and certain foreign jurisdictions are less willing or unwilling to protect trade secrets. If any of our trade secrets were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent them from using that technology or information to compete with us. If any of our trade secrets were to be disclosed to or independently developed by a competitor, our competitive position would be harmed.

**If our trademarks are not adequately protected, then we may not be able to build name recognition in our markets of interest and our business may be adversely affected.**

We expect to rely on trademarks as one means to distinguish any of our product candidates that are approved for marketing from the products of our competitors. OPTINOSE® and XHANCE® are registered trademarks of ours in the U.S. Our trademarks may be challenged, infringed, circumvented or declared generic or determined to be infringing on other marks. We may not be able to protect our rights to these trademarks or may be forced to stop using these names, which we need for name recognition by potential partners or customers in our markets of interest. If we are unable to establish name recognition based on our trademarks, we may not be able to compete effectively.

#### **Risks Related to Ownership of Our Common Stock and Our Status as a Public Company**

**The price of our common stock may be volatile and you may lose all or part of your investment.**

The market price of our common stock is likely to be highly volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control. In addition to the factors discussed in this "Risk Factors" section and elsewhere in this 10-K, these factors include:

- our ability to successfully commercialize XHANCE;
- any delay in our regulatory approval or filings for XHANCE for a follow-on indication for the treatment of chronic sinusitis or any other product candidate we may develop, and any adverse development or perceived adverse development with respect to the applicable regulatory authority's review of such filings, including without limitation the FDA's issuance of a "refusal to file" letter, a request for additional information, or a CRL;
- the success of competitive products or technologies;
- adverse regulatory actions with respect to our product candidates, including the failure to receive regulatory approval, or our competitors' products or product candidates;
- discovery of previously unknown problems with XHANCE, such as AEs of unanticipated severity or frequency;
- issues involving manufacturing of XHANCE or any of our products that may be under development;
- actual or anticipated changes in our growth rate relative to our competitors;
- announcements by us or our competitors of significant acquisitions or divestitures, strategic collaborations, joint ventures, collaborations or capital commitments;
- the commencement, enrollment or results of planned clinical trials of our product candidates or any future clinical trials we may conduct, or any changes generally in the development status of our product candidates or those of our competitors;
- regulatory or legal developments in the U.S. and other countries;
- the outcome of any investigations or regulatory scrutiny of our operations or litigation that may be brought against us;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key personnel;
- the level of expenses related to any of our product candidates or clinical development programs;
- actual or anticipated variations in our quarterly operating results;
- the number and characteristics of our efforts to in-license or acquire additional product candidates or products;
- introduction of new products or services by us or our competitors;
- failure to meet the estimates and projections of the investment community or financial guidance that we may otherwise provide to the public;

- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- actual or anticipated changes in estimates as to development timelines that we may provide to the public;
- variations in our financial results or those of companies that are perceived to be similar to us;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- share price and volume fluctuations attributable to inconsistent trading volume levels of our shares;
- announcement or expectation of additional financing efforts;
- sales of our common stock by us, our insiders or our other stockholders;
- significant lawsuits, including patent or stockholder litigation;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors;
- general political, economic, industry and market conditions;
- investors' general perception of our company and our business;
- publication of research reports about us, our competitors or our industry, or positive or negative recommendations or withdrawal of research coverage by securities or industry analysts; and
- other events or factors, many of which are beyond our control.

In addition, the stock market in general, and pharmaceutical companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. Broad market and industry factors may negatively affect the market price of our common stock, regardless of our actual operating performance. The realization of any of the above risks or any of a broad range of other risks stated above could have a material adverse effect on the market price of our common stock.

**Sales of a substantial number of shares of our common stock in the public market could cause our stock price to fall, even if our business is doing well.**

Sales of a substantial number of shares of our common stock in the public market could occur at any time. If our stockholders sell, or the market perceives that the holders of a large number of shares intend to sell, substantial amounts of our common stock in the public market, the market price of our common stock could decline significantly.

As of March 1, 2020, there were 45,906,162 outstanding shares of our common stock. Holders of an aggregate of 14,461,137 shares of our common stock have rights, subject to specified conditions, that 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. Of these shares, 14,273,017 are already covered by a registration statement and may be sold in the public market pursuant to such registration statement. Additionally, these shares are also eligible for sale without registration under Rule 144, subject to volume limitations applicable to affiliates. If these additional shares are sold, or if it is perceived that they will be sold, in the public market, the trading price of our common stock could decline.

**Future issuances of our common stock or rights to purchase common stock, including pursuant to our equity incentive plans, could result in additional dilution of the percentage ownership of our stockholders and could cause our stock price to fall.**

We will likely require additional capital in the future to execute our business plan. To raise capital, we may sell substantial amounts of common stock or securities convertible into or exchangeable for common stock. These future issuances of common stock or common stock-related securities, together with the exercise of outstanding options, warrants and any additional shares issued in connection with acquisitions, if any, may result in material dilution to our investors and may cause our stock price to fall. Such sales may also result in new investors receiving rights, preferences and privileges senior to those of holders of our common stock.

**Our principal stockholders and management own a majority of our stock and are able to exert significant control over matters subject to stockholder approval, which could prevent new investors from influencing significant corporate decisions.**

Our executive officers, directors, beneficial owners of 5% or more of our capital stock and their respective affiliates, in the aggregate, beneficially own approximately 78.6% of our outstanding common stock as of March 1, 2020. Entities associated with Avista Capital Partners II, L.P. (Avista), our largest stockholder, collectively hold as a group approximately 31.1% of our outstanding common stock as of March 1, 2020. As a result, Avista can significantly influence the outcome of matters requiring stockholder approval, including the election of directors, amendments of our organizational documents, or approval of any merger, sale of assets or other major corporate transaction. This may prevent or discourage unsolicited acquisition proposals or offers for our common stock that you may feel are in your best interest. The interests of Avista may not always coincide with your interests or the interests of other stockholders and they may act in a manner that advances their best interests and not necessarily those of other stockholders, including seeking a premium value for their common stock. For instance, under the terms of our fourth amended and restated certificate of incorporation, neither Avista nor any of its respective representatives on our board of directors are required to offer us any transaction opportunity of which they become aware, and they could take any such opportunity for themselves or offer it to other companies in which they have an investment, unless that opportunity is expressly offered to a person serving on our board of directors solely in his or her capacity as one of our directors. These actions might affect the prevailing market price for our common stock. In addition, because Avista and certain of our other principal stockholders have held their shares for several years, they may be more interested in selling our company than other investors, or they may want us to pursue strategies that deviate from the interests of other stockholders. Such concentration of ownership control may also:

- delay, defer or prevent a change in control;
- entrench our management and/or the board of directors; or
- impede a merger, consolidation, takeover or other business combination involving us that other stockholders may desire.

We may also take actions that our other stockholders do not view as beneficial, which may adversely affect our results of operations and financial condition and cause the value of your investment to decline.

**Some provisions of our charter documents and Delaware law may have anti-takeover effects that could discourage an acquisition of us by others, even if an acquisition would be beneficial to our stockholders, and may prevent attempts by our stockholders to replace or remove our current management.**

Provisions in our fourth amended and restated certificate of incorporation and our amended and restated bylaws, as well as provisions of Delaware law, could make it more difficult for a third party to acquire us or increase the cost of acquiring us, even if doing so would benefit our stockholders, or remove our current management. These include provisions that:

- permit our board of directors to issue up to five million shares of preferred stock, with any rights, preferences and privileges as it may designate, which issuance could result in the loss of voting control by other stockholders;
- provide that our board of directors will be classified into three classes with staggered, three-year terms and that, subject to the rights of Avista to remove its respective director nominees with or without cause, directors may only be removed for cause by the affirmative vote of the holders of at least a majority of the voting power of outstanding shares of our capital stock;
- subject to any director nomination rights afforded Avista, provide that all vacancies on our board of directors, including as a result of newly created directorships, may, except as otherwise required by law, be filled only by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- require that any action to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and not be taken by written consent;
- provide that, with the exception of director nominees submitted by Avista pursuant to our Stockholders Agreement, dated October 2, 2017 with Avista, stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide advance notice in writing, and also specify requirements as to the form and content of a stockholder's notice;

- require that the amendment of certain provisions of our certificate of incorporation relating to anti-takeover measures may only be approved by a vote of 66 $\frac{2}{3}$ % of our outstanding common stock;
- require that the amendment of our bylaws be approved by the affirmative vote of a majority of directors then in office or 66 $\frac{2}{3}$ % of our outstanding common stock entitled to vote thereon;
- do not provide for cumulative voting rights, thereby allowing the holders of a majority of the shares of common stock entitled to vote in any election of directors to elect all of the directors standing for election; and
- provide that special meetings of our stockholders may be called only by the chairman or vice chairman of our board of directors, our chief executive officer, or a majority of our board of directors.

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, who are responsible for appointing the members of our management. Under our fourth amended and restated certificate of incorporation, we have elected not to be governed by Section 203 of the Delaware General Corporation Law until such time that Avista ceases to own 15% or more of our capital stock. Our fourth amended and restated certificate of incorporation does, however, contain a provision that generally mirrors Section 203 of the Delaware General Corporation Law, except that it excludes Avista and its affiliates from the definition of "interested stockholder." At such time that Avista ceases to own 15% or more of our capital stock, we will be governed by the provisions of Section 203 of the Delaware General Corporation Law. These provisions may discourage, delay or prevent someone from acquiring us or merging with us whether or not it is desired by or beneficial to our stockholders. Under Section 203, a corporation may not, in general, engage in a business combination with any holder of 15% or more of its capital stock unless the holder has held the stock for three years or, among other things, prior to the time the stockholder has become an interested stockholder, the board of directors has approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder.

These provisions of our fourth amended and restated certificate of incorporation, our amended and restated bylaws and Delaware law could have the effect of discouraging potential acquisition proposals and delaying or preventing a change in control. They could also have the effect of discouraging others from making tender offers for our common stock, including transactions that may be in your best interests or provide an opportunity for our stockholders to receive a premium for their shares of our common stock. These provisions could also affect the price that some investors are willing to pay for our common stock.

**Our certificate of incorporation also provides that the Court of Chancery of the State of Delaware will be the exclusive forum for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.**

Our fourth amended and restated certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will be the exclusive forum for any derivative action or proceeding brought on our behalf; any action asserting a breach of fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders; any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our certificate of incorporation or our bylaws; or any action asserting a claim against us that is governed by the internal affairs doctrine. Our fourth amended and restated certificate of incorporation also provides that the U.S. District Court for the District of Delaware and any appellate courts thereof will be the exclusive forum for resolving any such complaint for which subject matter jurisdiction of such claim is vested exclusively in the federal courts of the U.S. These choice of forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. Alternatively, if a court were to find the choice of forum provisions contained in our certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions.

**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 will be influenced by 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. 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.

**Because we do not anticipate paying any cash dividends on our capital stock in the foreseeable future, capital appreciation, if any, will be your sole source of gain and you may never receive a return on your investment.**

We have never declared or paid cash dividends on our capital stock, and you should not rely on an investment in our common stock to provide dividend income. We currently intend to retain all of our future earnings, if any, to finance the growth and development of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. In addition, the terms of the Note Purchase Agreement precludes us from paying dividends. As a result, capital appreciation, if any, of our common stock will be your sole source of gain for the foreseeable future.

**We may be subject to securities litigation, which is expensive and could divert our management's attention.**

As we operate in the pharmaceutical industry, we may be especially vulnerable to volatility in the market price of our common stock, especially to the extent that various factors affect the common stock of companies in our industry. In the past companies that have experienced volatility in the market price of their stock have been subject to securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management's attention from other business concerns, which could seriously harm our business, and could also require us to make substantial payments to satisfy judgments or to settle litigation.

**We are an "emerging growth company" and intend to take advantage of reduced disclosure and governance requirements applicable to emerging growth companies, which could result in our common stock being less attractive to investors.**

We are an "emerging growth company," as defined in the Jumpstart Our Business Startups Act of 2012 (the JOBS Act) and we are eligible to and intend to take advantage of some of the exemptions from reporting requirements applicable to other public companies, but not to emerging growth companies, including, but not limited to, an exemption from the auditor attestation requirement of Section 404 of the Sarbanes-Oxley Act, reduced disclosure about executive compensation arrangements pursuant to the rules applicable to smaller reporting companies and no requirement to seek non-binding advisory votes on executive compensation or golden parachute arrangements. We will remain an emerging growth company until the earliest of (1) the beginning of the first fiscal year following the fifth anniversary of our initial public offering, or January 1, 2023, (2) the beginning of the first fiscal year after our annual gross revenue is \$1.07 billion or more, (3) the date on which we have, during the previous three-year period, issued more than \$1.0 billion in non-convertible debt securities and (4) the end of any fiscal year in which the market value of our common stock held by non-affiliates exceeded \$700.0 million as of the end of the second quarter of that fiscal year.

In addition, Section 107 of the JOBS Act also provides that an emerging growth company can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act of 1933, as amended, for complying with new or revised accounting standards. An emerging growth company can therefore delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. However, we have chosen to "opt out" of such extended transition period and, as a result, we will comply with new or revised accounting standards on the relevant dates on which adoption of such standards is required for non-emerging growth companies. Section 107 of the JOBS Act provides that our decision to opt out of the extended transition period for complying with new or revised accounting standards is irrevocable.

We cannot predict if investors will find our common stock less attractive as a result of our taking advantage of these exemptions. If some investors find our common stock less attractive as a result of our choices, there may be a less active trading market for our common stock and our stock price may be more volatile. We may also be unable to raise additional capital as and when we need it.

**If we fail to maintain an effective system of internal control over financial reporting, we may not be able to timely and accurately report our financial condition, results of operations or cash flows, which may adversely affect investor confidence in us and, as a result, the value of our common stock.**

We are subject to the reporting requirements of the Securities Exchange Act of 1934 (the Exchange Act), as well as the Sarbanes-Oxley Act and the rules and regulations of the stock market on which our common stock is listed. The Sarbanes-Oxley Act requires, among other things, that we maintain effective internal control over financial reporting.



We are required, under Section 404 of the Sarbanes-Oxley Act, to include in our Form 10-K filings a report by management on, among other things, the effectiveness of our internal control over financial reporting. This assessment needs to include disclosure of any material weaknesses identified by our management in our internal control over financial reporting. A material weakness is a control deficiency, or combination of control deficiencies, in internal control over financial reporting that results in more than a reasonable possibility that a material misstatement of annual or interim consolidated financial statements will not be prevented or detected on a timely basis. Section 404 of the Sarbanes-Oxley Act also generally requires an attestation from our independent registered public accounting firm on the effectiveness of our internal control over financial reporting. However, for as long as we remain an emerging growth company as defined in the JOBS Act, we intend to take advantage of an exemption from the independent registered public accounting firm attestation requirement.

Our compliance with Section 404's requirement to furnish a report by management requires that we incur substantial accounting expense and expend significant management efforts. Prior to our initial public offering in October 2017, we were never required to test our internal control within a specified period, and, as a result, we may experience difficulty in meeting these reporting requirements in a timely manner. We currently do not have an internal audit function. We may not be able to complete our evaluation, testing and any required remediation in a timely fashion, which could potentially subject us to sanctions or investigations by the Securities and Exchange Commission (the SEC) or other regulatory authorities.

We may identify weaknesses in our system of internal financial and accounting controls and procedures that could result in a material misstatement of our consolidated financial statements. During the evaluation and testing process, if we identify one or more material weaknesses in our internal control over financial reporting, we will be unable to assert that our internal control over financial reporting is effective. We cannot assure you that there will not be material weaknesses or significant deficiencies in our internal control over financial reporting in the future. Our internal control over financial reporting will not prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud will be detected.

Any failure to maintain internal control over financial reporting could severely inhibit our ability to timely and accurately report our financial condition, results of operations or cash flows. If we are unable to conclude that our internal control over financial reporting is effective, or if our independent registered public accounting firm determines we have a material weakness in our internal control over financial reporting once that firm begins the testing procedures over internal controls, we could lose investor confidence in the accuracy and completeness of our financial reports, the market price of our common stock could decline, and we could be subject to sanctions or investigations by Nasdaq, the SEC or other regulatory authorities. Failure to remedy any material weakness in our internal control over financial reporting, or to implement or maintain other effective control systems required of public companies, could also restrict our future access to the capital markets.

**Our disclosure controls and procedures may not prevent or detect all errors or acts of fraud.**

We are subject to the periodic reporting requirements of the Exchange Act. Our disclosure controls and procedures are designed to reasonably assure that information required to be disclosed by us in reports we file or submit under the Exchange Act is accumulated and communicated to management, recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC. We believe that any disclosure controls and procedures, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met.

These inherent limitations reflect the reality that judgments can be faulty, and that breakdowns can occur because of simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by an unauthorized override of the controls. Accordingly, because of the inherent limitations in our control system, misstatements due to error or fraud may occur and not be detected. If that were to happen, the market price of our stock could decline and we could be subject to sanctions or investigations by Nasdaq, the SEC or other regulatory authorities.

**We have incurred and will continue to incur increased costs as a result of operating as a public company, and our management is required to devote substantial time to new compliance initiatives.**

Prior to the consummation of our initial public offering in October 2017, we were not subject to public company reporting obligations. We now incur significant additional legal, accounting, administrative and other costs and

expenses as a public company. Compliance with the Sarbanes-Oxley Act, the Dodd-Frank Act of 2010, the Exchange Act, as well as rules of the SEC and Nasdaq, for example, resulted in, and will result in further, significant ongoing costs in our legal, audit and financial compliance costs, particularly after we are no longer an "emerging growth company." In addition, changing laws, regulations and standards relating to corporate governance and public disclosure, including regulations implemented by Nasdaq and the SEC, may increase legal and financial compliance costs and make some activities more time-consuming. These laws, regulations and standards are subject to varying interpretations and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. We intend to invest resources to comply with evolving laws, regulations and standards, and this investment may result in increased general and administrative expenses and a diversion of management's time and attention from revenue-generating activities to compliance activities. Any changes that we make to comply with these obligations may not be sufficient to allow us to satisfy our obligations as a public company on a timely basis, or at all.

The Exchange Act requires, among other things, that we file annual, quarterly and current reports with respect to our business and financial condition. Our board of directors, management and other personnel need to devote a substantial amount of time to these compliance initiatives. Moreover, failure to comply with these rules and regulations might make it more difficult and more expensive for us to obtain director and officer liability insurance, or we might be forced to accept reduced policy limits and coverage or incur substantially higher costs to maintain the same or similar coverage.

## **ITEM 1B. UNRESOLVED STAFF COMMENTS**

None.

## **ITEM 2. PROPERTIES**

Our principal office is located in Yardley, Pennsylvania, where we lease approximately 30,000 square feet of office space pursuant to a lease that expires in May 2021. We also lease facilities in Ewing, New Jersey, Oslo, Norway and Swindon, England. We believe our facilities are adequate to meet our current needs, although we may seek to negotiate new leases or evaluate additional or alternate space for our operations. We believe appropriate alternative space will be readily available on commercially reasonable terms.

## **ITEM 3. LEGAL PROCEEDINGS**

We are not currently a party to any material pending legal proceedings.

## **ITEM 4. MINE SAFETY DISCLOSURES**

Not applicable.

## **PART II**

## **ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES**

Our common stock is traded on The Nasdaq Global Select Market under the symbol "OPTN". As of March 1, 2020, there were 45,906,162 shares of our common stock outstanding. There were approximately 16 stockholders of record at March 1, 2020. Because many of our shares are held by brokers and other institutions on behalf of stockholders, we are unable to estimate the total number of stockholders represented by these record holders.

### **Securities Authorized for Issuance under Equity Compensation Plans**

Information required by Item 5 of Form 10-K regarding our equity compensation plans is incorporated herein by reference to Item 12 of Part III of this Annual Report on Form 10-K.

### **Recent Sales of Unregistered Securities**

In connection with the transactions contemplated by the Note Purchase Agreement with Pharmakon, we issued a warrant (each, a "Warrant") to each of the two current Purchasers (each, a "Warrantholder") to purchase an aggregate of 810,357 shares of our common stock, par value \$0.001 per share (the "Warrant Shares") at an exercise price equal to \$6.72 per Warrant Share, in each case, subject to adjustment for customary stock splits, stock dividends, combinations or similar events. Each Warrant is exercisable any time on or after the Closing Date until September 12, 2022. Each Warrantholder may exercise its Warrant on a cashless basis at any time. In the event a Warrantholder exercises its Warrant on a cashless basis the Company will not receive any proceeds.

The Warrants issued in the connection with the transactions contemplated by the Note Purchase Agreement, and the Warrant Shares issuable upon exercise thereof, were offered and sold without registration under Act of 1933, as amended (Securities Act), pursuant to the exemption provided by Section 4(a)(2) of the Securities Act and Rule 506 promulgated thereunder as transactions not involving a public offering, as well as similar exemptions under applicable state securities laws, in reliance upon the following facts: no general solicitation was used in the offer or sale of such securities; the recipients of the securities had adequate access to information about the Company; each recipient of such securities represented its acquisition thereof as principal for its own account and its lack of any arrangements or understandings regarding the distribution of such securities; each recipient of such securities represented its capability of evaluating the merits of an investment in our securities due to its knowledge, sophistication and experience in business and financial matters; and such securities were issued as restricted securities with restricted legends referring to the Securities Act. No such securities may be offered or sold in the United States in the absence of an effective registration statement or exemption from applicable registration requirements.

The Warrants described in this Item 5 included appropriate legends setting forth that the applicable securities have not been registered and reciting the applicable restrictions on transfer. There were no underwriters employed in

connection with any of the transactions set forth in this Item 5. Except as set forth above, we did not sell any shares of our common stock or our preferred stock, or grant any stock options, warrants or restricted stock awards, during the year ended December 31, 2019 that were not registered under the Securities Act and that have not otherwise been described in a Quarterly Report on Form 10-Q or a Periodic Report on Form 8-K.

#### **Purchases of Equity Securities by the Issuer and Affiliated Purchasers**

We did not purchase any of our registered equity securities during the period covered by this Annual Report on Form 10-K.

#### **ITEM 6. SELECTED CONSOLIDATED FINANCIAL DATA**

We are a smaller reporting company as defined by Rule 12b-2 of the Securities Exchange Act of 1934 and are not required to provide the information under this item.

#### **ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS**

*You should read the following discussion and analysis of our financial condition and results of operations together with our historical consolidated financial statements and the related notes thereto appearing in this Annual Report. In addition to historical information, some of the information contained in this discussion and analysis or set forth elsewhere in this Annual Report, includes forward-looking statements that involve risks and uncertainties. As a result of many factors, including those factors set forth in the "Risk Factors" section of this Annual Report, our actual results could differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis. See "Note Regarding Forward-Looking Statements"*

##### **Company Overview**

We are a specialty pharmaceutical company focused on the development and commercialization of products for patients treated by ear, nose and throat (ENT) and allergy specialists. Our first commercial product, XHANCE® (fluticasone propionate) nasal spray, 93 micrograms (mcg), is a therapeutic utilizing our proprietary Exhalation Delivery System (EDS) that delivers a topically-acting corticosteroid for the treatment of chronic rhinosinusitis with nasal polyps and, if approved, chronic rhinosinusitis without nasal polyps (also known as chronic sinusitis). Chronic rhinosinusitis is a serious nasal inflammatory disease that is treated using therapies, such as intranasal steroids (INS), which have significant limitations. We believe XHANCE has a differentiated clinical profile with the potential to become part of the standard of care for this disease because it is able to deliver medication to the primary site of inflammation high and deep in the nasal passages in regions not adequately reached by conventional INS.

In September 2017, the U.S. Food and Drug Administration (FDA) approved XHANCE for the treatment of nasal polyps in patients 18 years of age or older. XHANCE was made widely available through commercial channels in April 2018.

We sell XHANCE primarily to Preferred Pharmacy Network (PPN) partners with whom we contract to perform certain patient services such as patient insurance benefit verification.

We track and report metrics that we believe are an important part of assessing our progress in key strategic areas including:

- **XHANCE Prescriptions and Market Share.** Based on third-party prescription data as well as data from PPN partners, the total estimated number of XHANCE prescriptions in the fourth quarter of 2019 was 54,300, which represents 26% growth for prescriptions when compared to estimated third quarter 2019 prescriptions of 43,000. The INS prescription market increased approximately 9% from third quarter 2019 to fourth quarter 2019 based on third-party prescription data. In addition, the total estimated number of XHANCE prescriptions was 14,100 in the fourth quarter of 2018, 22,500 in the first quarter of 2019, and 33,900 in the second quarter of 2019.

A seasonal effect has historically been observed in the INS prescription market in which market volume generally peaks near the middle of the second quarter and declines into the early part of the third quarter of each calendar year. Based on third-party prescription data, the INS market increased 3% from the fourth quarter of 2018 to the first quarter of 2019, increased 1% from the first quarter of 2019 to the second quarter of 2019 and decreased 11% from the second quarter of 2019 to the third quarter of 2019.

Although the underlying disease that we are treating is chronic and causes symptoms year-round, we believe the variation in patient flow through the offices of relevant specialists, and seasonality in disease flare-ups, has an impact on the number of patients that present themselves and who are therefore available for prescribing a relatively new medication like XHANCE. Demand has historically been, and we expect will continue to be, impacted by the INS market seasonality and the seasonal variation in patient visits with their doctor resulting in reduced XHANCE prescription demand in the third quarter. Additionally, we expect that first quarter prescription demand and average net revenue per prescription for XHANCE will be adversely impacted by the annual resetting of patient healthcare insurance plan deductibles and changes in individual patients' healthcare insurance coverage, both of which often occur in January.

We monitor the market share of XHANCE within our current target audience. For this purpose, we calculate market share as the proportion of XHANCE prescriptions to the number of prescriptions written for other INS within our current target audience of over 10,000 physicians. We believe market share, in addition to XHANCE prescription volume, provides important information regarding XHANCE utilization because market share normalizes XHANCE prescriptions for market effects including the INS market seasonality, seasonal variation in patient visits with their doctor, annual deductible resets and annual changes in individual patients' healthcare insurance coverage referenced above. Based on third-party prescription data as well as data from PPN partners, we estimate XHANCE had a market share of 0.9% in the fourth quarter of 2018, 1.5% in the first quarter of 2019, 2.2% in the second quarter of 2019, 3.0% in the third quarter of 2019, and 3.5% in the fourth quarter of 2019. Note that most of the INS prescriptions written within our target physician audience are for chronic sinusitis, allergic rhinitis and other conditions outside of our nasal polyp indication.

- **XHANCE New Prescriptions and Refill Prescriptions.** The underlying disease that we are treating is chronic and, as a result, many patients may fill multiple prescriptions per year. We monitor new prescriptions as they create the potential for future refill prescriptions. Based on third-party prescription data as well as data from PPN partners, the total estimated number of XHANCE new prescriptions in the fourth quarter of 2019 was 21,200, which represents 19% growth for new prescriptions when compared to estimated third quarter 2019 new prescriptions of 17,800. In addition, the total estimated number of XHANCE new prescriptions was 8,800 in fourth quarter 2018, 12,700 in first quarter 2019, and 15,600 in second quarter 2019.

We monitor refill prescriptions and provide patient assistance to support refill programs that are administered by our PPN partners. Based on third-party prescription data as well as data from PPN partners, the total estimated number of XHANCE refill prescriptions in the fourth quarter of 2019 was 33,000, which represents 31% growth for refill prescriptions when compared to estimated third quarter 2019 refill prescriptions of 25,200. In addition, the total estimated number of XHANCE refill prescriptions was 5,300 in fourth quarter 2018, 9,800 in first quarter 2019, and 18,400 in second quarter 2019.

- **Prescribing Breadth and Depth.** We monitor the number of physicians who prescribe XHANCE in a time period to evaluate the breadth of prescribing. Based on third-party prescription data as well as data from PPN partners, the total estimated number of physicians who had at least one patient fill a prescription for XHANCE in the fourth quarter of 2019 was 5,859, which represents 15% growth when compared to the estimated 5,075 physicians who had at least one patient fill a prescription for XHANCE in the third quarter of 2019. In addition, the total estimated number of physicians who had at least one patient fill a prescription for XHANCE was 3,059 in the fourth quarter of 2018, 3,706 in the first quarter of 2019, and 4,442 in the second quarter of 2019.

We monitor the number of prescriptions filled by a prescribing physician's patients in a time period to evaluate depth of prescribing. Based on third-party prescription data as well as data from PPN partners, the total estimated number of physicians who had more than 15 XHANCE prescriptions filled by their patients in the fourth quarter of 2019 was 828, which represents 25% growth when compared to the estimated 665 physicians who had more than 15 XHANCE prescriptions filled by their patients in the third quarter of 2019. In addition, the total estimated number of physicians who had more than 15 XHANCE prescriptions filled by their patients was 136 in the fourth quarter of 2018, 288 in the first quarter of 2019, and 523 in the second quarter of 2019.

Physicians who had more than 15 XHANCE prescriptions filled by their patients in the fourth quarter of 2019 are responsible for a significant proportion of total XHANCE prescriptions. Based on third-party prescription data as well as data from PPN partners, physicians who had more than 15 XHANCE prescriptions filled by their patients averaged approximately 40 prescriptions in the fourth quarter of 2019 and were responsible for approximately 33,000 total XHANCE prescriptions in the fourth quarter of 2019.

## ***XHANCE Development Update***

In addition to XHANCE's existing indication for the treatment of nasal polyps, in order to broaden our U.S. market opportunity, we initiated a clinical trial program in pursuit of a follow-on indication for the treatment of chronic sinusitis in the U.S. We believe XHANCE has the potential to be the first drug therapy approved by the FDA for the treatment of chronic sinusitis. We expect the program will be comprised of two phase 3b clinical trials, the first of which was initiated in the fourth quarter of 2018 and is estimated to enroll approximately 378 subjects and the second of which was initiated in the second quarter of 2019 and is estimated to enroll approximately 399 subjects. Estimated enrollment for both trials is subject to change for factors that may include an interim analysis intended to inform the statistical powering of both trials. We expect top-line results from both of our ongoing chronic sinusitis trials in the second half of 2021.

## ***Licensing of Our Exhalation Delivery System (Outside of ENT/Allergy Indications)***

### ***Currax License Agreement***

In September 2019, OptiNose AS, our wholly-owned subsidiary, entered into a license agreement (the Currax License Agreement) with Currax Pharmaceuticals LLC (Currax). Under the terms of the Currax License Agreement, we granted Currax an exclusive license to certain OptiNose patents and a non-exclusive license to certain OptiNose know-how to use, sell, offer for sale, have sold and import Onzetra® Xsail® (sumatriptan nasal powder) in the U.S., Canada and Mexico.

### ***Inexia License Agreement***

In January 2019, OptiNose AS, our wholly-owned subsidiary, entered into a license agreement (Inexia License Agreement), with Inexia Limited (Inexia). Under the terms of the Inexia License Agreement, we granted Inexia an exclusive, royalty-bearing, worldwide, non-transferable, sublicensable license to our EDS and other intellectual property for the development, sale, import and manufacture of products containing orexin receptor agonist and/or orexin receptor positive modulator molecule(s) as the sole active pharmaceutical ingredient(s) for the treatment, diagnosis or prevention of human diseases or conditions associated primarily with orexin receptor agonism and orexin receptor positive modulation. The license excludes the treatment of any disease or condition affecting the ear, nose or throat, or the treatment of any disease or condition associated primarily with another receptor, other than the Orexin 1 and Orexin 2 receptors. Inexia is solely responsible for all costs and activities related to its identification, development and commercialization of products under the Inexia License Agreement.

As a result of the Inexia License Agreement, we have discontinued our preclinical OPN-021 program, which combined our EDS with orexin agonist molecules for the treatment of narcolepsy and symptoms of other diseases potentially amenable to the same pharmacologic activity, such as Parkinson's disease.

### ***Avanir License Agreement***

The Avanir License Agreement with Avanir Pharmaceuticals Inc. terminated on March 10, 2019. In September 2019, as described above, we entered into the Currax License Agreement.

## **Financial Operations Overview**

The following discussion sets forth certain components of our consolidated statements of operations as well as factors that impact those items.

### ***Net product revenues***

Sales of XHANCE generated \$30.4 million and \$7.1 million in net product revenues for the years ended December 31, 2019 and 2018, respectively. In accordance with GAAP, we determine net product revenues for XHANCE, with specific assumptions for variable consideration components including but not limited to trade discounts and allowances, co-pay assistance programs and payor rebates.



Based on available XHANCE prescription data purchased from third parties and data from our PPN partners, who collectively dispensed 75% to 80% of our total prescriptions (TRxs) in the period, our average net product revenues per prescription for the fourth quarter of 2019 was approximately \$204, which represents an increase compared to our average net product revenue per prescription of approximately \$202 in the third quarter of 2019. Average net product revenues per prescription for the year ended December 31, 2019 was \$198. We believe the 1% improvement in the average net product revenues per prescription in the fourth quarter versus the third quarter of 2019 is largely attributable to patients meeting annual out-of-pocket expense thresholds which reduces the amount of copay assistance that we provide through our affordability program.

We calculate average net product revenues per prescription, one metric that we use to gauge the profitability of XHANCE, by dividing net product revenues for the quarter by the estimated number of XHANCE prescriptions dispensed during the quarter. As a result, average net product revenues per prescription is subject to variability. That variability is impacted by factors that do not necessarily reflect a change in the price that is paid for an individual unit of XHANCE, including but not limited to ordering patterns and inventory levels for our wholesale customers and PPN partners, patient utilization rates of affordability programs and the proportion of patients acquiring XHANCE through an insurance benefit. There is also the potential for variability that results from changes in estimation methodology by the third parties that we rely upon to provide prescription data which may lead to revisions of historical estimates of prescription volumes and our calculated average net product revenues per prescription.

We expect full year 2020 net product revenues will more than double compared to full year 2019. This includes our expectation that first quarter 2020 net product revenues will decrease compared to fourth quarter 2019. The primary driver of the sequential decrease to net product revenues is our expectation that XHANCE average net product revenues per prescription for the first quarter of 2020 will be between \$120 and \$140. This expected decrease from the fourth quarter 2019 is largely a consequence of the reset of many patient insurance deductibles in January. As a result of this annual reset, we expect greater copay support to be provided by us under our assistance programs. In addition, we believe another contributor to the expected first quarter 2020 decrease is related to changes in patients' healthcare insurance coverage that reduce demand for refill prescriptions early in the year. This reduction in refill prescriptions also has the effect of lowering average net product revenues per prescription as it reduces the proportion of prescriptions that are covered (reimbursed) by a commercial insurer, which results in us providing greater copay support under our assistance programs.

For the remainder of 2020, we believe average net product revenues per prescription will improve substantially. Factors supporting this expected growth include patients meeting their out-of-pocket expense thresholds, expected improvements in insurance coverage and continued strength in the proportion of prescription refills.

#### ***Licensing revenues***

In September 2019, OptiNose AS, a wholly owned subsidiary of the Company, entered into the Currax License Agreement with Currax. Under the terms of the Currax License Agreement, Currax paid us a \$3.7 million upfront payment. We are also eligible to receive an additional \$0.8 million which is being held in escrow for a limited period to cover certain indemnification obligations. In addition, we are eligible to receive a one-time 10% royalty on Onzetra net sales in excess of \$3.0 million solely for calendar year 2020, and an additional \$1.0 million milestone payment subject to the achievement of a specified regulatory milestone.

In January 2019, OptiNose AS entered into the Inexia License Agreement with Inexia. Under the terms of the Inexia License Agreement, Inexia paid us a \$0.5 million upfront payment. For each product developed under the Inexia License Agreement, we are eligible to receive up to \$8.0 million of development milestone payments and up to \$37.0 million of sales milestone payments. In addition, we are eligible to receive tiered, low-to-mid single digit royalties based on net sales of any products successfully developed and commercialized under the Inexia License Agreement. Other than the upfront payment, we do not anticipate the receipt of any milestone or royalty payments from Inexia in the near term.

#### ***Costs of product sales***

Costs of product sales includes the cost of inventory sold, which includes direct and indirect manufacturing and supply chain costs.

**Research and development expense**

Research and development expense consists primarily of expenses incurred to prepare for, initiate and conduct our planned clinical trials, ongoing research efforts of new products and device improvements. We expense research and development costs as incurred. These expenses include:

- personnel expenses, including salaries, benefits and stock-based compensation expense;
- costs of funding clinical development performed by third parties, including pursuant to agreements with contract research organizations (CROs), as well as investigative sites and consultants that conduct or support our nonclinical studies and clinical trials;
- expenses associated with the continued development of our EDS devices;
- expenses related to the continued development of our product sample portfolio;
- expenses incurred under agreements with contract manufacturing organizations (CMOs), including manufacturing scale-up expenses prior to regulatory approval of products for commercial sale and the cost of acquiring and manufacturing preclinical study and clinical trial materials;
- consultant fees and expenses associated with outsourced professional scientific development services;
- expenses for regulatory activities, including filing fees paid to regulatory agencies and costs incurred to compile and respond to filings with the FDA prior to regulatory approval of products for commercial sale;
- costs incurred to maintain, expand and protect our patent portfolio as it relates to product candidates in development; and
- allocated expenses for facility costs, including rent, utilities, depreciation and maintenance.

We typically use our employee, consultant and infrastructure resources across our research and development programs. Although we track certain outsourced development costs by product candidate, we do not allocate personnel costs or other internal costs to specific product candidates.

We plan to incur research and development expenses for the foreseeable future as we expect to continue the development of XHANCE for the treatment of chronic sinusitis and our other product candidates. At this time, due to the inherently unpredictable nature of preclinical and clinical development, including rate of subject enrollment, number of subjects required, and trial duration, and the early stage of our other product candidates, we are unable to estimate with reasonable certainty the costs we will incur and the timelines we will require in our continued development efforts.

**Selling, general and administrative expense**

General and administrative expense consists primarily of personnel expenses, including salaries, benefits and stock-based compensation expense, for employees in executive, finance, accounting, business development, information technology, legal and human resource functions. General and administrative expense also includes corporate facility costs, including rent, utilities, depreciation and maintenance, not otherwise included in research and development expense, as well as regulatory fees and professional fees for legal, patent, accounting and other consulting services.

Sales and marketing-related expenses incurred in 2018 included expenses related to building brand awareness through advertising and the deployment of our nurse educator team, training and deploying our contract sales force and securing market access for XHANCE as well as salaries and related benefits for employees focused on such efforts. Current sales and marketing expenses include our sales team and supporting promotional materials, digital promotion, peer-to-peer education, congresses / conventions, samples, and marketing activities such as direct-to-patient / direct-to-consumer initiatives. Additionally, sales and marketing-related expenses include fees paid to our PPN partners for services unrelated to traditional distribution functions, such as data fees and benefit claims adjudication.

**Interest (income) expense**

Interest (income) expense consists of interest earned on our cash and cash equivalents held with institutional banks and interest expense is primarily related to our note purchase agreement (Pharmakon Senior Secured Notes) with Pharmakon Advisors, LP (Pharmakon) and our former note purchase agreement (Athyrium Senior Secured Notes) with Athyrium Opportunities III Acquisition LP (Athyrium).

**Other (income) expense**

Other (income) expense consists primarily of the loss on the extinguishment of the Athyrium Senior Secured Notes, grant and other income as a result of government cost reimbursements for research and development activities over a contractually defined period, as well as foreign currency (income) losses due to exchange rate fluctuations on transactions denominated in a currency other than our functional currency.

**Critical accounting policies**

Our consolidated financial statements are prepared in accordance with U.S. generally accepted accounting principles (GAAP). The preparation of our consolidated financial statements requires us to make estimates and judgments that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of expenses during the reported period. We base our estimates on historical experience, known trends and events and various other factors that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. We evaluate our estimates and assumptions on an ongoing basis. Our actual results may differ from these estimates under different assumptions and conditions.

While our significant accounting policies are described in more detail in the notes to our consolidated financial statements appearing elsewhere in this report, we believe that the following accounting policies are those most critical to the preparation of our consolidated financial statements.

**Revenue recognition**

We account for revenue in accordance with Accounting Standards Codification (ASC) Topic 606, *Revenue from Contracts with Customers*, which was adopted on January 1, 2018. We perform the following five steps to recognize revenue under ASC Topic 606: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation. We only recognize revenue when it is probable that we will collect the consideration to which we are entitled in exchange for the goods or services that will be transferred to the customer.

**Net product revenues**

We recognized XHANCE revenue at the point the customer obtains control of the product, which generally occurs upon delivery. The transaction price that is recognized as revenue for products includes an estimate of variable consideration. Payment terms with customers do not exceed one year and, therefore, we do not account for a financing component in our arrangements. Incremental costs of obtaining a contract with a customer (for example, sales commissions) are expensed when incurred as the period of benefit is less than one year. Shipping and handling costs for product shipments to customers are recorded as selling, general and administrative expenses. Our estimates of variable consideration and determination of whether to include estimated amounts in the transaction price are based largely on an assessment of our anticipated performance and all information (historical, current and forecasted) that is reasonably available. The components of our variable consideration include the following:

**Provider Chargebacks and Discounts.** Chargebacks for fees and discounts to providers represent the estimated obligations resulting from contractual commitments to sell products to qualified healthcare providers at prices lower than the list prices charged to customers who directly purchase the product from us. Customers charge us for the difference between what they pay for the product and the ultimate selling price to the qualified healthcare providers. These components of variable consideration are established in the same period that the related revenue is recognized, resulting in a reduction of product revenue and accounts receivable.

**Trade Discounts and Allowances.** We generally provide customers with discounts that include incentive fees which are explicitly stated in the Company's contracts. These discounts are recorded as a reduction of revenue and

accounts receivable in the period in which the related product revenue is recognized. In addition, we reimburse (through discounts and allowances) our customers for sales order management, data and distribution services.

**Product Returns.** Consistent with industry practice, we have a product returns policy that provides customers a right of return for product purchased within a specified period prior to and subsequent to the product's expiration date. We estimate the amount of our product that may be returned and present this amount as a reduction of revenue in the period the related product revenue is recognized, in addition to establishing a current liability. We consider several factors in the estimation process, including expiration dates of product shipped to customers, inventory levels within the distribution channel, product shelf life, prescription trends and other relevant factors.

**Government Rebates.** We are subject to discount obligations under state Medicaid programs and Medicare. Reserves related to these discount obligations are recorded in the same period the related revenue is recognized, resulting in a reduction of product revenue and the establishment of a current liability. Our liability for these rebates consists of estimates of claims for the current quarter and estimated future claims that will be made for product that has been recognized as revenue but remains in the distribution channel inventories at the end of the reporting period.

**Payor Rebates.** We contract with certain third-party payors, primarily health insurance companies and pharmacy benefit managers, for the payment of rebates with respect to utilization of its products. These rebates are based on contractual percentages applied to the amount of product prescribed to patients who are covered by the plan or the organization with which it contracts. We estimate these rebates and record such estimates in the same period the related revenue is recognized, resulting in a reduction of product revenue and the establishment of a current liability.

**Patient Assistance.** Other programs that we offer include voluntary co-pay patient assistance programs intended to provide financial assistance to eligible patients with prescription drug co-payments required by payors and coupon programs for cash payors. The calculation of the current liability for this assistance is based on an estimate of claims and the cost per claim that we expect to receive associated with product that has been recognized as revenue but remains in the distribution channel inventories at the end of each reporting period.

### **Licensing revenues**

During the year ended December 31, 2019, our licensing revenues were generated pursuant to license agreements with Inexia and Currax. These license agreements provide for exclusive licensed rights to certain intellectual property, a non-refundable up-front payment, potential milestone payment(s) and potential royalty payment(s).

We analyzed the performance obligations under the license agreements, the consideration received to date and the consideration we could receive in the future as part of our analysis related to ASC Topic 606. We recognized the upfront payments from the licensing agreements of \$4.2 million as licensing revenue during the year ended December 31, 2019 upon the delivery of the license performance obligations. No licensing revenue was recognized during the year ended December 31, 2018.

### **Research and development expenses**

Research and development expense consists primarily of expenses incurred to prepare for, initiate and conduct our clinical trials, ongoing research efforts of new products and device improvements. We expense research and development costs as incurred.

At the end of each reporting period, we compare payments made to third-party service providers to the estimated progress toward completion of the applicable research or development objectives. Such estimates are subject to change as additional information becomes available. Depending on the timing of payments to the service providers and the progress that we estimate has been made as a result of the service provided, we may record net prepaid or accrued expenses relating to these costs. To date, we have not made any material adjustments to our prior estimates of accrued research and development expenses.

## Stock-based compensation

We account for stock-based compensation awards in accordance with the FASB ASC Topic 718, *Compensation — Stock Compensation* (ASC 718). ASC 718 requires all stock-based compensation awards to employees to be recognized as expense based on their grant date fair values. We use the Black-Scholes option pricing model to value our stock option awards and shares issued under our employee stock purchase plan. Restricted stock units are valued at the fair market value per share of our common stock on the date of grant. We account for forfeitures of stock option awards as they occur. For awards issued to employees, we recognize compensation expense on a straight-line basis over the requisite service period, which is generally the vesting period of the award. The resulting increase or decrease in value, if any, is recognized as expense or income, respectively, during the period the related services are rendered. Expense for awards with performance conditions is estimated and adjusted on a quarterly basis based upon our assessment of the probability that the performance condition will be met. We have not issued awards where vesting is subject to market conditions; however, if we were to grant such awards in the future, recognition would be based on the derived service period.

Estimating the fair value of stock option awards and shares issued under the employee stock purchase plan requires the input of subjective assumptions, including the estimated fair value of our common stock, the expected life of the option, stock price volatility, the risk-free interest rate and expected dividends. The assumptions used in our Black-Scholes option-pricing model represent management's best estimates and involve a number of variables, uncertainties and assumptions and the application of management's judgment, as they are inherently subjective. If any assumptions change, our stock-based compensation expense could be materially different in the future.

These assumptions used in our Black-Scholes option-pricing model are estimated as follows:

- **Expected Term.** Due to the lack of sufficient company-specific historical data, the expected term of employee options is determined using the "simplified" method, as prescribed in SEC's Staff Accounting Bulletin (SAB) No. 107, whereby the expected life equals the arithmetic average of the vesting term and the original contractual term of the option. The expected term of nonemployee options is equal to the contractual term.
- **Expected Volatility.** The expected volatility is based on historical volatilities of similar entities within our industry which were commensurate with the expected term assumption as described in SAB No. 107.
- **Risk-Free Interest Rate.** The risk-free interest rate is based on the interest rate payable on U.S. Treasury securities in effect at the time of grant for a period that is commensurate with the assumed expected term.
- **Expected Dividends.** The expected dividend yield is 0% because we have not historically paid, and do not expect for the foreseeable future to pay, a dividend on our common stock.

The following table reflects the weighted average assumptions used to estimate the fair value of stock option awards granted and shares issued under the employee stock purchase plan during the year ended December 31, 2019.

	Year Ended December 31, 2019	
	2010 A&R Stock Incentive Plan	2017 Employee Stock Purchase Plan
Risk free interest rate	2.47 %	2.32 %
Expected term (in years)	6.05	0.5
Expected volatility	67.03 %	73.34 %
Annual dividend yield	0.00 %	0.00 %

For information about our employee stock purchase plan, see Note 13 to the Consolidated Financial Statements.

## Recent Accounting Pronouncements

See Note 3 of our audited consolidated financial statements beginning on page F-1 of this Annual Report on Form 10-K for a description of recent accounting pronouncements applicable to our consolidated financial statements.

## ***JOBS Act***

The JOBS Act permits an “emerging growth company”, such as us, to take advantage of an extended transition period to comply with new or revised accounting standards applicable to public companies until those standards would otherwise apply to private companies. We have irrevocably elected to “opt out” of this provision and, as a result, we will comply with new or revised accounting standards when they are required to be adopted by public companies that are not emerging growth companies.

## **Consolidated Results of Operations**

### ***Comparison of the years ended December 31, 2019 and 2018***

The following table sets forth our selected consolidated statements of operations data for the periods indicated (in thousands):

	<b>Year Ended December 31,</b>	
	<b>2019</b>	<b>2018</b>
<b>Revenues:</b>		
Net product revenues	\$ 30,401	\$ 7,065
Licensing revenues	4,230	—
Total revenues	34,631	7,065
<b>Costs and expenses:</b>		
Cost of product sales	5,294	1,588
Research and development	20,783	10,099
Selling, general and administrative	104,155	95,618
Total operating expenses	130,232	107,305
Loss from operations	(95,601)	(100,240)
<b>Other (income) expense:</b>		
Interest (income) expense	7,264	6,776
Other (income) expense	7,188	(358)
Total other (income) expense	14,452	6,418
<b>Net loss</b>	<b>\$ (110,053)</b>	<b>\$ (106,658)</b>

#### ***Net product revenues***

Net product revenues related to sales of XHANCE were \$30.4 million and \$7.1 million for the years ended December 31, 2019 and 2018, respectively. Revenue growth is attributable primarily to an increase in units sold to customers, as a result of a greater number of XHANCE prescriptions dispensed during the year ended December 31, 2019.

#### ***Licensing revenues***

Licensing revenues were \$4.2 million for the year ended December 31, 2019 as a result of upfront payments received under the terms of the Inexia License Agreement entered into in January 2019 and the Currax License Agreement entered into in September 2019. No licensing revenues were recognized during the year ended December 31, 2018.

#### ***Cost of product sales***

Cost of product sales related to XHANCE were \$5.3 million and \$1.6 million for the years ended December 31, 2019 and 2018, respectively, with the increase attributable primarily to an increase in units sold to customers, the result of a greater number of XHANCE prescriptions dispensed during the period.

#### ***Research and development expense***

Research and development expenses were \$20.8 million and \$10.1 million for the years ended December 31, 2019 and 2018, respectively. The \$10.7 million increase in 2019 was attributable primarily to:

- a \$9.7 million increase in clinical expenses related to our clinical trial program in pursuit of a follow-on indication for XHANCE for the treatment of chronic sinusitis in the U.S. and FDA-mandated pediatric studies; and
- a \$1.0 million increase in payroll-related expenses due to an increase in headcount.



### *Selling, general and administrative expense*

Selling, general and administrative expenses were \$104.2 million and \$95.6 million for the years ended December 31, 2019 and 2018, respectively. The \$8.6 million increase was due primarily to:

- a \$6.8 million increase in personnel, bonus and travel expenses due to increases in headcount and the expansion of our sales team;
- a \$4.9 million increase in expenses related to the sale of XHANCE, including marketing expenses;
- a \$3.8 million increase in service fees paid to our PPN partners, the result of a greater number of XHANCE prescriptions dispensed by our PPN partners during the period; and
- a \$1.7 million increase in stock-based compensation expense.

This increase was offset by:

- a \$8.9 million decrease in sales and medical affairs expenses due to the completion of XHANCE initial launch activities in 2018.

### *Interest (income) expense, net*

Interest expense, net, was \$7.3 million and \$6.8 million for the years ended December 31, 2019 and 2018, respectively. The increase in interest expense, net, for the year ended December 31, 2019, was due to a higher weighted average interest rate on the Athyrium Senior Secured Notes and the increased principal balance of the Pharmakon Senior Secured Notes offset by interest income of \$2.4 million. Interest income decreased by \$0.1 million as compared to the year ended December 31, 2018 as a result of lower cash balances.

### *Other (income) expense, net*

Other (income) expense, net, was \$7.2 million and \$(0.4) million for the years ended December 31, 2019 and 2018, respectively. Other expense, net, for the year ended December 31, 2019 was related primarily to the loss on the extinguishment of the Athyrium Senior Secured Notes. Other income, net, for the year ended December 31, 2018 was attributable primarily to the reimbursement of grant-eligible research and development expenses incurred by OptiNose AS, our Norwegian subsidiary. No grant-eligible research and development expenses were incurred during the year ended December 31, 2019.

## **Liquidity and Capital Resources**

Since inception, we have incurred significant net losses and expect to continue to incur net losses for the foreseeable future. We incurred net losses of \$110.1 million and \$106.7 million for the years ended December 31, 2019 and 2018, respectively. As of December 31, 2019, we had an accumulated deficit of \$428.0 million. We have funded our operations primarily through the sale of stock and the issuance of debt, as well as through licensing revenues received under the terms our license agreements and revenues from sales of XHANCE. As of December 31, 2019, we had \$147.1 million in cash and cash equivalents.

The following table shows a summary of our cash flows for the periods indicated (in thousands):

	Year Ended December 31,	
	2019	2018
Net cash used in operating activities	\$ (90,815)	\$ (91,817)
Net cash used in investing activities	(557)	(1,690)
Net cash provided by financing activities	37,529	59,579
Effects of exchange rates on cash and cash equivalents	(3)	64
Net decrease in cash and cash equivalents	<u>\$ (53,846)</u>	<u>\$ (33,864)</u>

### *Operating activities*

Cash used in operating activities decreased by \$1.0 million, from \$91.8 million for the year ended December 31, 2018 to \$90.8 million for the year ended December 31, 2019. The decrease in cash used in operating activities was attributable primarily to increased revenue offset by increased operating expenses and the timing of payment of those expenses.

### *Investing activities*

Cash used in investing activities decreased \$1.1 million from \$1.7 million for the year ended December 31, 2018 to \$0.6 million for the year ended December 31, 2019. The decrease was related primarily to purchases of equipment in 2018 in connection with infrastructure expansion activities to support the commercial launch of XHANCE and our transition to a public company.

### *Financing activities*

Cash provided by financing activities for the year ended December 31, 2019, was driven primarily by net proceeds of \$76.7 million from the issuance of the Pharmakon Senior Secured Notes and net proceeds of \$38.7 million as a result of a November 2019 underwritten public offering in which we sold 4,250,000 shares of our Common Stock (Common Stock) at a price of \$9.75 per share. These receipts were partially offset by the repayment of the Athyrium Senior Secured Notes of \$80.2 million.

Cash provided by financing activities for the year ended December 31, 2018, was driven primarily by net proceeds of \$59.9 million as a result of a June 2018 underwritten public offering of 5,750,000 shares of our Common Stock at a price of \$22.25 per share, which consisted of 2,875,000 shares of our Common Stock sold by us and 2,875,000 shares of our Common Stock sold by certain stockholders.

### *Senior Secured Note Purchase Agreement*

On September 12, 2019 (the Closing Date), we entered into the Pharmakon Senior Secured Notes with funds managed by Pharmakon, the investment manager of the BioPharma Credit funds (BioPharma). The Pharmakon Senior Secured Notes provide us with up to \$150.0 million in debt financing, of which \$80.0 million was issued on the Closing Date and \$30.0 million was issued on February 13, 2020 (the First Delayed Draw Notes). The remaining \$40.0 million of the Pharmakon Senior Secured Notes may be issued as follows:

- \$20.0 million of Pharmakon Senior Secured Notes, at our option, between 15 days after the closing of the First Delayed Draw Notes and August 15, 2020 (the Second Delayed Draw Notes), subject to our achievement of, either (x) XHANCE net sales and royalties for the fiscal quarter ended March 31, 2020 of at least \$11.0 million or (y) XHANCE net sales and royalties for the six months ended June 30, 2020 of at least \$25.0 million; and
- \$20.0 million of Pharmakon Senior Secured Notes, at our option, between 15 days after the closing of the Second Delayed Draw Notes and February 15, 2021 (the Third Delayed Draw Notes, and together with the First Delayed Draw Notes and Second Delayed Draw Notes, collectively, the Delayed Draw Notes), subject to our achievement of either (x) XHANCE net sales and royalties for the quarter ended September 30, 2020 of at least \$14.5 million or (y) XHANCE net sales and royalties for the six months ended December 31, 2020 of at least \$31.0 million.

The issuance of the Second Delayed Draw Notes and Third Delayed Draw Notes are not conditioned upon the issuance of any prior Delayed Draw Notes. Furthermore, if we fail to meet the XHANCE net sales royalties thresholds required to issue the Second Delayed Draw Notes, we may request BioPharma to issue, in its sole discretion, the entire amount or any lesser amount of such Second Delayed Draw Notes upon the closing date of the Third Delayed Draw Notes (subject to our satisfaction of the net sales and royalties thresholds applicable to the Third Delayed Draw Notes). The proceeds of the initial Pharmakon Senior Secured Notes issued on the Closing Date were used to repay all existing indebtedness under the note purchase agreement with Athyrium. The proceeds from the First Delayed Draw Notes are being used for general corporate purposes. The proceeds of the Delayed Draw Notes, if issued, are expected to be used for general corporate purposes.

The Pharmakon Senior Secured Notes bear interest at a fixed per annum rate of 10.75% and are scheduled to mature on September 12, 2024 (the Maturity Date). We are required to make quarterly interest payments until the Maturity Date. We are also required to make principal payments, which are payable in 8 equal quarterly installments beginning on December 15, 2022 and continuing until the Maturity Date; provided that we may, at our election, postpone any such principal payment until the Maturity Date if, as of the applicable payment date, certain trailing four-quarter consolidated XHANCE net sales and royalties thresholds have been achieved.

We are required to repay the Pharmakon Senior Secured Notes in full upon the occurrence of a change of control (as defined in the Note Purchase Agreement). In addition, we may make voluntary prepayments in whole or in part. All mandatory and voluntary prepayments are subject to the payment of prepayment premiums as follows: (i) if

prepayment occurs prior to the third anniversary of the Closing Date, an amount equal to 2% of the principal prepaid, (ii) if prepayment occurs on or after the third anniversary of the Closing Date but prior to the fourth anniversary of the Closing Date, an amount equal to 1% of the principal prepaid, and (iii) if prepayment occurs on or after the fourth anniversary of the Closing Date, no prepayment premium is required. Additionally, we are also required to pay a "make-whole" amount in respect of any principal payments (whether mandatory or voluntary) made prior to the 30-month anniversary of the issuance of the applicable note, in an amount equal to the interest that would have accrued through the 30-month anniversary in respect of such note but for such principal payment.

The Pharmakon Senior Secured Notes are secured by a pledge of substantially all of our assets and contains affirmative and negative covenants customary for financings of this type, including limitations on our and our subsidiaries' ability, among other things, to incur additional debt, grant or permit additional liens, make investments and acquisitions, merge or consolidate with others, dispose of assets, grant certain license rights to our products, technologies and other intellectual property rights; pay dividends and distributions, repay junior indebtedness and enter into affiliate transactions, in each case, subject to certain exceptions. In addition, the Pharmakon Senior Secured Notes contain financial covenants requiring us to maintain at all times certain minimum trailing twelve-month consolidated XHANCE net sales and royalties, tested on a quarterly basis, and at least \$30.0 million of cash and cash equivalents.

The Note Purchase Agreement also includes events of default customary for financings of this type, in certain cases subject to customary periods to cure, following which BioPharma may accelerate all amounts outstanding under the notes.

#### *Projected 2020 operating expenses*

We expect that our total GAAP operating expenses (consisting of selling, general & administrative expenses and research & development expenses) for 2020 will be between \$148.0 million and \$153.0 million of which approximately \$12.0 million is expected to be stock-based compensation expense. Total GAAP operating expenses excluding stock-based compensation expense are expected to be between \$136.0 million and \$141.0 million. An increase in selling and marketing expenses in 2020 vs. 2019 is projected primarily related to annualization of the 2019 sales force expansion, an additional sales force expansion in the first quarter of 2020, and an increase in fees paid to our PPN partners associated with higher projected XHANCE TRx volumes. An increase in research and development expenses is also projected in 2020 related to our clinical trial program in pursuit of a follow-on indication for XHANCE for the treatment of chronic sinusitis in the U.S.

#### *Future funding requirements*

We expect to continue to incur significant expenses in connection with our ongoing activities, particularly as we:

- maintain and expand our sales force and the commercial infrastructure to support the sales and marketing for XHANCE;
- continue advertising and other promotional activities to support the commercialization of XHANCE;
- continue to provide co-pay and other patient affordability programs;
- continue clinical development activities for XHANCE, including FDA-mandated pediatric studies and clinical trials for a follow-on indication for the treatment of chronic sinusitis;
- continue research and development activities for additional product candidates;
- continue to contract to manufacture XHANCE and our other product candidates;
- maintain, expand and protect our patent portfolio;
- service our debt obligations under the Pharmakon Senior Secured Notes issued in September 2019;
- maintain infrastructure necessary to operate as a publicly-traded, commercial-stage company; and
- hire additional staff and add operational, financial and information systems to execute our business plan.

Our future funding requirements, both near and long-term, will depend on many factors, including, but not limited to:

- the success of our commercialization of XHANCE for the treatment of nasal polyps including, among other things, patient and physician acceptance of XHANCE and our ability to maintain adequate insurance coverage and reimbursement for XHANCE;

- the cost of commercialization activities for XHANCE, including product manufacturing, distribution, marketing and sales;
- net product revenues received from sales of XHANCE;
- the costs and timing of expanding our sales force;
- the level of co-pay assistance and other patient affordability programs offered for XHANCE;
- our clinical development plans for XHANCE, including the outcome, timing and cost of FDA-mandated pediatric studies and clinical trials for the supplemental indication for the treatment of chronic sinusitis;
- the outcome, timing and cost of the regulatory approval process of XHANCE for chronic sinusitis by the FDA, including the potential for the FDA to require that we perform more studies and clinical trials than those that we currently expect;
- the costs involved in preparing, filing and prosecuting patent applications and annuity fees relating to issued patents;
- the cost of maintaining and enforcing our intellectual property rights, as well as the cost of defending intellectual property disputes, including patent infringement actions brought by third parties against us;
- the initiation, progress, timing, costs and results of clinical trials and other research and development related to additional product candidates; and
- the extent to which we in-license, acquire or otherwise partner in development or commercialization of other products, product candidates or technologies.

Although it is difficult to predict our future liquidity requirements, we will likely require additional capital in the future secured through equity or debt financings, partnerships, collaborations, or other sources in order to meet the debt service obligations under our outstanding Pharmakon Senior Secured Notes, including repayment, and to carry out our planned development and commercial activities. As of December 31, 2019, we had access to up to an additional \$70.0 million from the Pharmakon Senior Secured Notes, of which the First Delayed Draw Notes representing \$30.0 million of this \$70.0 million were issued in February 2020. The availability of the remaining \$40.0 million proceeds of the Delayed Draw Notes is subject to the achievement of certain milestones for XHANCE net sales and royalties and certain other conditions. Additional capital, secured in the future through equity or debt financings, partnerships, collaborations, or other sources, may not be available on a timely basis, on favorable terms, or at all, and such capital, if raised, may not be sufficient to meet our debt service obligations, including repayment, or enable us to continue to implement our long-term business strategy. If additional capital is not secured when required, we may need to delay or curtail our operations until such funding is received. If we cannot expand our operations or otherwise capitalize on our business opportunities because we lack sufficient capital, our business, financial condition and results of operations could be materially adversely affected and we may need to delay or curtail our operations until such funding is received. Additionally, we may never become profitable, or if we do, we may not be able to sustain profitability on a recurring basis.

### Contractual obligations and commitments

The following table summarizes our contractual obligations at December 31, 2019 (in thousands):

	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Operating leases <sup>(1)</sup>	\$ 1,597	\$ 1,196	\$ 401	\$ —	\$ —
Long-term debt <sup>(2)</sup>	113,756	8,696	27,439	77,621	—
Total	\$ 115,353	\$ 9,892	\$ 27,840	\$ 77,621	\$ —

<sup>(1)</sup> Reflects obligations pursuant to our office leases in Yardley, Pennsylvania, Ewing, New Jersey, Oslo, Norway and Swindon, England and leases of certain other equipment.

<sup>(2)</sup> Reflects principal and interest obligations pursuant to the Pharmakon Senior Secured Notes entered into on September 12, 2019 (the Closing Date). The Pharmakon Senior Secured Notes bear interest at 10.75% and are scheduled to mature on September 12, 2024 (the Maturity Date). We are required to make quarterly interest payments until the Maturity Date. Principal payments are payable in eight equal quarterly installments beginning on December 15, 2022 and continuing until the Maturity Date; provided that we may, at our election and upon achieving certain trailing four-quarter consolidated XHANCE net sales and royalties, postpone any such amortization payment until the Maturity Date. The Pharmakon Senior Secured Notes include events of default customary for financings of this type (including, among others, failure to comply with affirmative,

negative and financial covenants), in certain cases subject to customary periods to cure, following which BioPharma may accelerate all amounts outstanding under the notes.

### **Off-balance sheet arrangements**

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

## **ITEM 7A. QUALITATIVE AND QUANTITATIVE DISCLOSURES ABOUT MARKET RISK**

We are a smaller reporting company as defined by Rule 12b-2 of the Securities Exchange Act of 1934 and are not required to provide the information under this item.

## **ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA**

The information required by Item 8 including the financial statements and notes thereto, and report of the independent registered public accounting firm thereon, are included in this Form 10-K as set forth in the "Index to Consolidated Financial Statements" on page F-1.

## **ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE**

Not applicable.

## **ITEM 9A. CONTROLS AND PROCEDURES**

### **Evaluation of Disclosure Controls and Procedures**

The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, refers to controls and procedures that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that such information is accumulated and communicated to a company's management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure.

In designing and evaluating our disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the disclosure controls and procedures are met. Additionally, in designing disclosure controls and procedures, our management was required to apply its judgment in evaluating the cost-benefit relationship of possible disclosure controls and procedures. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a control system, misstatements due to error or fraud may occur and may not be detected.

Our Chief Executive Officer and our Chief Financial Officer evaluated the effectiveness of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, as of the end of the period covered by this report. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of December 31, 2019.

### **Management's Report on Internal Control over Financial Reporting**

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is a process designed to provide reasonable assurance of the reliability of financial reporting and of the preparation of financial statements for external reporting purposes, in accordance with U.S. generally accepted accounting principles.

Internal control over financial reporting includes policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect transactions and disposition of assets; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in

accordance with U.S. generally accepted accounting principles, and that receipts and expenditures are being made only in accordance with the authorization of its management and directors; and (3) provide reasonable assurance regarding the prevention or timely detection of unauthorized acquisition, use, or disposition of our assets that could have a material effect on its financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of the 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 and procedures included in such controls may deteriorate.

Our management has assessed the effectiveness of our internal control over financial reporting as of December 31, 2019. In making this assessment, management used the criteria established by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control - Integrated Framework (2013). These criteria are in the areas of control environment, risk assessment, control activities, information and communication, and monitoring. Management's assessment included extensive documentation, evaluating and testing the design and operating effectiveness of its internal controls over financial reporting.

Based on management's processes and assessment, as described above, management has concluded that, as of December 31, 2019, our internal control over financial reporting was effective.

#### **Attestation Report of the Registered Public Accounting Firm**

This Annual Report on Form 10-K does not include an attestation report of our registered public accounting firm due to an exemption established by the JOBS Act for "emerging growth companies."

#### **Changes in Internal Control over Financial Reporting**

There were no changes in our internal control over financial reporting that occurred during our the quarter ended December 31, 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

#### **ITEM 9B. OTHER INFORMATION**

None.

### **PART III**

#### **ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE**

The information required by this item is incorporated by reference to our Proxy Statement for the 2020 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission within 120 days of the fiscal year ended December 31, 2019.

Our Board has adopted a written Code Conduct applicable to all officers, directors and employees, which is available on our website ([www.optinose.com](http://www.optinose.com)) under "Corporate Governance" within the "Investors" section. We intend to satisfy the disclosure requirement under Item 5.05 of Form 8-K regarding amendment to, or waiver from, a provision of this Code and by posting such information on the website address and location specified above.

#### **ITEM 11. EXECUTIVE COMPENSATION**

The information required by this item is incorporated by reference to our Proxy Statement for the 2020 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission within 120 days of the fiscal year ended December 31, 2019.



## ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this item is incorporated by reference to our Proxy Statement for the 2020 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission within 120 days of the fiscal year ended December 31, 2019.

## ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this item is incorporated by reference to our Proxy Statement for the 2020 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission within 120 days of the fiscal year ended December 31, 2019.

## ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this item is incorporated by reference to our Proxy Statement for the 2020 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission within 120 days of the fiscal year ended December 31, 2019.

## PART IV

## ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

### (a) (1) Consolidated Financial Statements.

The Consolidated Financial Statements are filed as part of this report. See the Index to the Consolidated Financial Statements on page F-1.

### (2) Consolidated Financial Statement Schedule.

Schedules are omitted because they are not applicable, or are not required, or because the information is included in the Consolidated Financial Statements and Notes thereto.

### (3) The exhibits listed under Item 15(b), which are incorporated herein by reference, are filed or furnished as part of this report or are incorporated into this report by reference.

### (b) Exhibits.

Exhibit Number	Exhibit Description	Incorporated by Reference			
		Form	Date	Number	Filed Herewith
2.1	<a href="#">Exchange Agreement, dated as of June 7, 2010, by and among the Registrant, OptiNose AS and the other signatories thereto (the Registrant hereby agrees to furnish supplementally a copy of any omitted schedules to the SEC upon request)</a>	S-1	9/18/17	2.1	
3.1	<a href="#">Fourth Amended and Restated Certificate of Incorporation of OptiNose, Inc.</a>	8-K	10/18/17	3.1	
3.2	<a href="#">Amended and Restated Bylaws of OptiNose, Inc.</a>	8-K	10/18/17	3.2	
4.1	<a href="#">Form of Common Stock Certificate.</a>	S-1/A	10/3/17	4.1	
4.2	<a href="#">Second Amended and Restated Registration Rights Agreement, dated March 24, 2017, by and among the Registrant and certain of its stockholders.</a>	S-1	9/18/17	4.2	
4.3	<a href="#">Form of Warrant issued by the Registrant on June 7, 2010.</a>	S-1	9/18/17	4.4	
4.4	<a href="#">Stockholders' Agreement, dated October 2, 2017, by and among OptiNose, Inc. and certain of its stockholders.</a>	S-1/A	10/3/17	4.6	
4.5	<a href="#">First Amendment to the Second Amended and Restated Registration Rights Agreement, dated October 2, 2017, by and among the Registrant and certain of its stockholders.</a>	S-1/A	10/11/17	4.7	
4.6	<a href="#">Common Stock Warrant issued by OptiNose, Inc. dated September 12, 2019.</a>	8-K	9/12/19	4.1	
4.7	<a href="#">Description of Securities of OptiNose, Inc.</a>				x

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10.1	<a href="#">Form of Indemnification Agreement.</a> <sup>+</sup>				x
10.2	<a href="#">Employment Agreement, dated October 12, 2017, between OptiNose US, Inc. and Peter K. Miller.</a> <sup>+</sup>	8-K	10/18/17	10.1	
10.3	<a href="#">Employment Agreement, dated October 12, 2017, between OptiNose US, Inc. and Ramy A. Mahmoud.</a> <sup>+</sup>	8-K	10/18/17	10.2	
10.4	<a href="#">Employment Agreement, dated October 12, 2017, between OptiNose US, Inc. and Keith A. Goldan.</a> <sup>+</sup>	8-K	10/18/17	10.4	
10.5	<a href="#">Employment Agreement, dated October 12, 2017, between OptiNose US, Inc. and Michael F. Marino.</a> <sup>+</sup>	8-K	10/18/17	10.5	
10.6	<a href="#">Amended and Restated 2010 Stock Incentive Plan.</a> <sup>+</sup>	S-1/A	10/3/17	10.7	
10.7	<a href="#">Form of Non-Qualified Stock Option Agreement Granted Under the 2010 Stock Incentive Plan (Relating to Success Pool Grants).</a> <sup>+</sup>	S-1/A	10/3/17	10.8	
10.8	<a href="#">Form of Non-Qualified Stock Option Agreement Granted Under the 2010 Stock Incentive Plan (Relating to Option Pool Grants).</a> <sup>+</sup>	S-1/A	10/3/17	10.9	
10.9	<a href="#">Form of Non-Qualified Stock Option Agreement Granted Under the 2010 Stock Incentive Plan.</a> <sup>+</sup>	S-1/A	10/3/17	10.10	
10.10	<a href="#">Supply Agreement, dated July 1, 2017, by and between Hovione Inter Ltd and OptiNose US, Inc., OptiNose UK, Ltd and OptiNose AS.</a> <sup>†</sup>	S-1	9/18/17	10.14	
10.11	<a href="#">Manufacture and Supply Agreement, dated as of August 18, 2017, by and among OptiNose US, Inc., OptiNose UK Ltd. and OptiNose AS and Contract Pharmaceuticals Limited Canada.</a> <sup>†</sup>	S-1	9/18/17	10.15	
10.12	<a href="#">Form of Non-Qualified Stock Option Agreement Under the Amended and Restated 2010 Stock Incentive Plan.</a> <sup>+</sup>	S-1/A	10/3/17	10.17	
10.13	<a href="#">2017 Employee Stock Purchase Plan.</a> <sup>+</sup>	S-1/A	10/3/17	10.18	
10.14	<a href="#">Manufacturing Services Agreement, dated December 21, 2018, by and among OptiNose US, Inc., OptiNose UK Ltd. and OptiNose AS and Advance Mold &amp; Manufacturing, Inc. d/b/a Vision Technical Molding.</a> <sup>†</sup>	10-K	3/6/19	10.1	
10.15	<a href="#">Form of Restricted Stock Unit Agreement Under the 2019 Stock Incentive Plan.</a>	10-Q	8/12/19	10.1	
10.16	<a href="#">Note Purchase Agreement, dated September 12, 2019, among OptiNose US, Inc., OptiNose, Inc., OptiNose UK Limited and OptiNose AS, BioPharma Credit PLC, as Collateral Agent and the purchasers from time to time party thereto (including Form of Initial Senior Secured Note).</a>	8-K	9/12/19	10.1	
10.17	<a href="#">Employment Agreement, dated February 17, 2020, between OptiNose US, Inc. and Victor M. Clavelli.</a>	8-K	2/19/20	99.2	
10.18	<a href="#">Form of Non-Qualified Stock Option Agreement (Inducement Grant)</a>	8-K	2/19/20	99.3	
10.19	<a href="#">Relocation Agreement, dated February 17, 2020, between OptiNose US, Inc. and Victor M. Clavelli.</a>	8-K	2/19/20	99.4	
21.1	<a href="#">List of Subsidiaries</a>				x
23.1	<a href="#">Consent of Ernst &amp; Young LLP, independent registered public accounting firm.</a>				x
31.1	<a href="#">Certification of Chief Executive Officer pursuant to Rule 13a-14(a) or 15a-14(a) under the Exchange Act.</a>				x
31.2	<a href="#">Certification of Chief Financial Officer pursuant to Rule 13a-14(a) or 15a-14(a) under the Exchange Act.</a>				x
32.1	<a href="#">Certification Pursuant to 18 U.S.C. Section 1350 of principal executive officer and principal financial officer.</a>				x
32.2	<a href="#">Certification Pursuant to 18 U.S.C. Section 1350 of principal executive officer and principal financial officer.</a>				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
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)				x

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† Portions of this exhibit (indicated by asterisks) have been omitted in compliance with Item 601 of Regulation S-K.

+ Indicates management contract or compensatory plan.

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## **ITEM 16. FORM 10-K SUMMARY**

Not applicable.

**SIGNATURES**

Pursuant to the requirements 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 in the capacities and on the date indicated.

Date: March 5, 2020

**OPTINOSE, INC.**

By: /s/ PETER K. MILLER  
 Name: Peter K. Miller  
 Title: *Chief Executive Officer*

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ PETER K. MILLER</u> Peter K. Miller	Chief Executive Officer and Director (Principal Executive Officer)	March 5, 2020
<u>/s/ KEITH A. GOLDAN</u> Keith A. Goldan	Chief Financial Officer (Principal Finance Officer and Principal Accounting Officer)	March 5, 2020
<u>/s/ JOSEPH C. SCODARI</u> Joseph C. Scodari	Chairman of the Board of Directors	March 5, 2020
<u>/s/ ROBERT P. O'NEIL</u> Robert P. O'Neil	Director	March 5, 2020
<u>/s/ SRIRAM VENKATARAMAN</u> Sriram Venkataraman	Director	March 5, 2020
<u>/s/ WILLIAM F. DOYLE</u> William F. Doyle	Director	March 5, 2020
<u>/s/ JOSHUA A. TAMAROFF</u> Joshua A. Tamaroff	Director	March 5, 2020
<u>/s/ WILHELMUS GROENHUYSEN</u> Wilhelmus Groenhuysen	Director	March 5, 2020
<u>/s/ SANDRA L. HELTON</u> Sandra L. Helton	Director	March 5, 2020

## INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

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<b><u>Audited Consolidated Financial Statements</u></b>	
<a href="#">Report of Independent Registered Public Accounting Firm</a>	<a href="#">F-2</a>
<a href="#">Consolidated Balance Sheets as of December 31, 2019 and 2018</a>	<a href="#">F-3</a>
<a href="#">Consolidated Statements of Operations for the years ended December 31, 2019 and 2018</a>	<a href="#">F-4</a>
<a href="#">Consolidated Statements of Comprehensive Loss for the years ended December 31, 2019 and 2018</a>	<a href="#">F-5</a>
<a href="#">Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2019 and 2018</a>	<a href="#">F-6</a>
<a href="#">Consolidated Statements of Cash Flows for the years ended December 31, 2019 and 2018</a>	<a href="#">F-7</a>
<a href="#">Notes to Consolidated Financial Statements</a>	<a href="#">F-8</a>

## **Report of Independent Registered Public Accounting Firm**

To the Shareholders and Board of Directors of OptiNose, Inc.

### **Opinion on the Financial Statements**

We have audited the accompanying consolidated balance sheets of OptiNose, Inc. (the Company) as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive loss, stockholders' equity and cash flows for the years then ended, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019 and 2018, and the results of its operations and its cash flows for the years then ended, in conformity with U.S. generally accepted accounting principles.

### **Basis for Opinion**

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2016.

Philadelphia, Pennsylvania

March 5, 2020



**OptiNose, Inc.**  
**Consolidated Balance Sheets**  
(in thousands, except share and per share data)

	December 31,	
	2019	2018
<b>Assets</b>		
Current assets:		
Cash and cash equivalents	\$ 147,144	\$ 200,990
Accounts receivable, net	13,643	2,310
Grants and other receivables	175	242
Inventory	3,484	7,132
Prepaid expenses and other current assets	3,614	2,183
Total current assets	168,060	212,857
Property and equipment, net	3,052	3,884
Other assets	1,538	248
Total assets	\$ 172,650	\$ 216,989
<b>Liabilities and stockholders' equity</b>		
Current liabilities:		
Accounts payable	\$ 3,625	\$ 7,116
Accrued expenses	32,514	18,421
Deferred other income	—	160
Total current liabilities	36,139	25,697
Long-term debt, net	74,531	72,500
Other liabilities	397	181
Total liabilities	111,067	98,378
Commitments and contingencies (Note 11)		
Stockholders' equity:		
Common stock, \$0.001 par value; 200,000,000 shares authorized at December 31, 2019 and 2018; 45,906,162 and 41,227,530 shares issued and outstanding at December 31, 2019 and December 31, 2018, respectively	46	41
Additional paid-in capital	489,565	436,554
Accumulated deficit	(427,980)	(317,927)
Accumulated other comprehensive loss	(48)	(57)
Total stockholders' equity	61,583	118,611
Total liabilities and stockholders' equity	\$ 172,650	\$ 216,989

See accompanying notes to consolidated financial statements

**OptiNose, Inc.**  
**Consolidated Statements of Operations**  
(in thousands, except share and per share data)

	Year Ended December 31,	
	2019	2018
Net product revenues	\$ 30,401	\$ 7,065
Licensing revenues	4,230	—
Total revenues	34,631	7,065
Costs and expenses:		
Cost of product sales	5,294	1,588
Research and development	20,783	10,099
Selling, general and administrative	104,155	95,618
Total costs and expenses	130,232	107,305
Loss from operations	(95,601)	(100,240)
Other (income) expense:		
Grant and other income	—	(406)
Interest income	(2,359)	(2,453)
Interest expense	9,623	9,229
Foreign currency losses	33	48
Loss on extinguishment of debt	7,155	—
Net loss	\$ (110,053)	\$ (106,658)
Net loss per share of common stock, basic and diluted	\$ (2.63)	\$ (2.68)
Weighted average common shares outstanding, basic and diluted	41,877,527	39,765,983

See accompanying notes to consolidated financial statements

**OptiNose, Inc.**  
**Consolidated Statements of Comprehensive Loss**  
**(in thousands)**

	Year Ended December 31,	
	2019	2018
Net loss	\$ (110,053)	\$ (106,658)
Other comprehensive (loss) income:		
Foreign currency translation adjustment	9	54
Comprehensive loss	<u>\$ (110,044)</u>	<u>\$ (106,604)</u>

See accompanying notes to consolidated financial statements

**OptiNose, Inc.**  
**Consolidated Statements of Changes in Stockholders' Equity**  
**(in thousands, except share data)**

	Stockholders' Equity					
	Common Stock		Additional Paid -in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2017	37,802,556	\$ 38	\$ 365,838	\$ (211,269)	\$ (111)	\$ 154,496
Stock compensation expense	—	—	8,645	—	—	8,645
Sale of common stock, net of issuance costs	2,875,000	3	59,914	—	—	59,917
Exercise of common stock options	482,190	—	1,418	—	—	1,418
Exercise of warrants	14,647	—	—	—	—	—
Issuance of common stock under employee stock purchase plan	53,137	—	739	—	—	739
Foreign currency translation adjustment	—	—	—	—	54	54
Net loss	—	—	—	(106,658)	—	(106,658)
Balance at December 31, 2018	41,227,530	\$ 41	\$ 436,554	\$ (317,927)	\$ (57)	\$ 118,611
Stock compensation expense	—	—	9,999	—	—	9,999
Sale of common stock, net of issuance costs	4,250,000	5	38,742	—	—	38,747
Exercise of common stock options	254,335	—	1,038	—	—	1,038
Issuance of common stock under employee stock purchase plan	174,297	—	1,008	—	—	1,008
Issuance of warrants	—	—	2,224	—	—	2,224
Foreign currency translation adjustment	—	—	—	—	9	9
Net loss	—	—	—	(110,053)	—	(110,053)
Balance at December 31, 2019	45,906,162	\$ 46	\$ 489,565	\$ (427,980)	\$ (48)	\$ 61,583

See accompanying notes to consolidated financial statements

**OptiNose, Inc.**  
**Consolidated Statements of Cash Flows**  
(in thousands)

	Year Ended December 31,	
	2019	2018
Operating activities:		
Net loss	\$ (110,053)	\$ (106,658)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	1,108	539
Stock-based compensation	9,860	8,543
Amortization of debt discount and issuance costs	658	404
Loss on extinguishment of debt	7,155	—
Changes in operating assets and liabilities:		
Accounts receivable	(11,333)	(2,310)
Grants and other receivables	68	(196)
Prepaid expenses and other assets	(26)	(762)
Inventory	3,759	(4,698)
Accounts payable	(3,856)	3,171
Accrued expenses and other liabilities	11,845	10,150
Cash used in operating activities	(90,815)	(91,817)
Investing activities:		
Purchases of property and equipment	(557)	(1,690)
Cash used in investing activities	(557)	(1,690)
Financing activities:		
Proceeds from the sale of common stock	41,438	63,969
Proceeds from long-term debt	77,596	—
Proceeds from the issuance of warrants	2,404	—
Proceeds from the issuance of common stock under employee stock purchase plan	1,008	739
Proceeds from the exercise of stock options	1,038	1,488
Cash paid for financing costs	(5,776)	(6,547)
Payment of withholdings on shares withheld for income taxes	—	(70)
Repayment of Athyrium debt facility	(80,179)	—
Cash provided by financing activities	37,529	59,579
Effects of exchange rate changes on cash and cash equivalents	(3)	64
Net decrease in cash, cash equivalents and restricted cash	(53,846)	(33,864)
Cash, cash equivalents and restricted cash at beginning of period	201,011	234,875
Cash, cash equivalents and restricted cash at end of period	\$ 147,165	\$ 201,011
Supplemental disclosure of cash flow information:		
Cash paid for interest	\$ 8,785	\$ 8,253
Supplemental disclosure of noncash activities:		
Fixed asset purchases within accounts payable and accrued expenses	\$ 38	\$ 146
Fixed asset additions acquired through tenant allowance	\$ —	\$ 361
Financing costs within accounts payable and accrued expenses	\$ 483	\$ —
Recognition of initial right-of-use assets	\$ 2,483	\$ —
Recognition of initial lease liabilities	\$ 2,959	\$ —

See accompanying notes to consolidated financial statements

**OptiNose, Inc.**  
**Notes to Consolidated Financial Statements**  
**(in thousands, except share and per share data)**

## **1. Organization and Description of Business**

OptiNose, Inc. (the Company) was incorporated in Delaware in May 2010 (inception) and has facilities in Yardley, Pennsylvania, Ewing, New Jersey, Oslo, Norway and Swindon, England. The Company's predecessor entity, OptiNose AS, was formed under the laws of Norway in September 2000. In 2010, OptiNose AS became a wholly-owned subsidiary of the Company as part of an internal reorganization.

The Company is a specialty pharmaceutical company focused on the development and commercialization of products for patients treated by ear, nose and throat (ENT) and allergy specialists. The Company's first commercial product, XHANCE® (fluticasone propionate) nasal spray, 93 mcg, is a therapeutic utilizing its proprietary Exhalation Delivery System (EDS) that delivers a topically-acting corticosteroid for the treatment of chronic rhinosinusitis with nasal polyps and, if approved, chronic rhinosinusitis without nasal polyps (also known as chronic sinusitis). XHANCE was approved by the United States (US) Food and Drug Administration (FDA) in September 2017 for the treatment of nasal polyps in patients 18 years of age or older. XHANCE was made widely available through commercial channels in April 2018.

## **2. Liquidity**

Since inception, the Company's operations have focused on organization and staffing, business planning, raising capital, establishing an intellectual property portfolio, conducting preclinical studies and clinical trials, conducting out-licensing activities, pursuing regulatory approvals and most recently, preparing for and launching XHANCE in the US. As of December 31, 2019, the Company had cash and cash equivalents of \$147,144.

On November 25, 2019, the Company and certain stockholders closed an underwritten public offering (the Offering) of 5,500,000 shares of Company common stock (Common Stock) at a price of \$9.75 per share. The Offering consisted of 4,250,000 shares of Common Stock sold by the Company and 1,250,000 shares of Common Stock sold by certain stockholders. As a result of the offering, the Company received \$38,747 in net proceeds, after deducting discounts and commissions of \$2,383 and offering expenses of approximately \$308 payable by the Company.

The Company will likely require additional capital in the future secured through equity or debt financings, partnerships, collaborations, or other sources in order to meet the debt service obligations under the Company's outstanding senior secured notes, including repayment, and to carry out the Company's planned development and commercial activities. If additional capital is not secured when required, the Company may need to delay or curtail its operations until such funding is received. The Company is subject to a number of risks similar to other life sciences companies, including, but not limited to, successful discovery, development and commercialization of its products and product candidates, raising additional capital, the development by its competitors of new technological innovations, protection of proprietary technology and market acceptance of the Company's products.

## **3. Summary of Significant Accounting Policies**

### ***Basis of presentation***

The accompanying consolidated financial statements have been prepared in conformity with US generally accepted accounting principles (GAAP). Any reference in these notes to applicable guidance is meant to refer to GAAP as found in the Accounting Standards Codification (ASC) and Accounting Standards Updates (ASU) of the Financial Accounting Standards Board (FASB).

### ***Principles of consolidation***

The consolidated financial statements include the accounts of OptiNose, Inc. and its wholly-owned subsidiaries, OptiNose US, Inc., OptiNose AS and OptiNose UK Ltd. All inter-company balances and transactions have been eliminated in consolidation.



**OptiNose, Inc.**  
**Notes to Consolidated Financial Statements (Continued)**  
**(in thousands, except share and per share data)**

***Use of estimates***

The preparation of the consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and reported amounts of expenses during the reporting period. Due to the uncertainty of factors surrounding the estimates or judgments used in the preparation of the consolidated financial statements, actual results may materially vary from these estimates. Estimates and assumptions are periodically reviewed and the effects of revisions are reflected in the consolidated financial statements in the period they are determined to be necessary.

***Concentration of credit risk***

Financial instruments that potentially subject the Company to concentrations of credit risk are primarily cash and accounts receivable. The Company generally invests its cash in deposits with high credit quality financial institutions. Additionally, the Company performs periodic evaluations of the relative credit standing of these financial institutions.

The Company has exposure to credit risk in accounts receivable from sales of product. XHANCE is sold to wholesale pharmaceutical distributors and PPN partners, who, in turn, sell XHANCE to pharmacies, hospitals and other customers. Five customers represent approximately 62% of the Company's accounts receivable at December 31, 2019 and five customers represent approximately 62% of the Company's net product sales for the year ended December 31, 2019.

***Cash and cash equivalents***

All highly liquid investments purchased with an original maturity date of three months or less at the date of purchase are considered to be cash equivalents. The Company maintains its cash and cash equivalent balances at foreign and domestic financial institutions. Bank deposits with Norwegian banks are insured up to approximately 2,000 Norwegian krone by the Norwegian Banks' Guarantee Fund. Bank deposits with US banks are insured up to \$250 by the Federal Deposits Insurance Corporation. The Company had uninsured cash balances of \$145,634 and \$199,507 at December 31, 2019 and 2018, respectively.

***Restricted cash***

As of December 31, 2019 and 2018, the restricted cash balance included in prepaid expenses and other assets was \$21.

***Fair value of financial instruments***

The Company measures certain assets and liabilities at fair value, which is defined as the price that would be received to sell an asset or paid to transfer a liability (the exit price) in an orderly transaction between market participants at the measurement date. The FASB accounting guidance outlines a valuation framework and creates a fair value hierarchy in order to increase the consistency and comparability of fair value measurements and the related disclosures. In determining fair value, the Company uses quoted prices and observable inputs. Observable inputs are inputs that market participants would use in pricing the asset or liability based on market data obtained from independent sources. The fair value hierarchy is broken down into three levels based on the source of the inputs as follows:

- Level 1 — Valuations based on unadjusted quoted prices in active markets for identical assets or liabilities.
- Level 2 — Valuations based on observable inputs (other than Level 1 quoted prices), such as quoted prices in active markets for similar assets or liabilities, quoted prices in markets that are not active for identical or similar assets or liabilities, or other inputs that are observable or can be corroborated by observable market data.
- Level 3 — Valuations based on inputs that are unobservable and models that are significant to the overall fair value measurement.

**OptiNose, Inc.**  
**Notes to Consolidated Financial Statements (Continued)**  
**(in thousands, except share and per share data)**

At December 31, 2019 and 2018, the Company's financial instruments included cash and cash equivalents, accounts receivable, grants receivable, accounts payable, and accrued expenses. The carrying amounts reported in the Company's financial statements for these instruments approximates their respective fair values because of the short-term nature of these instruments. In addition, at December 31, 2019, the Company believes the carrying value of debt approximates fair value as the interest rates are reflective of the rate the Company could obtain on debt with similar terms and conditions. At December 31, 2019 and 2018, there were no financial assets or liabilities measured at fair value on a recurring basis.

**Accounts receivable**

Accounts receivable primarily relates to amounts due from customers, which are typically due within 31 to 61 days. The Company analyzes accounts that are past due for collectability. Given the nature and historical collectability of the Company's accounts receivable, an allowance for doubtful accounts was not deemed necessary at December 31, 2019 and 2018.

**Inventory**

Inventories are stated at the lower of cost or net realizable value. Costs of inventories, which include amounts related to materials and manufacturing overhead, are determined on a first-in, first-out basis. An assessment of the recoverability of capitalized inventory is performed during each reporting period and any excess and obsolete inventories are written down to their estimated net realizable value in the period in which the impairment is first identified.

**Property and equipment**

Property and equipment is recorded at cost less accumulated depreciation. Significant additions or improvements are capitalized, and expenditures for repairs and maintenance are charged to expense as incurred. Gains and losses on disposal of assets are included in the consolidated statements of operations. Depreciation is calculated on a straight-line basis over the estimated useful lives of the respective assets.

The estimated useful lives of property and equipment are as follows:

Computer equipment	2-3 years
Software	3 years
Machinery & production equipment	5-10 years
Furniture & fixtures	3-5 years
Leasehold improvements	Shorter of lease term or useful life

**Long lived assets**

Long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to future net cash flows expected to be generated. Impairment charges are recognized at the amount by which the carrying amount of an asset exceeds the fair value of the asset. Assets to be disposed of are reported at the lower of the carrying amount or the fair value less costs to sell. The Company did not recognize any impairment or disposition of long-lived assets for the years ended December 31, 2019 and 2018.

**Net product revenues**

The Company accounts for revenue in accordance with ASC Topic 606, *Revenue from Contracts with Customers* (ASC 606), which was adopted on January 1, 2018. The Company performs the following five steps to recognize revenue under ASC 606: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation. The Company only recognizes revenue when it is probable that it will collect the consideration to which it is entitled in exchange for the goods or services that will be transferred to the customer.

**OptiNose, Inc.**  
**Notes to Consolidated Financial Statements (Continued)**  
**(in thousands, except share and per share data)**

The Company sells XHANCE to preferred pharmacy network partners and wholesalers in the US (collectively, Customers). These Customers subsequently resell the Company's products to healthcare providers, patients and other retail pharmacies. In addition to agreements with Customers, the Company enters into arrangements with healthcare providers and payors that provide for government-mandated and/or privately-negotiated rebates, chargebacks and discounts for the purchase of the Company's products.

The Company recognizes revenue from XHANCE sales at the point Customers obtain control of the product, which generally occurs upon delivery. The transaction price that is recognized as revenue for products includes an estimate of variable consideration which is described below. Payment terms with Customers do not exceed one year and, therefore, the Company does not account for a financing component in its arrangements. The Company expenses incremental costs of obtaining a contract with a Customer (for example, sales commissions) when incurred as the period of benefit is less than one year. Shipping and handling costs for product shipments to Customers are recorded as selling, general and administrative expenses.

Transaction Price, including Estimates of Variable Consideration

Revenue from products is recognized at the estimated net sales price (transaction price), which includes estimates of variable consideration. The Company includes estimated amounts in the transaction price to the extent it is determined probable that a significant reversal of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved. The Company's estimates of variable consideration and determination of whether to include estimated amounts in the transaction price are based largely on an assessment of its anticipated performance and all information (historical, current and forecasted) that is reasonably available. The components of the Company's variable consideration include the following:

- Provider Chargebacks and Discounts. Chargebacks for fees and discounts to providers represent the estimated obligations resulting from contractual commitments to sell products to qualified healthcare providers at prices lower than the list prices charged to Customers who directly purchase the product from the Company. Customers charge the Company for the difference between what they pay for the product and the ultimate selling price to the qualified healthcare providers. These components of variable consideration are established in the same period that the related revenue is recognized, resulting in a reduction of product revenue and accounts receivable.
- Trade Discounts and Allowances. The Company generally provides Customers with discounts that include incentive fees which are explicitly stated in the Company's contracts. These discounts are recorded as a reduction of revenue and accounts receivable in the period in which the related product revenue is recognized. In addition, the Company reimburses (through discounts and allowances) its Customers for sales order management, data and distribution services.
- Product Returns. Consistent with industry practice, the Company has a product returns policy that provides Customers a right of return for product purchased within a specified period prior to and subsequent to the product's expiration date. The Company estimates the amount of its products that may be returned and presents this amount as a reduction of revenue in the period the related product revenue is recognized, in addition to establishing a current liability. The Company considers several factors in the estimation process, including expiration dates of product shipped to Customers, inventory levels within the distribution channel, product shelf life, prescription trends and other relevant factors.
- Government Rebates. The Company is subject to discount obligations under state Medicaid programs and Medicare. Reserves related to these discount obligations are recorded in the same period the related revenue is recognized, resulting in a reduction of product revenue and the establishment of a current liability. The Company's liability for these rebates consists of estimates of claims for the current reporting period and estimated future claims that will be made for product that has been recognized as revenue but remains in the distribution channel inventories at the end of the reporting period.
- Payor Rebates. The Company contracts with certain third-party payors, primarily health insurance companies and pharmacy benefit managers, for the payment of rebates with respect to utilization of its

**OptiNose, Inc.**  
**Notes to Consolidated Financial Statements (Continued)**  
**(in thousands, except share and per share data)**

products. These rebates are based on contractual percentages applied to the amount of product prescribed to patients who are covered by the plan or the organization with which it contracts. The Company estimates these rebates and records such estimates in the same period the related revenue is recognized, resulting in a reduction of product revenue and the establishment of a current liability.

- Patient Assistance. Other programs that the Company offers include voluntary co-pay patient assistance programs intended to provide financial assistance to eligible patients with prescription drug co-payments required by payors and coupon programs for cash payors. The calculation of the current liability for this assistance is based on an estimate of claims and the cost per claim that the Company expects to receive associated with product that has been recognized as revenue but remains in the distribution channel inventories at the end of each reporting period.

### ***Licensing Revenues***

During the year ended December 31, 2019, the Company's licensing revenues were generated pursuant to license agreements with Inexia Limited (Inexia) and Currax Pharmaceuticals LLC (Currax) (Note 8). These license agreements provide for exclusive licensed rights to certain intellectual property, a non-refundable up-front payment, potential milestone payment(s) and potential royalty payment(s).

The Company analyzed the performance obligations under the license agreements, the consideration received to date and the consideration the Company could receive in the future as part of its analysis related to ASC 606. The Company recognized the upfront payments from the licensing agreements of \$4,230 as licensing revenue during the year ended December 31, 2019 upon the delivery of the license performance obligations. No licensing revenue was recognized during the year ended December 31, 2018.

### ***Advertising expenses***

The Company expenses the costs of advertising, including promotional expenses, as incurred. Advertising expenses were \$18,528 and \$9,767 for the years ended December 31, 2019 and 2018, respectively.

### ***Research and development***

Research and development costs are expensed as incurred. Research and development costs consist primarily of device development, clinical trial related costs and regulatory related costs. The Company enters into agreements with contract research organizations (CROs) to facilitate, coordinate and perform agreed upon research and development activities for the Company's clinical trials. These CRO contracts typically call for the payment of fees for services at the initiation of the contract and/or upon the achievement of certain clinical trial milestones. The Company prepays certain CRO fees whereby the prepayments are recorded as a current or non-current prepaid asset and are amortized into research and development expense over the period of time the contracted research and development services were performed. The Company's CRO contracts generally also included other fees such as project management and pass through fees whereby the Company expenses these costs as incurred, using the Company's best estimate. Pass through fees include, but are not limited to, regulatory expenses, investigator fees, travel costs, and other miscellaneous costs. Pass through fees incurred are based on the amount of work completed for the clinical trials and are monitored through reporting provided by the Company's CROs.

### ***Stock-based compensation***

The Company measures and recognizes compensation expense for all stock options and restricted stock units (RSUs) awarded to employees and nonemployees and shares issued under the employee stock purchase plan based on the estimated fair value of the awards on the respective grant dates. The Company uses the Black-Scholes option pricing model to value its stock option and shares issued under the employee stock purchase plan. RSUs are valued at the fair market value per share of the Company's common stock on the date of grant. The Company recognizes compensation expense for time-based awards on a straight-line basis over the requisite service period, which is generally the vesting period of the award. The Company recognizes compensation expense for performance based awards when the performance condition is probable of achievement. The Company accounts for forfeitures of stock option awards as they occur.

**OptiNose, Inc.**  
**Notes to Consolidated Financial Statements (Continued)**  
**(in thousands, except share and per share data)**

Estimating the fair value of options and shares issued under the employee stock purchase plan requires the input of subjective assumptions, including the estimated fair value of the Company's common stock, the expected life of the options, stock price volatility, the risk-free interest rate and expected dividends. The assumptions used in the Company's Black-Scholes option-pricing model represent management's best estimates and involve a number of variables, uncertainties and assumptions and the application of management's judgment, as they are inherently subjective.

### **Income taxes**

Income taxes are accounted for under the asset and liability method. The Company recognizes deferred tax assets and liabilities for temporary differences between the financial reporting basis and the tax basis of the Company's assets and liabilities and the expected benefits of net operating loss carryforwards. The impact of changes in tax rates and laws on deferred taxes, if any, applied during the period in which temporary differences are expected to be settled, is reflected in the Company's financial statements in the period of enactment. The measurement of deferred tax assets is reduced, if necessary, if, based on the weight of the evidence, it is more likely than not that some, or all, of the deferred tax assets will not be realized. As of December 31, 2019 and 2018, the Company has concluded that a full valuation allowance is necessary for all of its net deferred tax assets. The Company had no amounts recorded for uncertain tax positions, interest or penalties in the accompanying consolidated financial statements.

### **Grant income**

Government grants are agreements that provide cost reimbursement for certain research and development activities over a contractually defined period. Income from government grants is recognized in the period in which related costs are incurred, provided that the conditions under which government grants were provided have been met and only perfunctory obligations are outstanding. Grant income received in excess of costs incurred is recognized as deferred other income.

### **Net income (loss) per common share**

Basic net income (loss) per common share is determined by dividing net income (loss) applicable to common stockholders by the weighted average common shares outstanding during the period. For the years ended December 31, 2019 and 2018, the outstanding common stock options and common stock warrants have been excluded from the calculation of diluted net loss per share because their effect would be anti-dilutive. Therefore, the weighted average shares used to calculate both basic and diluted net loss per share are the same.

Diluted net loss per common share for the periods presented do not reflect the following potential common shares, as the effect would be antidilutive:

	<b>Year Ended December 31,</b>	
	<b>2019</b>	<b>2018</b>
Stock options	7,399,217	6,182,873
Common stock warrants	2,677,188	1,866,831
Employee stock purchase plan	—	31,892
Total	<u>10,076,405</u>	<u>8,081,596</u>

### **Recent accounting pronouncements**

In December 2019, the FASB issued ASU No. 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*. ASU 2019-12 eliminated certain exceptions and changed guidance on other matters. The exceptions relate to the allocation of income taxes in separate company financial statements, tax accounting for equity method investments and accounting for income taxes when the interim period year-to-date loss exceeds the anticipated full year loss. Changes relate to the accounting for franchise taxes that are income-based and non-income-based, determining if a step up in tax basis is part of a business combination or if it is a separate transaction, when enacted tax law changes should be included in the annual effective tax rate computation, and the allocation of taxes in separate company financial statements to a legal entity that is not subject to income tax. The new standard is effective for fiscal years, and interim periods within those fiscal years, beginning after December

**OptiNose, Inc.**  
**Notes to Consolidated Financial Statements (Continued)**  
**(in thousands, except share and per share data)**

15, 2020, with early adoption permitted. The Company is currently evaluating the potential impact of the adoption of this standard on its results of operations, financial position and cash flows and related disclosures.

In August 2018, the FASB issued ASU No. 2018-15, *Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*. ASU 2018-15 requires that certain implementation costs incurred in a cloud computing arrangement be deferred and recognized over the term of the arrangement. The new standard is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019, and early adoption is permitted. The Company adopted ASU 2018-15 on January 1, 2020 and believes the most significant effect of implementation relates to the recognition of capitalized implementation costs within prepaid expenses and other current assets and the disclosures regarding these capitalized costs.

In August 2018, the FASB issued ASU No. 2018-13, *Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement*. ASU 2018-13 resulted in certain modifications to fair value measurement disclosures, primarily related to level 3 fair value measurements. The new standard is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019, and early adoption is permitted. The Company does not expect the adoption of this standard to have a material impact on its disclosures.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments – Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*. ASU 2016-03, in conjunction with ASU No. 2019-04, *Codification Improvements to Topic 326, Financial Instruments - Credit Losses*, Topic 815, *Derivatives and Hedging*, and Topic 825, *Financial Instruments*, introduces an approach, based on expected losses, to estimate credit losses on certain types of financial instruments and modifies the impairment model for available-for-sale debt securities. The new standard is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2022 for companies deemed to be smaller reporting companies as of November 15, 2019, with early adoption permitted. The Company is currently evaluating the potential impact of the adoption of this standard on its results of operations, financial position and cash flows and related disclosures.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. The FASB issued the update to require the recognition of lease assets and liabilities on the balance sheet of lessees. The standard will be effective for fiscal years beginning after December 15, 2018, with early adoption permitted. The ASU requires a modified retrospective transition method with the option to elect a package of practical expedients. The Company adopted ASU 2016-02 on January 1, 2019 using the optional modified retrospective transition method and elected the following transition practical expedients: (i) to not reassess lease identification, lease classification and initial indirect costs related to those leases entered into prior to the adoption of ASC 842; and (ii) to not separate lease and non-lease components for our office lease portfolio. Refer to Note 6 for further details.

#### **4. Inventory**

Inventory consisted of the following:

	December 31,	
	2019	2018
Raw materials	\$ 1,227	\$ 1,969
Work-in-process	676	2,344
Finished goods	1,581	2,819
Total inventory	<u>\$ 3,484</u>	<u>\$ 7,132</u>



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## 5. Property and Equipment

Property and equipment, net, consisted of:

	December 31,	
	2019	2018
Computer equipment and software	\$ 1,112	\$ 833
Furniture and fixtures	366	389
Machinery and equipment	3,142	2,723
Leasehold improvements	609	609
Construction in process	70	481
	5,299	5,035
Less: accumulated depreciation	(2,247)	(1,151)
	<u>\$ 3,052</u>	<u>\$ 3,884</u>

Depreciation expense was \$1,106 and \$535 for the years ended December 31, 2019 and 2018, respectively. In addition, depreciation expense of \$315 and \$49 was charged to inventory and prepaid expenses and other assets, respectively, as of December 31, 2019, which represents depreciation expense related to equipment involved in the manufacturing process.

## 6. Leases

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)* to require the recognition of lease assets and liabilities on the balance sheet of lessees. The Company implemented ASU 2016-02 as of January 1, 2019 using the optional modified retrospective transition method, which does not require the restatement of prior period amounts, and elected the following transition practical expedients: (i) to not reassess lease identification, lease classification and initial indirect costs related to those leases entered into prior to the adoption of ASC 842; and (ii) to not separate lease and non-lease components for its office lease portfolio. As of the implementation date, all of the Company's leases were operating leases and its total operating lease assets and liabilities were \$2,411 and \$2,887, respectively.

The Company leases office space, storage space and equipment (primarily vehicles). Certain office space leases include options to renew that generally can extend the lease term up to three years. The Company evaluates renewal options at lease inception on an ongoing basis and includes renewal options that it is reasonably certain to exercise in its expected lease terms when classifying leases and measuring lease liabilities. Lease agreements generally do not require material variable lease payments, residual value guarantees or restrictive covenants.

The table below presents the operating lease assets and liabilities recognized on the Company's consolidated balance sheets as of December 31, 2019:

Balance Sheet Line Item		December 31, 2019
Non-current operating lease assets	Other assets	\$ 1,386
Operating lease liabilities:		
Current operating lease liabilities	Accrued expenses and other current liabilities	1,135
Non-current operating lease liabilities	Other liabilities	397
Total operating lease liabilities		<u>\$ 1,532</u>

The depreciable lives of operating lease asset leasehold improvements are limited by the lease term.

The Company's leases generally do not provide an implicit rate, and therefore, the Company uses its incremental borrowing rate as the discount rate when measuring operating leases liabilities. The incremental borrowing rate represents an estimate of the interest rate the Company would incur at lease commencement to borrow an amount equal to the lease payments on a collateralized basis over the term of a lease. The Company used the incremental borrowing rates as of January 1, 2019 for operating leases that commenced prior to that date.

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The Company's weighted average remaining lease term and weighted average discount rate for operating leases as of December 31, 2019 are:

	December 31, 2019
Weighted average remaining lease term (years)	1.24
Weighted average discount rate	6.4 %

The table below reconciles the undiscounted future minimum lease payments (displayed in aggregate by year) under non-cancelable operating leases with terms of more than one year to the total operating lease liabilities recognized on the consolidated balance sheets as of December 31, 2019:

	December 31, 2019
2020	\$ 1,193
2021	401
Thereafter	—
Total undiscounted future minimum lease payments	1,594
Less: difference between undiscounted lease payments and discounted operating lease liabilities	(62)
Total operating lease liabilities	\$ 1,532

Operating lease payments include \$44 related to options to extend lease terms that are reasonably certain of being exercised.

Operating lease costs were \$2,154 the year ended December 31, 2019. Operating lease costs are included within selling, general and administrative expenses on the consolidated statements of operations.

Cash paid for amounts included in the measurement of operating lease liabilities were \$1,589 for the year ended December 31, 2019. This amount is included in operating activities in the consolidated statements of cash flows.

## 7. Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities consisted of:

	December 31,	
	2019	2018
Accrued expenses:		
Product revenue allowances	\$ 12,858	\$ 2,856
Selling, general and administrative expenses	5,544	4,812
Research and development expenses	3,379	933
Payroll expenses	7,810	4,199
Contract sales organization expenses	—	4,482
Other	1,788	1,139
Total accrued expenses	31,379	18,421
Other current liabilities:		
Lease liability	\$ 1,135	\$ —
Total other current liabilities	1,135	—
Total accrued expenses and other current liabilities	\$ 32,514	\$ 18,421

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## **8. License Agreements**

### Avanir License Agreement

In July 2013, the Company's wholly owned subsidiary, OptiNose AS, entered into the Avanir License Agreement with Avanir Pharmaceuticals, Inc. (Avanir) for the exclusive right to sell AVP-825 (now marketed as Onzetra® Xsail®), a product combining a low-dose powder form of sumatriptan with the Company's Exhalation Delivery System technology platform, for the acute treatment of migraines in adults and any follow-on products under development that consist of a formulation that contains triptans as the sole active ingredient.

Through December 31, 2019, under the terms of the Avanir License Agreement, the Company received aggregate cash payments of \$70,000 in connection with the initial signing and the achievement of certain development milestones. The Company did not recognize any licensing revenue under the arrangement during the years ended December 31, 2019 and 2018. The Avanir License Agreement was terminated by Avanir on March 10, 2019. As a result, the Company will not receive any future revenues under the agreement.

### Currax License Agreement

On September 25, 2019, OptiNose AS entered into a license agreement (the Currax License Agreement) with Currax Pharmaceuticals LLC (Currax) pursuant to which the Company granted Currax an exclusive license to certain intellectual property for the commercialization of Onzetra Xsail in the US, Canada and Mexico.

Under the terms of the Currax License Agreement, Currax paid the Company an upfront payment of \$3,730, which was recognized as license revenue during the year ended December 31, 2019. In addition, the Company is eligible to receive an additional \$750, which is being held in escrow for a limited period to cover certain indemnification obligations. The Company is also eligible to receive a one-time 10% royalty on Onzetra Xsail net sales in excess of \$3,000 solely for calendar year 2020, and a \$1,000 milestone payment subject to the achievement of a specified regulatory milestone.

### Inexia License Agreement

On January 31, 2019, OptiNose AS entered into a license agreement (the Inexia License Agreement) with Inexia Limited (Inexia) pursuant to which the Company granted Inexia an exclusive worldwide license to certain intellectual property for the development and commercialization of products containing orexin receptor agonist and/or orexin receptor positive modulator molecules for the treatment, diagnosis or prevention of human diseases or conditions associated primarily with orexin receptor agonism and orexin receptor positive modulation.

Under the terms of the Inexia License Agreement, Inexia paid the Company a \$500 upfront payment, which was recognized as license revenue during the year ended December 31, 2019. For each product developed under the Inexia License Agreement, the Company is eligible to receive up to \$8,000 of development milestone payments and up to \$37,000 of sales milestone payments. In addition, the Company is eligible to receive tiered, low-to-mid single digit royalties based on net sales of any products successfully developed and commercialized under the Inexia License Agreement. Other than the upfront payment, the Company does not anticipate the receipt of any milestone or royalty payments from Inexia in the near term.

## **9. Long-term Debt**

On December 29, 2017, the Company entered into a Senior Secured Note Purchase Agreement (the Senior Secured Notes) with Athyrium Opportunities III Acquisition LP. The Senior Secured Notes provided the Company with up to \$100,000 in capital, of which \$75,000 was issued.

The Senior Secured Notes bore interest at 9.0% plus the three-month London Inter-bank Offered Rate (LIBOR) rate, subject to a 1.0% floor and were scheduled to mature on June 29, 2023. The Senior Secured Notes bore front-end fees of 1% of the aggregate principal amount, which were paid at issuance. The Company was also required to pay an exit fee of 2% of any principal payments (whether mandatory, voluntary, or at maturity) made throughout the term of the Note Purchase Agreement.

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On September 12, 2019 (the Closing Date), the Company entered into a Note Purchase Agreement (the Pharmakon Senior Secured Notes) with funds managed by Pharmakon Advisors, LP (Pharmakon), the investment manager of the BioPharma Credit funds (BioPharma). The Pharmakon Senior Secured Notes provide the Company with up to \$150,000 in debt financing, of which \$80,000 was issued on the Closing Date. The remaining \$70,000 of the Pharmakon Senior Secured Notes may be issued as follows:

- \$30,000 of Pharmakon Senior Secured Notes shall be issued, between September 27, 2019 and February 15, 2020 (the First Delayed Draw Notes), subject to the Company achieving XHANCE net sales and royalties for the quarter ended December 31, 2019 of at least \$9,000;
- \$20,000 of Pharmakon Senior Secured Notes, at the Company's option, between 15 days after the closing of the First Delayed Draw Notes and August 15, 2020 (the Second Delayed Draw Notes), subject to the Company achieving, either (x) XHANCE net sales and royalties for the fiscal quarter ended March 31, 2020 of at least \$11,000 or (y) XHANCE net sales and royalties for the six months ended June 30, 2020 of at least \$25,000; and
- \$20,000 of Pharmakon Senior Secured Notes, at the Company's option, between 15 days after the closing of the Second Delayed Draw Notes and February 15, 2021 (the Third Delayed Draw Notes, and together with the First Delayed Draw Notes and Second Delayed Draw Notes, collectively, the Delayed Draw Notes), subject to the Company achieving either (x) XHANCE net sales and royalties for the quarter ended September 30, 2020 of at least \$14,500 or (y) XHANCE net sales and royalties for the six months ended December 31, 2020 of at least \$31,000.

The issuance of the Second Delayed Draw Notes and Third Delayed Draw Notes are not conditioned upon the issuance of any prior Delayed Draw Notes. Furthermore, if the Company fails to meet the XHANCE net sales and royalties thresholds required to issue the First Delayed Draw Notes or the Second Delayed Draw Notes, the Company may request BioPharma to issue, in its sole discretion, the entire amount or any lesser amount of such First Delayed Draw Notes and/or Second Delayed Draw Notes upon the closing date of any subsequent Delayed Draw Notes (subject to the Company's satisfaction of the net sales and royalties thresholds applicable to such subsequent Delayed Draw Notes). The proceeds of the initial Pharmakon Senior Secured Notes issued on the Closing Date were used to repay all existing indebtedness under the note purchase agreement with Athyrium Opportunities III Acquisition LP (Athyrium). The proceeds of the Delayed Draw Notes, if issued, are expected to be used for general corporate purposes.

The Pharmakon Senior Secured Notes bear interest at a fixed per annum rate of 10.75% and are scheduled to mature on September 12, 2024 (the Maturity Date). The Company is required to make quarterly interest payments until the Maturity Date. The Company is also required to make principal payments, which are payable in eight equal quarterly installments beginning on December 15, 2022 and continuing until the Maturity Date; provided that the Company may, at its election, postpone any such principal payment until the Maturity Date if, as of the applicable payment date, certain trailing four-quarter consolidated XHANCE net sales and royalties thresholds have been achieved.

In conjunction with the Pharmakon Senior Secured Notes, the Company paid an upfront fee of \$1,125 on the Closing Date and issued warrants to purchase an aggregate of 810,357 shares of Common Stock at an exercise price equal to \$6.72 per share, which expire on September 12, 2022. The upfront fees were recorded as a debt discount at issuance and are being amortized to interest expense over the five year term of the loan. The Company also incurred \$4,848 in debt issuance costs, including \$2,404 related to the fair value of the warrants, which are also being amortized to interest expense over the term of the Pharmakon Senior Secured Notes. The Company will incur additional debt issuance costs of 0.5% of the principal amount of the Delayed Draw Notes, if issued.

The Company is required to repay the Pharmakon Senior Secured Notes in full upon the occurrence of a change of control (as defined in the Note Purchase Agreement). In addition, the Company may make voluntary prepayments in whole or in part. All mandatory and voluntary prepayments are subject to the payment of prepayment premiums as follows: (i) if prepayment occurs prior to the third anniversary of the Closing Date, an amount equal to 2% of the

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principal prepaid, (ii) if prepayment occurs on or after the third anniversary of the Closing Date but prior to the fourth anniversary of the Closing Date, an amount equal to 1% of the principal prepaid, and (iii) if prepayment occurs on or after the fourth anniversary of the Closing Date, no prepayment premium is required. Additionally, the Company is also required to pay a "make-whole" amount in respect of any principal payments (whether mandatory or voluntary) made prior to the 30-month anniversary of the issuance of the applicable note, in an amount equal to the interest that would have accrued through the 30-month anniversary in respect of such note but for such principal payment.

The Pharmakon Senior Secured Notes are secured by a pledge of substantially all of the Company's assets and contains affirmative and negative covenants customary for financings of this type, including limitations on the Company's and its subsidiaries' ability, among other things, to incur additional debt, grant or permit additional liens, make investments and acquisitions, merge or consolidate with others, dispose of assets, grant certain licenses related to the Company's products, technology and other intellectual property, pay dividends and distributions, repay junior indebtedness and enter into affiliate transactions, in each case, subject to certain exceptions. In addition, the Pharmakon Senior Secured Notes contain financial covenants requiring the Company to maintain at all times certain minimum trailing twelve-month consolidated XHANCE net sales and royalties, tested on a quarterly basis, and at least \$30,000 of cash and cash equivalents. As of December 31, 2019, the Company was in compliance with the covenants.

The Note Purchase Agreement also includes events of default customary for financings of this type, in certain cases subject to customary periods to cure, following which BioPharma may accelerate all amounts outstanding under the notes.

On September 12, 2019, in conjunction with the entry into the Pharmakon Senior Secured Notes, the Company terminated the Athyrium senior secured notes and all outstanding amounts under such notes were repaid in full, and all security interests and other liens granted to or held by Athyrium were terminated and released. At the time of termination, the Company paid Athyrium (i) accrued and unpaid interest since June 18, 2019 of \$2,049, (ii) an exit fee of 2% of the aggregate principal amount of the notes outstanding under the under the Athyrium note purchase agreement, and (iii) a prepayment fee due under the Athyrium note purchase agreement of \$3,669. As a result, the Company recorded a loss on extinguishment of \$7,155.

The Company recorded interest expense of \$9,623 and \$9,229 during the years ended December 31, 2019 and 2018, respectively, in conjunction with both the Athyrium senior secured notes and the Pharmakon Senior Secured Notes. Interest expense included total coupon interest, and the amortization of exit fees, front end fees and the amortization of debt issuance costs.

The long-term debt balance is comprised of the following:

	December 31,	
	2019	2018
Face amount	\$ 80,000	\$ 75,000
Front end fees	(1,030)	(872)
Debt issuance costs	(4,439)	(1,902)
Back end fees	—	274
	<u>\$ 74,531</u>	<u>\$ 72,500</u>

## 10. Employee Benefit Plans

The Company maintains a defined contribution 401(k) retirement plan, which covers all eligible US employees. Employees are eligible to participate in the plan on the first of the month following their date of hire. Under the 401(k) retirement plan, participating employees may defer up to 100% of their pre-tax salary, but not more than statutory limits. In October 2017, the Company adopted a 401(k) matching program for its US employees. The Company matches 100% of the first 3% of participating employee contributions and 50% of the next 2% of participating employee contributions, subject to applicable IRC limits. The Company incurred costs of \$1,238 and

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\$645 related to the Company match applicable to employee contributions for the years ended December 31, 2019 and 2018, respectively. The Company's contributions are made in cash. The Company's common stock is not currently an investment option available to participants in the 401(k) retirement plan. As of December 31, 2019, approximately \$178 is recorded in accrued expenses related to the Company match.

For Norway and UK employees, the Company maintains defined contribution pension plans which meet statutory requirements of those jurisdictions. The Company incurred costs of \$19 and \$81 related to the pension plans for the years ended December 31, 2019 and 2018, respectively.

## **11. Commitments and Contingencies**

### ***Purchase commitments***

As of December 31, 2019, the Company had no material outstanding non-cancellable purchase commitments related to inventory and other goods and services, including pre-commercial manufacturing scale-up and sales and marketing activities.

### ***Employment agreements***

The Company has entered into employment contracts with its officers and certain employees that provide for severance and continuation of benefits in the event of termination of employment by the Company without cause or by the employee for good reason. In addition, in the event of termination of employment following a change in control, the vesting of certain equity awards may be accelerated.

### ***Litigation***

Liabilities for loss contingencies arising from claims, assessments, litigation, fines, penalties, and other sources are recorded when it is probable that a liability has been incurred and the amount can be reasonably estimated. We are not currently a party to any material pending legal proceedings.

## **12. Stockholders' equity**

### ***Common stock***

On June 11, 2018, the Company and certain stockholders closed an underwritten public offering of 5,750,000 shares of Common Stock at a price of \$22.25 per share. The offering consisted of 2,875,000 shares of Common Stock sold by the Company and 2,875,000 shares of Common Stock sold by certain stockholders. As a result of the offering, the Company received \$59,917 in net proceeds, after deducting discounts and commissions of \$3,678 and offering expenses of approximately \$373 payable by the Company.

On November 25, 2019, the Company and certain stockholders closed the Offering of 5,500,000 shares of Company Common Stock at a price of \$9.75 per share. The Offering consisted of 4,250,000 shares of Common Stock sold by the Company and 1,250,000 shares of Common Stock sold by certain stockholders. As a result of the offering, the Company received \$38,747 in net proceeds, after deducting discounts and commissions of \$2,383 and offering expenses of approximately \$308 payable by the Company.

Each share of common stock entitles the holder to one vote on all matters submitted to a vote of the Company's stockholders. Subject to preferences that may apply to any outstanding preferred stock, holders of common stock are entitled to receive ratably any dividends that the Company's board of directors may declare out of funds legally available for that purpose on a non-cumulative basis. No dividends had been declared through December 31, 2019.

### ***Common stock warrants***

On September 12, 2019, in conjunction with the issuance of the Pharmakon Senior Secured Notes, the Company issued warrants to purchase an aggregate of 810,357 shares of Common Stock at an exercise price of \$6.72. Refer to Note 9 for further details.



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The grant date fair value of the warrants issued in connection with the Pharmakon Senior Secured Notes was estimated at the time of grant using the Black-Scholes option-pricing model using the following weighted average assumptions:

Risk free interest rate	1.67 %
Expected term (in years)	3
Expected volatility	65.10 %
Annual dividend yield	0.00 %
Fair value of common stock	\$ 6.72

As of December 31, 2019, the Company had the following warrants outstanding to purchase shares of Common Stock:

Number of Shares	Exercise Price Per Share	Expiration Date
1,866,831	\$8.16	November 1, 2020
810,357	\$6.72	September 12, 2022

### 13. Stock-based compensation

The Company issues stock-based awards pursuant to its 2010 Stock Incentive Plan. Effective as of October 12, 2017, the Company's 2010 Stock Incentive Plan was amended and restated (A&R Plan). The A&R Plan provides for the grant of incentive stock options, non-statutory stock options, restricted stock awards, restricted stock units, deferred stock units, performance shares, stock appreciation rights and other equity-based awards. The Company's employees, officers, directors and other persons are eligible to receive awards under the A&R Plan. As of December 31, 2019, 10,055,648 shares of the Company's common stock were authorized to be issued under the A&R Plan, and 1,813,717 shares were reserved for future awards under the A&R Plan. The number of shares of the Company's common stock authorized under the A&R Plan will automatically increase on January 1<sup>st</sup> of each year, commencing on January 1, 2018 and continuing until the expiration of the A&R Plan, in an amount equal to four percent of the total number of shares of the Company's common stock outstanding on December 31<sup>st</sup> of the preceding calendar year, subject to the discretion of the Company's board of directors or compensation committee to determine a lesser number of shares shall be added for such year.

The amount, terms of grants, and exercisability provisions are determined and set by the Company's board of directors or compensation committee. The Company measures employee stock-based awards at grant-date fair value and records compensation expense on a straight-line basis over the vesting period of the award. Stock-based awards issued to non-employees are revalued until the award vests.

#### **Stock options**

The Company has issued service-based and performance-based stock options that generally have a contractual life of up to 10 years and may be exercisable in cash or as otherwise determined by the board of directors. Vesting generally occurs over a period of not greater than four years. Performance-based options may vest upon the achievement of certain milestones in connection with the Company's development programs. Additionally, the Company has issued stock options in excess of the fair market value of Common Stock on the issuance date that were only exercisable upon a change in control or upon or after an initial public offering. As of December 31, 2019, all of the performance conditions related to performance-based stock options issued by the Company have been achieved.

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The following table summarizes the activity related to stock option grants to employees and nonemployees for the years ended December 31, 2019:

	Shares	Weighted average exercise price per share	Weighted average remaining contractual life
Outstanding at December 31, 2018	6,182,873	\$ 10.60	6.67
Granted	2,088,673	7.72	
Exercised	(254,335)	4.09	
Expired	—	—	
Forfeited	(617,994)	12.96	
Outstanding at December 31, 2019	7,399,217	\$ 9.81	6.37
Exercisable at December 31, 2019	4,287,676	\$ 9.43	4.68
Vested and expected to vest at December 31, 2019	7,399,217	\$ 9.81	6.37

During the year ended December 31, 2019, stock options to purchase 2,088,673 shares of common stock were granted to employees that generally vest over four years. The options had an estimated weighted average grant date fair value of \$4.79. The grant date fair value of each option grant was estimated at the time of grant using the Black-Scholes option-pricing model.

The total aggregate intrinsic value of stock options exercised during the years ended December 31, 2019 and 2018 was \$1,005 and \$9,255, respectively. The aggregate intrinsic value of stock options outstanding and stock options exercisable as of December 31, 2019 was \$18,397 and \$14,431, respectively. At December 31, 2019, the unrecognized compensation cost related to unvested stock options expected to vest was \$18,733. This unrecognized compensation will be recognized over an estimated weighted-average amortization period of 2.4 years.

#### **Restricted stock units**

The Company has issued RSUs for which vesting generally occurs over a period not greater than four years. In April 2019, the Company issued 20,600 RSUs at a price of \$10.20, all of which forfeited during the year ended December 31, 2019. No RSUs were issued or outstanding at December 31, 2018.

#### **2017 Employee Stock Purchase Plan**

The Company's 2017 Employee Stock Purchase Plan (the 2017 Plan) became effective on October 12, 2017. As of December 31, 2019, 934,695 shares of the Company's common stock were authorized to be issued pursuant to purchase rights granted to its employees or to employees of any of its participating affiliates under the 2017 Plan. 707,261 shares of the Company's common stock were reserved for future issuance under the 2017 Plan. The number of shares of the Company's common stock that may be issued pursuant to rights granted under the 2017 Plan shall automatically increase on January 1<sup>st</sup> of each year, commencing on January 1, 2018 and continuing until the expiration of the 2017 Plan, in an amount equal to one percent of the total number of shares of the Company's common stock outstanding on December 31<sup>st</sup> of the preceding calendar year, subject to the discretion of the board of directors or compensation committee to determine a lesser number of shares shall be added for such year.

Under the 2017 Plan, eligible employees can purchase the Company's common stock through accumulated payroll deductions at such times as are established by the administrator. The 2017 Plan is administered by the compensation committee. Eligible employees may contribute up to 15% of their eligible compensation. A participant may not accrue rights to purchase more than \$25 worth of the Company's common stock for each calendar year in which such right is outstanding.

Payroll withholdings accumulate during the following six month offering periods each calendar year while the Purchase Plan is effective:

- January 1 through June 30, and
- July 1 through December 31.

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At the end of each offering period, shares of the Company's common stock may be purchased at 85% of the lesser of the average of the high and low sales price of the Company's common stock on (i) the first trading day of the relevant offering period and (ii) the last trading day of the relevant offering period (or, if the relevant offering period has multiple purchase periods, the last trading day of the relevant purchase period). In accordance with the guidance in ASC 718-50 – *Compensation – Stock Compensation*, the ability to purchase shares of the Company's common stock at the lower of the price on the first day of the offering period or the last day of the offering period (i.e. the purchase date) represents an option and, therefore, the 2017 Plan is a compensatory plan under this guidance. Accordingly, stock-based compensation expense is determined based on the option's grant-date fair value as estimated by applying the Black-Scholes option-pricing model and is recognized over the requisite service period of the option. The Company has recognized stock-based compensation expense of \$405 and \$446 during the years ended December 31, 2019 and 2018, respectively, related to the 2017 Plan.

**Stock-based compensation expense**

The Company recorded stock-based compensation expense in the following expense categories of its accompanying consolidated statements of operations for the years ended December 31, 2019 and 2018:

	Year Ended December 31,	
	2019	2018
Cost of product sales	\$ 103	\$ 9
Research and development	1,062	989
Selling, general and administrative	8,695	7,545
Total stock-based compensation expense	<u>\$ 9,860</u>	<u>\$ 8,543</u>

In addition, stock-based compensation expense of \$150 and \$27 was charged to inventory and prepaid expenses and other assets, respectively, during the year ended December 31, 2019, which represents the total stock-based compensation expense incurred related to employees involved in the manufacturing process of finished goods and samples during the period.

The Company utilized the Black-Scholes valuation model for estimating the fair value of stock options shares issued under the 2017 Plan. The Company calculated the fair value of each option grant and the shares issued under the 2017 Plan on the respective dates of grant using the following weighted average assumptions:

	December 31, 2019	
	2010 A&R Stock Incentive Plan	2017 Employee Stock Purchase Plan
Risk free interest rate	2.47 %	2.32 %
Expected term (in years)	6.05	0.50
Expected volatility	67.03 %	73.34 %
Annual dividend yield	0.00 %	0.00 %

Option valuation methods, including Black-Scholes, require the input of subjective assumptions, which are discussed below.

- The expected term of employee options is determined using the "simplified" method, as prescribed in SEC's Staff Accounting Bulletin (SAB) No. 107, *Share Based Payment* (SAB No. 107), whereby the expected life equals the arithmetic average of the vesting term and the original contractual term of the option due to the Company's lack of sufficient historical data. The expected term of nonemployee options is equal to the contractual term.
- The expected volatility is based on a weighted average of the Company's historical volatility and the volatilities of similar entities within the Company's industry which were commensurate with the expected term assumption as described in SAB No. 107.

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- The risk-free interest rate is based on the interest rate payable on US Treasury securities in effect at the time of grant for a period that is commensurate with the assumed expected term.
- The expected dividend yield is 0% because the Company has not historically paid, and does not expect for the foreseeable future to pay, a dividend on its common stock.

#### 14. Income taxes

Income taxes are based on the following book income (loss) before income tax expense:

	Year Ended December 31,	
	2019	2018
Domestic operations	\$ (103,109)	\$ (146,247)
Foreign operations	(6,944)	39,589
Loss before provision for income taxes	<u>\$ (110,053)</u>	<u>\$ (106,658)</u>

A reconciliation of income tax expense (benefit) at the US federal statutory income tax rate and the income tax provision in the financial statements is as follows:

	Year Ended December 31,	
	2019	2018
Income tax expense at statutory rate	21.0 %	21.0 %
Permanent items	(0.8)	0.5
Foreign rate differential	—	(0.8)
Impact of foreign operations	—	(7.2)
State taxes, net of federal benefit	3.0	3.9
Tax rate changes	—	(0.6)
Foreign exchange and other	0.7	(0.6)
Change in valuation allowance	(23.9)	(16.2)
Effective income tax rate	<u>0.0 %</u>	<u>0.0 %</u>

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The principal components of the Company's deferred tax assets and liabilities are as follows:

	Year Ended December 31,	
	2019	2018
Deferred tax assets:		
Accrued expenses and other	\$ 4,349	\$ 1,674
Prepaid licensing arrangement	11,154	11,562
Interest expense	4,469	1,267
Stock compensation	5,468	3,493
Research and development credits	2,485	2,485
Net operating losses	51,644	32,548
Total deferred tax assets	79,569	53,029
Deferred tax liabilities:		
Fixed assets, including leases	(630)	(409)
Total deferred tax liabilities:	(630)	(409)
Less: Valuation allowance	(78,939)	(52,620)
Total net deferred tax assets (liabilities)	\$ —	\$ —

During 2018, our wholly-owned subsidiary in Norway licensed certain intellectual property rights related to XHANCE to our US subsidiary. While this transaction did not result in any gain or loss in the condensed consolidated statements of operations, the transaction generated taxable income in both Norway and the US. Norway tax loss carryforwards were utilized to offset the taxable income in Norway and the income reduced the current year US taxable loss. There were no cash taxes associated with the transaction.

As of December 31, 2019, the Company had foreign net operating loss (NOL) carry forwards of \$52,806 primarily from its operations in Norway. As of December 31, 2019, the Company had federal and state NOLs of \$164,937 and \$90,594, respectively. These domestic NOL carry forwards may be subject to an annual limitation in the event of cumulative changes in the ownership interests of significant stockholders over a three-year period in excess of 50%. This could limit the amount of NOLs that the Company can utilize annually to offset future domestic taxable income, if any. The amount of the annual limitation, if any, will be determined based on the value of the Company immediately prior to the ownership change. Subsequent ownership changes may further affect the limitation in future years. The federal NOLs generated after 2017 have an indefinite carry forward period. The federal NOLs generated prior to 2018 will expire from 2030 through 2037. Some state NOLs will not expire while other state NOLs expire over various periods depending on the rules of the jurisdiction in which they were generated. The earliest state NOL expiration is in 2028.

ASC 740 requires the establishment of a valuation allowance to reduce deferred tax assets if, based on the weight of the available positive and negative evidence it is more likely than not that all or a portion of the deferred tax assets will not be realized. There is insufficient positive evidence to overcome the negative evidence attributable to the Company's cumulative operating losses. Consequently, the Company established a full valuation allowance against its net deferred tax assets at December 31, 2019 and 2018, respectively, because the Company's management was unable to conclude that it is more likely than not that these assets will be fully realized. The Company had a net increase in its valuation allowance of \$26,319 during the year ended December 31, 2019.

The Company files income tax returns in Norway, the UK, the US, and various states. The Company is subject to examination by federal, state and foreign jurisdictions. The Company's tax years in the US are open under statute from inception to present. All open years may be examined to the extent that tax credits or net operating loss carryforwards are used in future periods.

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The Company's policy is to record interest and penalties related to uncertain tax positions in income tax expense. As of December 31, 2019, the Company had no accrued interest or penalties related to uncertain tax positions and no amounts have been recognized in the Company's statement of operations.

**15. Related-party transactions**

During the year ended December 31, 2019 and 2018, the Company reimbursed Avista Capital Holdings, LP and related parties \$32 and \$51, respectively in expenses, primarily related to legal fees incurred in conjunction with the Company's Offerings of Common Stock in November 2019 and June 2018.

**16. Subsequent events**

On February 13, 2020, the First Delayed Draw Notes were issued as the Company achieved the XHANCE net sales and royalties threshold for the quarter ended December 31, 2019. The Company received \$30,000 from the issuance of the First Delayed Draw Notes and incurred additional debt issuance costs of \$150, which will be amortized to interest expense over the term of the Pharmakon Senior Secured Notes.