ARADIGM CORP
Form 10-K
March 18, 2015
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington D.C. 20549

Form 10-K

(Mark One)

x **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2014

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: 001-36480

Aradigm Corporation

(Exact Name of Registrant as Specified in Its Charter)

California	**94-3133088**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**

3929 Point Eden Way, Hayward, CA 94545

(Address of Principal Executive Offices)

Registrant s telephone number, including area code:

(510) 265-9000

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

Title of Each Class	**Name of Each Exchange on Which Registered**
Common Stock, no par value	**The NASDAQ Capital Market**

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

None

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

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 x

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 x No ¨

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

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein and will not be contained, to the best of registrant s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ¨

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

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

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

The aggregate market value of the registrant s common stock held by non-affiliates of the registrant, based upon the closing price of a share of the registrant s common stock on June 30, 2014 was: $48,304,849.

The number of shares of the registrant s common stock outstanding as of March 6, 2015 was: 14,726,960.

DOCUMENTS INCORPORATED BY REFERENCE

Parts of the Registrant s Proxy Statement for the 2015 Annual Meeting of Shareholders to be held on May 14, 2015 are incorporated by reference into Part III of this Annual Report on Form 10-K. Except as expressly incorporated by reference, the Registrant s Proxy Statement for the 2015 Annual Meeting of Shareholders shall not be deemed to be a part of this Annual Report on Form 10-K.

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Cautionary Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K contains forward-looking statements that are based on the current beliefs of management, as well as current assumptions made by, and information currently available to, management. All statements contained in this Annual Report on Form 10-K, other than statements that are purely historical, are forward-looking statements. Words such as anticipate, expect, intend, plan, believe, may, will, could, continue, seek, estimate, or the negative thereof and similar expressions also identify forward-looking statements. These forward-looking statements are subject to risks and uncertainties that could cause our future actual results, performance or achievements to differ materially from those expressed in, or implied by, any such forward-looking statements as a result of certain factors, including, but not limited to, those risks and uncertainties discussed in this section, as well as in the section entitled Risk Factors , and elsewhere in this Annual Report on Form 10-K and our other filings with the United States Securities and Exchange Commission (the SEC). Forward-looking statements contained in this Annual Report on Form 10-K include, but are not limited to, statements regarding: (i) our belief that our cash and cash equivalents as of December 31, 2014 will be sufficient to fund our operations through at least 2015; (ii) our business strategies, including our intent to pursue selected opportunities for prevention and treatment of severe respiratory diseases by seeking collaborations, government grants and other non-dilutive types of financing that will fund development and commercialization; (iii) our strategy to commercialize certain of our unlicensed respiratory product candidates with our own focused sales and marketing force addressing pulmonary specialty doctors in the United States or in the European Union and our intent to use our pulmonary delivery methods and formulations of drugs and biologics to improve their safety, efficacy and convenience of administration to patients; (iv) our expectations regarding future clinical trials; and (v) our expectation that we will incur additional operating losses.

These forward-looking statements and our business are subject to significant risks such as the risks and uncertainties discussed in the section entitled Risk Factors , including, but not limited to, our ability to maintain and/or enter into partnering agreements. Even if product candidates appear promising at various stages of development, they may not reach the market or may not be commercially successful for a number of reasons. Such reasons include, but are not limited to, the possibilities that the potential products may be found to be unsafe in animal or human trials, ineffective during clinical trials, may fail to receive necessary regulatory approvals, may be difficult to manufacture on a large scale, are uneconomical to market, may be precluded from commercialization by proprietary rights of third parties or may not gain acceptance from health care professionals and patients.

You are cautioned not to place undue reliance on the forward-looking statements contained herein, which speak only as of the date of the filing of this Annual Report on Form 10-K. We undertake no obligation to update these forward-looking statements in light of events or circumstances occurring after the date of the filing of this Annual Report on Form 10-K or to reflect the occurrence of unanticipated events.

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PART I

Item 1. *Business*

Overview

We are an emerging specialty pharmaceutical company focused on the development and commercialization of products for the treatment and prevention of severe respiratory diseases. Over the last decade, we invested a large amount of capital to develop drug delivery technologies, particularly the development of a significant amount of expertise in pulmonary (respiratory) drug delivery as incorporated in our lead product candidate currently in Phase 3 clinical trials, Pulmaquin®. We also invested considerable effort into the generation of a large volume of laboratory and clinical data demonstrating the performance of our AERx® pulmonary drug delivery platform and other proprietary technologies. The key technologies we have focused our efforts on are our inhaled ciprofloxacin formulations and our inhaler platform technology that includes a nicotine inhaler for smoking cessation. We have not been profitable since inception and expect to incur additional operating losses over at least the foreseeable future as we continue product development efforts, clinical trial activities, animal toxicology and safety testing and contract manufacturing efforts. To date, we have not had any significant product sales and do not anticipate receiving revenues from the sale of any of our products in the near term. As of December 31, 2014, we had an accumulated deficit of $388.3 million. Historically, we have funded our operations primarily through public offerings and private placements of our capital stock, license fees, development expense reimbursements, borrowings, milestone payments from collaborators, the milestone and royalty payments associated with the sale of assets to Zogenix, proceeds from our June 2011 royalty financing transaction and interest earned on cash equivalents and short-term investments.

More recently, our business has focused on opportunities in the development of drugs for the treatment of severe respiratory disease that could be developed by us and commercialized in the United States and/or another significant territory such as the European Union (EU). With the exception of our inhaled ciprofloxacin program which is partnered with Grifols, S.A. (Grifols), our longer term strategy is to commercialize our respiratory product candidates with our own focused marketing and sales force addressing pulmonary specialty doctors in the United States and/or in the EU, where we believe that a proprietary sales force will enhance the return to our shareholders. Where our products can benefit a broader population of patients in the United States or in other countries, such as with smoking cessation or biodefense products, we may enter into co-development, co-promotion or other marketing arrangements with collaborators, thereby reducing costs and increasing revenues through license fees, milestone payments and royalties. In selecting our proprietary development programs, we primarily seek drugs approved by the United States Food and Drug Administration (FDA) that can be reformulated for both existing and new indications in respiratory disease. Our intent is to use our pulmonary delivery methods and formulations to improve their safety, efficacy and convenience of administration to patients. We believe that this strategy will allow us to reduce cost, development time and risk of failure, when compared to the discovery and development of new chemical entities.

Our lead development candidates are proprietary formulations of the potent antibiotic ciprofloxacin (Pulmaquin (ARD-3150) and Lipoquin® (ARD-3100)) that are delivered by inhalation for the management of infections associated with severe respiratory diseases such as non-cystic fibrosis bronchiectasis (BE) and cystic fibrosis (CF). The formulations differ in the proportion of rapidly available and slow release ciprofloxacin. Pulmaquin uses the slow release liposomal formulation, Lipoquin, mixed with a small amount of unencapsulated ciprofloxacin dissolved in an aqueous medium. We received orphan drug designations for Lipoquin for both of these indications in the United States and for CF in the EU. We requested orphan drug designation from the FDA for Pulmaquin for the management of BE and we were granted orphan drug designation for ciprofloxacin for inhalation for this indication. We may seek

orphan drug designation for other eligible product candidates we develop. FDA designated Pulmaquin as a Qualified Infectious Disease Product (QIDP) for treatment of non-cystic fibrosis bronchiectasis patients with chronic lung infections with *Pseudomonas aeruginosa*. We are currently conducting Phase 3 clinical trials with Pulmaquin in BE. We have reported the results of one successful Phase 2b trial with Lipoquin and one successful Phase 2b trial with Pulmaquin in BE. We previously conducted one successful Phase 2a trial with Lipoquin in CF and one successful Phase 2a trial with Lipoquin in BE.

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In August 2013, we closed the transaction announced in May 2013 in which we entered into a License and Collaboration Agreement (the License Agreement) with Grifols under which we licensed to Grifols on an exclusive, world-wide basis, our inhaled liposomal ciprofloxacin product candidates for the indication of non-cystic fibrosis bronchiectasis and other indications and granted Grifols a limited term option to license our AERx pulmonary drug delivery platform for use with another molecule, each as more fully described in Note 6 to the consolidated financial statements included in this Annual Report on Form 10-K. In connection with our August 2013 private placement we also entered into a Governance Agreement (the Governance Agreement), which sets forth certain rights and obligations of us and Grifols concerning, among other things, certain corporate governance matters, certain limitations on future acquisitions of shares of common stock by Grifols, and certain rights by Grifols to maintain a target level of ownership in us, as more fully described in Note 6 to the consolidated financial statements included in this Annual Report on Form 10-K.

Pulmonary delivery by inhalation is an effective, widely used and well accepted method of administration of a variety of drugs for the treatment of respiratory and other diseases. Compared to other routes of administration, inhalation provides local delivery of the drug to the respiratory tract which offers a number of potential advantages, including rapid onset of action, less drug required to achieve the desired therapeutic effect, and reduced side effects because the rest of the body has lower exposure to the drug. We believe that there still are significant unmet medical needs in the respiratory disease market, both to replace existing therapies that demonstrate reduced efficacy or increased side effects over prolonged use in patients, as well as to provide novel treatments to patient populations and for disease conditions that are inadequately treated.

In addition to its use in the treatment of respiratory diseases, there is also an increasing awareness of the value of the inhalation route of delivery to administer drugs via the lung for the systemic treatment of disease elsewhere in the body. For many drugs, the large and highly absorptive area of the lung enables bioavailability and fast absorption as a result of pulmonary delivery than could otherwise only be obtained by injection. We believe that the features of our AERx delivery system make it more attractive for many systemic drug applications than alternative methods. We believe particular opportunities exist for the use of our pulmonary delivery technology for the delivery of biologics, including proteins, antibodies and peptides that today must be delivered by injection, as well as small molecule drugs, where rapid absorption is desirable. While we are currently focused on our Phase 3 Pulmaquin clinical trial program, we intend to pursue selected opportunities for systemic delivery via inhalation by seeking collaborations, government grants and other types of non-dilutive financing that will fund development and commercialization.

We believe that our proprietary formulation and delivery technologies and our experience in the development and management of pulmonary clinical programs uniquely position us to benefit from opportunities in the respiratory disease market as well as other disease markets that would benefit from the efficient, non-invasive inhalation delivery of drugs.

Our Strategy

We are a specialty pharmaceutical company, and our strategy is to develop and commercialize products for the treatment and prevention of severe respiratory diseases. We have chosen respiratory diseases based on the expertise of our management team and the history of our company. We have significant experience in the treatment of respiratory diseases and specifically in the development of inhalation products that are uniquely suited for their treatment. We have a portfolio of proprietary technologies that may potentially address significant unmet medical needs for unique or significantly improved products in the global respiratory market. There are five key elements of our strategy:

Develop proprietary products for the treatment of respiratory diseases. We believe our expertise in the development and delivery of pulmonary pharmaceutical products should enable us to advance and commercialize respiratory products for a variety of indications. We select for development those product candidates that can benefit from our experience in pulmonary delivery and that we believe are likely to provide a superior therapeutic profile or other valuable benefits to patients when compared to existing products.

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Accelerate the regulatory approval process. We believe that our management team s expertise in pharmaceutical inhalation products, new indications and reformulations of existing drugs will enable us to pursue the most appropriate regulatory pathway for our product candidates. Because our current product candidates incorporate FDA-approved drugs, we believe that the most expedient review and approval pathway for these product candidates in the United States will be under Section 505(b)(2) of the Food, Drug and Cosmetic Act (FDCA). Section 505(b)(2) permits the FDA to rely on scientific literature or on the FDA s prior findings of safety and/or effectiveness for approved drug products. By choosing to develop new applications or reformulations of FDA-approved drugs, we believe that we can substantially reduce the significant time, expenditure and risks associated with preclinical testing of new chemical entities and biologics, as well as utilize knowledge of these approved drugs to reduce the risk, time and cost of the clinical trials needed to obtain drug approval. We have already been granted or intend to pursue orphan drug designation for our products when appropriate. Orphan drug designation may be granted to drugs and biologics that treat rare life-threatening diseases that affect fewer than 200,000 persons in the United States. Such designation provides a company with the possibility of market exclusivity for 7 years as well as regulatory assistance, reduced filing fees and possible tax credits. Similar legislation exists in the EU with a market exclusivity of 10 years. We also seek other special designations by FDA such as Qualified Infectious Disease Product (QIDP). Under the Generating Antibiotic Incentives Now Act (GAIN Act), QIDP provides incentives including priority review and eligibility for fast-track status. Further, if ultimately approved by the FDA, the product is eligible for an additional five-year extension of Hatch-Waxman exclusivity.

Develop our own sales and marketing capacity for products in niche markets. With the exception of our inhaled ciprofloxacin program, which is partnered with Grifols, our longer term strategy is to develop our own targeted sales and marketing force for those of our products prescribed primarily by the approximately 11,000 pulmonologists, or their subspecialty associates, in the United States. We may also decide alternatively to explore the use of our sales force to serve pulmonary specialty physicians in another significant pharmaceutical market, such as the EU. We expect to begin establishing a sales force as we approach commercialization of the first of such products. We believe that by developing a small sales group dedicated to interacting with disease-specific physicians in the respiratory field, we can create greater value from our products for our shareholders. For markets where maximizing sales of the product would depend on marketing to primary healthcare providers that are only addressable with a large sales force, we plan to enter into co-marketing arrangements. We also intend to establish collaborative relationships to commercialize our products in cases where we cannot meet these goals with a small sales force or when we need collaborators with relevant expertise and capabilities, such as the ability to address international markets. Through such collaborations, we may also utilize our collaborators resources and expertise to conduct large late-stage clinical development.

Exploit the broad applicability of our delivery technology through product development collaborations. We continue to believe that companies can benefit by collaborating with us as our proprietary delivery technologies could create new pharmaceutical and biologics products. We intend to continue to exploit the broad applicability of our delivery technologies for systemic applications of our technologies in collaborations with companies and organizations that will fund development and commercialization. We intend to continue to out-license technologies and product opportunities that we have already developed to a certain stage and that are outside of our core strategic focus. Collaborations and out-licensing may generate additional revenues while we progress towards the development and potential launch of our own proprietary

products.

Outsource manufacturing activities. We outsource the late stage clinical and commercial scale manufacturing of our products to conserve our capital for product development. We believe that the required late stage clinical and commercial manufacturing capacity can be obtained from contract manufacturers. With this approach, we seek manufacturers whose expertise should allow us to reduce risk and the costs normally incurred if we were to build, operate and maintain large-scale production facilities ourselves.

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Partnered Programs Under Development

Inhaled Ciprofloxacin

In August 2013, we closed the transaction announced in May 2013 in which we entered into a License Agreement with Grifols under which we licensed to Grifols on an exclusive, world-wide basis, our inhaled liposomal ciprofloxacin product candidates for the indication of non-cystic fibrosis bronchiectasis and other indications.

Ciprofloxacin has been approved by the FDA as an anti-infective agent and is widely used for the acute treatment of a variety of bacterial infections, including exacerbations associated with pulmonary infections. Today, ciprofloxacin is approved to be delivered by oral or intravenous administration. However, these forms of ciprofloxacin are not often used chronically to prevent pulmonary exacerbations because of their side-effects in the rest of the body and concerns about emergence of systemic microbial resistance to this antibiotic.

Inhalation delivery of antibiotics directly to the respiratory tract typically results in much higher antibiotic concentrations in the infected organ, even with relatively small doses, than the concentrations of the antibiotic that could be achieved with safe, approved doses delivered via injections or by oral administration. Furthermore, the inhalation approach may also significantly reduce the concentration of the antibiotic in the rest of the body which is beneficial to reduce systemic side-effects and the risk of antibiotic resistance. However, ciprofloxacin, like many other antibiotics, is absorbed from the respiratory tract rapidly, and therefore it would likely need to be inhaled frequently to achieve adequate anti-infective effect. The high concentrations could also potentially cause irritation in the patient s respiratory tract as has been observed in some trials with other inhaled antibiotics. We therefore employ liposomes, which are nanoparticles made from materials similar to the lipids in the human lungs and dispersed in water, that encapsulate ciprofloxacin during storage and release it gradually upon contact with the fluid covering the respiratory tract (airways and lungs). In an animal experiment, unencapsulated ciprofloxacin delivered to the lungs of mice appeared to be rapidly absorbed into the bloodstream, with no drug detectable four hours after administration. In contrast, the liposomal formulation of ciprofloxacin produced high sustained levels of ciprofloxacin in the lungs and was still detectable at 12 hours post dosing. We have shown similarly in human clinical trials that inhaled liposomal ciprofloxacin achieves very high concentrations in the sputum from the respiratory tract of patients and results in much lower blood levels of ciprofloxacin than those seen with therapeutic, approved doses of oral or injected ciprofloxacin. Furthermore, the slow release of ciprofloxacin allows once daily dosing, which is more convenient for patients than the twice or three times daily dosing of the two currently approved inhaled antibiotics for the management of respiratory infections in cystic fibrosis. We believe that delivering ciprofloxacin directly to the respiratory tract by inhalation in the form of our slow release formulation may improve its safety and efficacy in the chronic management of pulmonary infections and prevent traumatic and costly pulmonary exacerbations. We also believe that for certain respiratory disease indications, it may be possible that a liposomal formulation enables better interaction of the drug with the disease target, leading to improved effectiveness over other therapies. For example, we have shown through our collaboration with Oregon State University that our preparations Pulmaquin and Lipoquin are superior to unencapsulated ciprofloxacin in in vitro models of non-tuberculous mycobacteria (NTM) that harbor in biofilms and macrophages.

In October 2012, scientists from the Virginia Commonwealth University in Richmond, Virginia reported findings about the anti-inflammatory effects of our inhaled ciprofloxacin in human bronchial lung cells stimulated by the lipopolysaccharide (LPS) produced by *Pseudomonas aeruginosa*. *Pseudomonas aeruginosa* is one of the most significant bacterial pathogens in patients with cystic fibrosis, bronchiectasis and severe COPD. LPS produced by this organism is a key virulence-causing factor associated with the respiratory infections due to this microorganism.

In the experiments reported by the School of Pharmacy, Virginia Commonwealth University, liposomal ciprofloxacin and free ciprofloxacin were applied onto the monolayer of human bronchial lung cells for 24 hours. LPS from *Pseudomonas aeruginosa* was then added to stimulate the inflammatory response. At 24 and 48 hours

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of this stimulation, samples were taken for determination of cellular release of an important pro-inflammatory cytokine, interleukin-8 (IL-8). IL-8 release was negligible from the unstimulated negative control cells. In contrast, 10 mg/ml LPS stimulation for 24 and 48 hours caused significant 24.1 ± 9.2 and 39.5 ± 11.6 ng of IL-8 release, respectively (positive control). Despite its application 24 hours prior to the LPS stimulation, liposomal ciprofloxacin at 0.1 mg/ml still inhibited this LPS-induced IL-8 release (60.1 ± 9.8% and 45.6 ± 4.8% inhibition, respectively). Free ciprofloxacin alone also showed comparable inhibition, but was eliminated much faster from the surface of the cells.

Chronic respiratory infections with *Pseudomonas aeruginosa* with the associated airway inflammation are the key cause of the deterioration in the quality of life and premature death of patients with cystic fibrosis and bronchiectasis. These findings suggest that liposomal ciprofloxacin could exert both anti-pseudomonal and anti-inflammatory effects in the lungs.

We have been developing several disease indications for our inhaled ciprofloxacin that share much of the laboratory and product development efforts, as well as a common safety data base.

Pulmaquin and Lipoquin (ARD-3150 and ARD-3100) Inhaled Ciprofloxacin for the Management of Infections in Non-Cystic Fibrosis Bronchiectasis (BE) Patients

BE is a chronic condition characterized by abnormal dilatation of the bronchi and bronchioles associated with chronic infection. The patient s lung function is often irreversibly reduced compared to that found in healthy individuals. BE is frequently observed in patients with cystic fibrosis (CF). However, it is a condition that affects over 110,000 people without CF in the United States and many more in other countries, and results from a cycle of inflammation, recurrent infection, and bronchial wall damage. There is currently no drug specifically approved for the treatment of BE in the U.S. We were granted orphan drug designation in the U.S. for Lipoquin for the management of this condition. We requested orphan drug designation from the FDA for Pulmaquin for the management of BE and in June 2011 we were granted orphan drug designation for ciprofloxacin for inhalation for this indication.

In May 2014, we announced that the FDA designated Pulmaquin as a Qualified Infectious Disease Product (QIDP). The QIDP designation, granted for treatment of non-cystic fibrosis bronchiectasis patients with chronic lung infections with *Pseudomonas aeruginosa*, will make Pulmaquin eligible to benefit from certain incentives for the development of new antibiotics provided under the Generating Antibiotic Incentives Now Act (GAIN Act). These incentives include priority review and eligibility for fast-track status. Further, if ultimately approved by the FDA, Pulmaquin is eligible for an additional five-year extension of Hatch-Waxman exclusivity.

In September 2014, we announced that the FDA granted Fast Track designation to Pulmaquin. The FDA gives Fast Track status to facilitate the development of new drugs intended to treat serious or life-threatening conditions and which demonstrate the potential to address unmet medical needs, with the goal of getting important new drugs to patients earlier. According to the FDA, determining whether a condition is serious is a matter of judgment, but generally is based on whether the drug will have an impact on such factors as survival, day-to-day functioning, or the likelihood that the condition, if left untreated, will progress from a less severe condition to a more serious one.

A drug that receives Fast Track designation is eligible for some or all of the following:

More frequent meetings with FDA to discuss the drug s development plan and ensure collection of appropriate data needed to support drug approval

Eligibility for *Priority Review,* if relevant criteria are met

Rolling Review, which means that a drug company can submit completed sections of its New Drug Application (NDA) for review by FDA, rather than waiting until every section of the application is completed before the entire application can be reviewed. NDA review usually does not begin until the drug company has submitted the entire application to the FDA

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According to the FDA, once a drug receives Fast Track designation, early and frequent communication between the FDA and a drug company is encouraged throughout the entire drug development and review process. The frequency of communication assures that questions and issues are resolved quickly, often leading to earlier drug approval and access by patients.

We believe we have the preclinical development, clinical and regulatory expertise to advance this product through development. In August 2013, we licensed to Grifols on an exclusive, world-wide basis, our inhaled liposomal ciprofloxacin product candidates for the indication of non-cystic fibrosis bronchiectasis and other indications. We obtained a royalty-bearing license for biodefense applications from Grifols.

Development of Inhaled Ciprofloxacin for BE

We have been testing two formulations of inhaled ciprofloxacin (Pulmaquin and Lipoquin) that differ in the proportion of rapidly available and slow release ciprofloxacin. Pulmaquin (also called Dual Release Ciprofloxacin for Inhalation DRCFI) uses the slow release liposomal formulation (Lipoquin, also called Ciprofloxacin for Inhalation CFI) mixed with a small amount of ciprofloxacin dissolved in an aqueous medium.

Pre-clinical and clinical activities described below for Lipoquin also support the Pulmaquin program.

In December 2008, we completed an open-label, four week treatment study of efficacy, safety and tolerability of the once daily inhaled liposomal ciprofloxacin formulation Lipoquin (ARD-3100) in patients with BE. The study was conducted at eight leading centers in the United Kingdom and enrolled a total of 36 patients. The patients were randomized into two equal size groups, one receiving 3 mL of inhaled liposomal ciprofloxacin and the other receiving 6 mL of inhaled liposomal ciprofloxacin, once-a-day for the four-week treatment period. The primary efficacy endpoint was the change from baseline in the sputum *Pseudomonas aeruginosa* CFUs, the standard objective measure of the reduction in pulmonary bacterial load. The 3 mL and 6 mL doses of inhaled liposomal ciprofloxacin in the evaluable patient population demonstrated similar significant mean decreases against baseline in the *Pseudomonas aeruginosa* CFUs over the 28-day treatment period of 3.5 log ($p<0.001$) and 4.0 log ($p<0.001$) units, respectively.

With regard to safety, there were no statistically significant changes in lung function for the evaluable patient population at the end of treatment as measured by the normalized forced expiratory volume in one second (FEV1% predicted). Inhaled liposomal ciprofloxacin was well tolerated: no bronchodilator use was mandated or needed before administration of the study drug. In the 3 mL group, respiratory drug-related adverse reactions were only mild. Three serious adverse events were observed in each dose group, with only one of the six classified as possibly drug-related in the 6 mL group. This particular patient suffered from a viral infection (shingles) early in the treatment period that might have been a confounding factor leading ultimately to a respiratory exacerbation requiring hospitalization.

In November 2009, the first patient was dosed in the ORBIT-2 (Once-daily Respiratory Bronchiectasis Inhalation Treatment) trial, a 168 day, multicenter, international Phase 2b clinical trial of inhaled ciprofloxacin with the Pulmaquin (ARD-3150) formulation in 42 adult patients with non-cystic fibrosis bronchiectasis. The randomized, double-blind, placebo-controlled trial was conducted in Australia and New Zealand. Following a 14 day screening period, the patients were treated once-a-day for 28 days with either the active drug, or placebo, followed by a 28 day off-treatment period. This on-off sequence was repeated three times. The primary endpoint was defined as the mean change in *Pseudomonas aeruginosa* density in sputum (colony forming units CFU - per gram) from baseline to day 28 of the active treatment group versus placebo. Safety and tolerability assessments of the treatment versus placebo group were performed. Secondary efficacy endpoints assessed included long term microbiological responses, time to

an exacerbation, severity of exacerbations, length of time to resolve exacerbations and changes in lung function and in quality of life measurements. ORBIT-2 explored whether the novel formulation Pulmaquin, which has a different drug release profile than Lipoquin, may have additional therapeutic benefits.

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In October 2010, we announced positive top line data from the ORBIT-2 study. Statistical significance was achieved in the primary endpoint the mean change in *Pseudomonas aeruginosa* density in sputum from baseline to day 28. In the full analysis population (full analysis set includes all patients who were randomized, received at least one dose and provided samples for at least two time points), there was a significant mean reduction of 4.2 $\log_{10}$ units in the Pulmaquin group, reflecting an almost sixteen-thousand fold decrease in bacterial load, versus a very small mean decrease of 0.1 $\log_{10}$ units in the placebo group (p=0.004). Secondary endpoint analysis showed that 17 subjects in the placebo group required supplemental antibiotics for respiratory-related infections versus 8 subjects in the Pulmaquin group (p=0.05). As announced in January 2011, the Kaplan-Meier analysis showed that the median time to first pulmonary exacerbation in the per protocol population evaluation increased from 58 days in the placebo group to 134 days in the active treatment group and was statistically significant ($p<0.05$, log rank test). Pulmaquin was well tolerated and there were no significant decreases in lung function, as measured by FEV1 (forced expiratory volume in one second), at 28 days in either group. Overall, the incidence and severity of adverse events were similar in both the placebo and treatment groups; however, Pulmaquin had a superior pulmonary safety profile reflected in the number and severity of pulmonary adverse events. As announced in May 2011, further statistical analysis concluded that the reduction from baseline in *Pseudomonas aeruginosa* CFUs with Pulmaquin was rapid and persistent throughout the treatment cycles as exemplified by the statistically significant reductions of the mean log CFU values in the Pulmaquin group versus the placebo at day 14 and day 28 during the first treatment cycle, as well as at the end of the second and third cycles of treatment (days 84 and 140, respectively).

In February 2010, the first patient was dosed in the U.S. as part of the ORBIT-1 trial. This Phase 2b trial, an international, double-blind, placebo-controlled study being conducted under a U.S. FDA IND, randomized 95 patients and completed enrollment in March 2011. The ORBIT-1 study design called for four weeks of once-daily inhaled doses of Lipoquin or once-daily inhaled placebo. Two doses of the active drug were included in the study 100 or 150 mg ciprofloxacin delivered by inhalation as 2 or 3 mL of liposomal dispersion, respectively. The primary efficacy endpoint was a standard measure of antibacterial activity the change from baseline in sputum *Pseudomonas aeruginosa* colony forming units (CFUs). Secondary endpoints included quality of life measurements and improvement of outcomes with respect to exacerbations. Lung function changes were monitored for safety.

In June 2011, we announced positive top line data from the ORBIT-1 study. The primary endpoint - the mean change in *Pseudomonas aeruginosa* CFUs from baseline to day 28 was met in the full analysis population: The full analysis set included all patients who were randomized, received at least one dose and provided samples for at least two time points. There was a significant mean reduction ($p<0.001$) of 2.942 log10 CFUs in the 3mL Lipoquin group and a significant mean reduction ($p< 0.001$) of 3.842 log10 CFUs in the 2mL Lipoquin group compared to placebos. Pooled placebo groups had a mean reduction of log10 CFUs of 0.437. There was no statistically significant difference between the 2 mL and 3 mL Lipoquin doses. Lipoquin was well-tolerated and no bronchodilator treatment was mandated before inhaled study treatments. There were no statistically significant differences between the active and placebo groups in the number of patients experiencing at least one respiratory treatment-emergent adverse event. The incidence of serious adverse events (SAEs) was low; there were a total of 6 SAEs and none of them were treatment related.

In December 2011, we completed the analysis of all preclinical and clinical data from the two different formulations of inhaled ciprofloxacin (Lipoquin and Pulmaquin) and determined that Pulmaquin showed superior performance; therefore, we have taken Pulmaquin forward into Phase 3 clinical trials. In order to expedite anticipated time to market and increase market acceptance, we have elected to deliver our formulations via an approved, widely-accepted nebulizer system for each of our clinical trials and we intend to continue using this approach and also obtain the initial marketing approval with a currently FDA-approved nebulizer system. In March 2012, we announced the FDA

clearance of the Phase 3 IND for Pulmaquin in BE patients; the first human study under this IND is the first of the two identical Phase 3 studies in BE patients with Pulmaquin. Because we have chosen Pulmaquin as our lead formulation and in order to reduce the administrative burden of maintaining open regulatory filings, the existing Investigational New Drug (IND) filing for Lipoquin for BE has been inactivated.

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The CF and BE programs incorporate formulation and manufacturing processes and the early preclinical safety data developed for our inhalation anthrax program discussed below. We believe our inhaled ciprofloxacin could also be explored for the treatment of other serious respiratory infections, such as those occurring in severe COPD, pulmonary non-tuberculous mycobacteria (PNTM) and asthma patients.

Lipoquin (ARD-3100) Inhaled Ciprofloxacin for the Management of Infections in Cystic Fibrosis (CF) Patients

This program uses our proprietary inhaled formulation of ciprofloxacin for the management of respiratory infections caused by a microorganism, *Pseudomonas aeruginosa,* common in patients with CF. CF is a genetic disease that causes thick, sticky mucus to form in the lungs, pancreas and other organs. In the lungs, the mucus tends to block the airways, causing lung damage and making these patients highly susceptible to lung infections. According to the Cystic Fibrosis Foundation, CF affects roughly 30,000 children and adults in the United States and roughly 70,000 children and adults worldwide. Recent reports suggest that there may be over 100,000 largely undiagnosed CF patients in India. According to the American Lung Association, the direct medical care costs for an individual with CF in the U.S. are estimated to be in excess of $40,000 per year.

The inhalation route affords direct administration of the drug to the infected parts of the lung, maximizing the dose to the affected sites and minimizing the wasteful exposure to the rest of the body where it could cause side effects. Therefore, treatment of CF-related lung infections by direct administration of antibiotics to the lung may improve both the safety and efficacy of treatment compared to systemic administration by other routes, as well as improving patient convenience as compared to injections. Oral and injectable forms of ciprofloxacin are approved for the treatment of *Pseudomonas aeruginosa,* a serious lung infection to which CF patients are vulnerable. Currently, there are several inhaled products containing antibiotics tobramycin and aztreonam approved for the chronic management of this infection in CF patients in US; the tobramycin products are given twice a day and aztreonam three times a day. They are used intermittently one month on the therapy, one month off therapy. We believe that local lung delivery via inhalation of ciprofloxacin in our sustained release liposomal formulation could provide convenient, effective and safe chronic management of the debilitating and often life-threatening lung infections that afflict patients with CF. We think that once a day dosing of inhaled ciprofloxacin could also be a welcome reduction in the burden of therapy for this patient population. Furthermore, some patients may benefit from rotating two or more inhaled antibiotics so that they maintain some form of inhaled antibiotic therapy all the time. As ciprofloxacin is an antibiotic of a different class, with a different mechanism of action to the two currently approved inhaled antibiotics in US, its use could maximize the control of respiratory infections in CF patients and avoid the side effects associated with the use of the other antibiotics. We have received orphan drug designation from the FDA for this product for the management of CF.

We believe we have the preclinical development, clinical and regulatory expertise to advance this product through development. In August 2013, we licensed to Grifols on an exclusive, world-wide basis, our inhaled liposomal ciprofloxacin product candidates for the indication of non-cystic fibrosis bronchiectasis and other indications, such as CF.

Development of Inhaled Ciprofloxacin for CF

We initiated preclinical studies for inhaled ciprofloxacin in 2006 and we also continue to work on new innovative formulations for this product with the view to maximize the safety, efficacy and convenience to patients. In October 2007, we completed a Phase 1 clinical trial in 20 healthy volunteers in Australia. This was a safety, tolerability and pharmacokinetic study that included single dose escalation followed by dosing for one week. Administration of the liposomal formulation by inhalation was well tolerated and no serious adverse reactions were reported. The

pharmacokinetic profile obtained by measurement of blood levels of ciprofloxacin following the inhalation of the liposomal formulation was consistent with the profile from sustained release of ciprofloxacin from liposomes, supporting once daily dosing; the blood levels of ciprofloxacin were much lower than those that would be observed following administration of therapeutic doses of ciprofloxacin by injection or

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via the gastrointestinal tract. We believe that this is a desirable pharmacokinetic profile likely to result in a reduction of the incidence and severity of systemic side effects of ciprofloxacin and to be less likely to lead to systemic emergence of resistant micro-organisms. Further, we believe that once a day dosing of this product could provide a significant reduction in the burden of therapy for CF patients and their healthcare providers.

In June 2008, we completed a multi-center 14-day treatment Phase 2a trial in Australia and New Zealand in 21 CF patients to investigate safety, efficacy and pharmacokinetics of once daily inhaled liposomal ciprofloxacin. The primary efficacy endpoint in this Phase 2a study was the change from baseline in the sputum *Pseudomonas aeruginosa* colony forming units (CFU), an objective measure of the reduction in pulmonary bacterial load. Data analysis in 21 patients who completed the study demonstrated that the CFUs decreased by a mean 1.43 log over the 14-day treatment period ($p<0.0001$). Evaluation one week after study treatment was discontinued showed that the Pseudomonas bacterial density in the lung was still reduced from the baseline without additional antibiotic use. Pulmonary function testing as measured by the forced expiratory volume in one second (FEV1) showed a significant mean increase of 6.86% from baseline after 14 days of treatment ($p=0.04$). The study drug was well tolerated, and there were no serious adverse events reported during the trial.

CF patients may also develop debilitating pulmonary infections with non-tuberculous mycobacteria (PNTM). Through our NIH-funded collaboration with Oregon State University, we have demonstrated encouraging activity of Lipoquin and Pulmaquin in experimental models of pulmonary infections with NTM.

In order to expedite anticipated time to market and increase market acceptance, we have elected to deliver our formulation via nebulizer, as most CF patients already own a nebulizer and are familiar with this method of drug delivery. Because we have chosen Pulmaquin as our lead formulation and in order to reduce the administrative burden of maintaining open regulatory filings, the existing Investigational New Drug (IND) filing for Lipoquin for CF has been inactivated.

Liposomal Ciprofloxacin for Non-Tuberculous Mycobacteria

In August 2013, the National Institutes of Health (NIH) awarded us a Small Business Initiative Research (SBIR) grant in the amount of approximately $278,000 to investigate the treatment of pulmonary non-tuberculous mycobacteria (PNTM) infections with our inhaled liposomal ciprofloxacin products Pulmaquin and Lipoquin. The research program is being conducted in collaboration with Oregon State University, Corvalis.

According to a recent report from the National Institutes of Health based on an epidemiological study in U.S. adults aged 65 years or older, PNTM infections are an important cause of morbidity among older adults in the United States. From 1997 to 2007, the annual prevalence significantly increased from 20 to 47 cases/100,000 persons or 8.2% per year. Forty-four percent of PNTM-affected people in the study had bronchiectasis compared to 1% in the non-PNTM cases pointing to an important co-morbidity. PNTM infections are common also in patients with other chronic lung conditions, such as cystic fibrosis and emphysema. In patients with AIDS, the infection is disseminated. These infections are particularly difficult to treat as the mycobacteria can form biofilms in the airways and they are able to cause intracellular infections, e.g. by invasion of pulmonary macrophages. The current clinical paradigm is to treat patients with lung or disseminated disease with combination therapy given orally or by IV. Unfortunately, these therapies often fail, and may have significant side effects.

On April 15, 2014, we announced the first results from the collaboration between scientists from the Oregon State University, Corvallis (OSU) and Aradigm funded by NIH. The research demonstrated that after 4 days of in vitro

treatment of human macrophages infected with *Mycobacterium avium* and *Mycobacterium abscessus*, Aradigm s liposomal ciprofloxacin was associated with a decrease of greater than 99% of these infections at ciprofloxacin concentrations of 200 mcg/ml, which approximate the peak sputum levels observed in humans in prior Aradigm clinical studies. At a lower concentration of 20 mcg/ml, the liposomal concentrations still showed statistically significant decreases greater than 70% for *M. avium* and greater than 90% for *M. abscessus*.

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Unencapsulated ciprofloxacin showed smaller decreases which were only statistically significant at 200 mcg/ml. Liposomal ciprofloxacin at a concentration of 100 mcg/ml significantly reduced the population of these mycobacteria in a biofilm assay by more than 50% whereas unencapsulated ciprofloxacin did not show statistically significant decreases.

Liposomal Ciprofloxacin for Biodefense Purposes: Treatment of Q Fever, Tularemia, Pneumonic Plague, Inhalation Anthrax and other biodefense purposes

In addition to our programs addressing bronchiectasis and cystic fibrosis, our inhaled ciprofloxacin has also been tested for the prevention and treatment of inhaled bioterrorism infections, such as Q fever, inhalation anthrax, tularemia and pneumonic plague.

In September 2012, UK scientists from the Health Protection Agency (HPA) and Defence Science and Technology Laboratory (Dstl) reported the successful testing of our inhaled liposomal ciprofloxacin against *Coxiella burnetii* (Q fever) in a mouse model of this virulent infection. This work was conducted as part of the collaborative consortium that we formed with HPA and Dstl to evaluate the efficacy of our inhaled liposomal ciprofloxacin against high threat microbial agents.

Coxiella burnetii is a Gram-negative intracellular bacterium and the causative agent of the disease Q fever. *C. burnetii* is endemic worldwide, infects a wide variety of animals and humans and has a low infectious dose by the inhalational route. Clinical presentation in humans may lead to an acute infection with flu-like symptoms, or a chronic life-threatening disease. A recent epidemic of Q fever in humans took place in the Netherlands in 2009, with 2,357 reported cases and 6 deaths. Current oral antibiotic treatment of Q fever can be lengthy and complex.

In the experiments reported by the UK scientists, mice that were infected with *C. burnetii* via inhalation and treated 24 hours later with twice-daily oral ciprofloxacin continuing for 6 additional days, or infected drug-free control-treated animals that had the same treatment schedule, lost almost 20% of body weight by day 7 and exhibited clinical signs of the disease. In contrast, infected mice treated 24 hours later with once-daily lung-delivered liposomal ciprofloxacin continuing for 6 additional days, were significantly protected against weight loss and showed no clinical signs of disease throughout the 14-day duration of the study.

In November 2012, scientists from the UK Defence Science and Technology Laboratory (Dstl) reported in a preliminary study that they demonstrated that a single dose of Aradigm s liposomal ciprofloxacin formulation Lipoquin administered 24 hours after exposure to a lethal dose of the bacterium *Yersinia pestis* provided full protection in a murine model of pneumonic plague. In comparison, a single dose of oral ciprofloxacin administered 24 hours post-exposure provided no protection.

The Gram-negative bacterium *Yersinia pestis* is the causative agent of plague, a disease thought to be responsible for the death of 200 million people through devastating pandemics such as the Black Death. Inhalation of *Y. pestis* can result in the most severe form of the disease, pneumonic plague, which if untreated may have a mortality rate of 100%. Currently, there is no licensed vaccine for use in humans.

In the study, exposure to aerosolized *Y. pestis* was lethal. Animals were followed for up to 28 days post-exposure. All untreated mice succumbing to a systemic infection by day 3 post-exposure. A single dose of oral ciprofloxacin administered at 24 hours post-exposure did not prevent mortality and only increased the mean time to death to 5 days compared to 3 days for untreated mice. In comparison, a single dose of Lipoquin delivered via the nose into the lungs

of the animals provided 100% protection and significantly improved survival compared to a single dose of oral ciprofloxacin (P<0.0001); a single dose of aerosolized Lipoquin administered at 24 hours post-exposure provided approximately 70% protection and significantly improved survival when compared to a single dose of oral ciprofloxacin (P<0.001).

In their report, the scientists state that the study demonstrated the superior efficacy of Lipoquin compared to oral ciprofloxacin as post-exposure prophylaxis against *Y. pestis*.

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The Dstl team also demonstrated in another series of experiments that a single dose of our inhaled liposomal ciprofloxacin protects animals against lethal doses of inhaled *Francisella tularensis* (tularemia) infection another microbial threat. These results confirmed and extended the research that we began originally under a technology demonstration program funded by the Defence Research and Development Canada (DRDC) as part of their interest in developing products to counter bioterrorism, such as inhaled anthrax and tularemia infections. DRDC had already demonstrated the feasibility of inhaled liposomal ciprofloxacin for post-exposure prophylaxis of *Francisella tularensis.* Mice were exposed to a lethal dose of *Francisella tularensis* and then 24 hours later were exposed via inhalation to a single dose of free ciprofloxacin, liposomal ciprofloxacin or saline. All the mice in the control group and the free ciprofloxacin group were dead within 11 days post-infection; in contrast, all the mice in the liposomal ciprofloxacin group were alive 14 days post-infection. The same results were obtained when the mice received the single inhaled treatment as late as 48 or 72 hours post-infection.

With inhalation anthrax, once symptoms appear, fatality rates are high even with the initiation of antibiotic and supportive therapy. Further, a portion of the anthrax spores, once inhaled, may remain dormant in the lung for several months and then germinate. Anthrax has been identified by the Centers for Disease Control as a likely potential agent of bioterrorism.

Ciprofloxacin has been approved by the FDA for use orally and via injection for the treatment of inhalation anthrax (post-exposure) since 2000. We believe that our product candidate may be able to deliver a long-acting formulation of ciprofloxacin directly into the lungs and be more effective and could potentially have fewer side effects, which is important for patient compliance, to prevent and treat inhalation tularemia and anthrax, Q fever, pneumonic plague and other inhaled bacterial bioterrorism agents than currently available therapies.

If we can obtain sufficient additional funding, including government grants or collaborative funding from organizations such as the Canadian DRDC and the UK Dstl, we may be able to complete the development of our liposomal ciprofloxacin for approval under FDA regulations relating to new drugs or biologics for potentially fatal diseases where human studies cannot be conducted ethically or practically. Unlike most drugs, which require large, well-controlled Phase 3 clinical trials in patients with the disease or condition being targeted, these regulations allow a drug to be evaluated and approved by the FDA on the basis of demonstrated safety in humans combined with studies in animal models to show effectiveness. We plan to use our preclinical and clinical safety data from our BE and CF programs to supplement the data needed to have this product candidate considered for approval for use in prevention and treatment of a number of potential bioterrorism infections including anthrax, tularemia, Q fever and pneumonic plague.

Proprietary Programs Under Development

Smoking Cessation Therapy

ARD-1600 Inhaled Nicotine

According to the National Center for Health Statistics (NCHS), 21% of the U.S. population age 18 and above currently smoke cigarettes. The World Health Organization s (WHO) recent report states that tobacco smoking is the single most preventable cause of death in the world today. Already tobacco kills more than five million people per year more than tuberculosis, HIV/AIDS and malaria combined. WHO warns that by 2030, the death toll could exceed eight million a year. Unless urgent action is taken, tobacco could kill one billion people during this century. According to the National Institute on Drug Abuse, more than $75 billion of total U.S. healthcare costs each year is attributable

directly to smoking. However, this cost is well below the total cost to society because it does not include burn care from smoking-related fires, perinatal care for low birth-weight infants of mothers who smoke, and medical care costs associated with disease caused by secondhand smoke. In addition to healthcare costs, the costs of lost productivity due to smoking effects are estimated at $82 billion per year, bringing a conservative estimate of the economic burden of smoking to more than $150 billion per year.

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NCHS indicates that nicotine dependence is the most common form of chemical dependence in this country. Quitting tobacco use is difficult and often requires multiple attempts, as users often relapse because of withdrawal symptoms and the acute craving for cigarettes. Smokers attempting to quit often turn to nicotine replacement products (gums, lozenges, patches) in order to reduce these cravings. However, recent research indicates that, while these products help in the short term, they are ineffective in preventing long term relapse in many smokers trying to quit.

Our goal is to develop an inhaled nicotine product that would address effectively the acute craving for cigarettes and, through gradual reduction of the peak nicotine levels, wean-off the patients from cigarette smoking and from the nicotine addiction.

Development of Inhaled Nicotine for Smoking Cessation

The initial laboratory work on this program was partly funded under grants from the National Institutes of Health.

We have encouraging data from our first human clinical trial delivering aqueous solutions of nicotine using the palm-size AERx Essence® system. Our randomized, open-label, single-site Phase 1 trial evaluated arterial plasma pharmacokinetics and subjective acute cigarette craving when one of three nicotine doses was administered to 18 adult male smokers. Blood levels of nicotine rose much more rapidly following a single-breath inhalation compared to published data on other approved nicotine delivery systems. Cravings for cigarettes were measured on a scale from 0-10 before and after dosing for up to four hours. Prior to dosing, mean craving scores were 5.5, 5.5 and 5.0, respectively, for the three doses. At five minutes following inhalation of the nicotine solution through the AERx Essence device, craving scores were reduced to 1.3, 1.7 and 1.3, respectively, and did not return to pre-dose baseline during the four hours of monitoring. Nearly all subjects reported an acute reduction in craving or an absence of craving immediately following dosing. No serious adverse reactions were reported in the study.

In September 2012, we were issued a new U.S. patent for our inhaled nicotine technology from a second patent family that provides protection until at least 2024. Previously, we had two issued U.S. patents covering systems for effecting smoking cessation, which provided exclusivity until 2019. The first two patents are method of treatment patents, covering systems, devices and containers for delivering aerosolized nicotine formulations in specific ways which we believe to be important for cigarette smokers who want to quit smoking. This new patent extends the coverage to containers with novel features anticipated to provide additional smoking cessation benefits.

Presently, the FDA has no mandate to regulate nicotine products derived from tobacco that do not make healthcare claims and are not already a part of the current FDA mandate. This is a reflection of the recent Sottera, Inc. v. FDA, No. 10-5032 D.C. Circuit court decision that has allowed electronic cigarettes to stay on the market in the U.S. after the FDA attempted to remove them from the market because they were deemed to be drug / device products. As a result, we believe that the AERx nicotine inhaler may be introduced to the U.S. market today as a non-regulated product; however, no health claims can be made. A similar opportunity to enter the market may exist in other countries where electronic cigarettes are not regulated as drugs (e.g., most of Europe, New Zealand and China). We are also exploring the traditional regulatory path of approval of our nicotine inhaler as an approval under the FDA drug regulations may enable us to make health benefits claims and such approval would also mitigate the risk that the FDA in the future would prevent the marketing of unregulated nicotine-containing products.

We are seeking collaborations and non-dilutive financing to further develop this product for either the pharmaceutical market or the direct-to-consumer market or both.

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Other Programs

In August 2013, the NIH awarded us an SBIR grant in the amount of approximately $340,000 to investigate the development and validation of tests for gastro-esophageal reflux with aspirations into the respiratory tract. The Principal Investigators and co-inventors of the new diagnostic tests are Professor Homer Boushey, University of California, San Francisco (UCSF) and Dr. Igor Gonda, Aradigm Corporation. The grant is funding laboratory work and a human clinical trial to be conducted at UCSF.

Aspiration of gastric contents into the respiratory tract causes significant morbidity and mortality and is accepted as the key initiating event for aspiration pneumonitis a form of acute lung injury caused by the acidity of the gastric contents, and aspiration pneumonia the consequence of the growth of pathogenic bacteria contained in the oropharynx aspirated into the tracheobronchial tree. When subclinical events of gastric aspiration occur, it is described as silent aspiration or microaspiration. Chronic, recurrent microaspirations have been implicated in the pathogenesis and worsening of many severe chronic pulmonary diseases of unknown origin, such idiopathic pulmonary fibrosis, bronchiolitis obliterans after lung transplantation, pulmonary disease in conditions associated with esophageal dysfunction and delayed gastric emptying such as cystic fibrosis and scleroderma, and the very common conditions of community acquired pneumonia in the elderly, asthma and COPD.

Research into the role of microaspirations has been severely hampered by the insensitivity, expense, inconvenience, invasiveness, and discomfort of current diagnostic methods for this condition. Development of a simple, patient-convenient, diagnostic test that is safe and can be used repeatedly over time could significantly impact the diagnosis and management of several pulmonary diseases that may be affected by recurrent microaspirations of gastro-intestinal contents into the respiratory tract

Pulmonary Drug Delivery Background

Pulmonary delivery describes the delivery of drugs by inhalation and is a common method of treatment of many respiratory diseases, including asthma, chronic bronchitis, cystic fibrosis and bronchiectasis. The current global market for inhalation products includes delivery through metered-dose inhalers, dry powder inhalers and nebulizers. The advantage of inhalation delivery for the diagnosis, prevention and treatment of lung disease is that the active agent is delivered in high concentration directly to the desired targets in the respiratory tract while keeping the body s exposure to the rest of the drug, and resulting side effects, at a minimum. Over the last two decades, there has also been increased interest in the use of the inhalation route for systemic delivery of drugs throughout the body, either for the purpose of rapid onset of action or to enable noninvasive delivery of drugs that are not orally bioavailable.

The AERx Delivery Technology

The AERx delivery technology provides an efficient and reproducible means of targeting drugs to the diseased parts of the lung, or to the lung for systemic absorption, through a combination of fine mist generation technology and breath control mechanisms. Similar to nebulizers, the AERx delivery technology is capable of generating aerosols from simple liquid drug formulations, avoiding the need to develop complex dry powder or other formulations. However, in contrast to nebulizers, AERx is a hand-held unit that can deliver the required dosage typically in one or two breaths in a matter of seconds due to its enhanced efficiency compared to nebulization treatments, which commonly last about 15 minutes. We believe the ability to make small micron-size droplets from a hand-held device that incorporates breath control will be the preferred method of delivery for many medications.

The various forms of our AERx technology have been extensively tested in the laboratory and in over 50 human clinical trials with 19 different small molecules, peptides and proteins. Our most extensive AERx technology program has been with inhaled insulin for the treatment of Type I and Type II diabetes. This program was previously licensed to Novo Nordisk which conducted nine Phase 3 clinical trials during our collaboration

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with them. The collaboration was terminated in 2007 and all program assets were returned to Aradigm. The intellectual property including all the data and regulatory filings related to this inhaled insulin program is owned by Aradigm. We are exploring the potential to sell or license these assets. We also conducted two human clinical trials (with treprostinil and with nicotine) with the latest version of our inhalation technology, the AERx Essence system. This system retains the key features of breath control and aerosol quality of the previous generations of the AERx technology, but the patient is provided with a much smaller, palm-sized device. The device is easy to use and maintain and it does not require any batteries or external electrical power.

While the development of AERx product candidates is currently dormant, we believe that we could restart the development effort if sufficient funding or a collaboration is secured. We seek to identify partners who may wish to license or buy this asset in order to raise non-dilutive capital.

Formulation Technologies

We have a number of formulation technologies for drugs delivered by inhalation. We have proprietary knowledge and trade secrets relating to the formulation of drugs to achieve products with adequate stability and safety, and for the manufacture and testing of inhaled drug formulations. We have been exploring the use of liposomal formulations of drugs that may be used for the prevention and treatment of respiratory diseases. Liposomes are lipid-based nanoparticles dispersed in water that encapsulate the drug during storage, and release the drug slowly upon contact with fluid covering the airways and the lung. We have experience in the development of liposomal formulations specifically for those drugs that currently need to be dosed several times a day, or when the slow release of the drug is likely to improve the efficacy and safety profile. We believe a liposomal formulation will provide extended duration of protection and treatment against lung infection, greater convenience for the patient and reduced systemic levels of the drug. The formulation may also enable better interaction of the drug with the disease target, potentially leading to greater efficacy. We have applied this technology to ciprofloxacin.

Intellectual Property and Other Proprietary Rights

Our success will depend, to a significant extent, on our ability to obtain, expand and protect our intellectual property estate, enforce patents, maintain trade secret protection and operate without infringing the proprietary rights of other parties. Our most recent patents issued in the United States were an important composition of matter patent and a method of treatment patent for Pulmaquin. As of February 28, 2015, we had 39 issued United States patents, with 11 additional United States patent applications pending. In addition, we had 43 issued foreign patents and an additional 24 foreign patent applications pending. The bulk of our patents and patent applications contain claims directed toward our Pulmaquin and Lipoquin compositions and methods of treatment, proprietary delivery technologies, including methods for aerosol generation, devices used to generate aerosols, breath control, compliance monitoring, certain pharmaceutical formulations, design of dosage forms and their manufacturing and testing methods. In addition, we have purchased three United States patents containing claims that are relevant to our inhalation technologies. The bulk of our patents directed toward our proprietary delivery technologies and methods of use, expire between 2014 and 2031. Because patent positions can be highly uncertain and frequently involve complex legal and factual questions, the breadth of claims obtained in any application or the enforceability of our patents cannot be predicted.

We continue to seek to protect our proprietary position by protecting inventions that we determine are or may be important to our business. We do this, when we are able, through the filing of patent applications with claims directed toward the devices, methods and technologies we develop. Our ability to compete effectively will depend to a significant extent on our ability and the ability of our collaborators to obtain and enforce patents and maintain trade

secret protection over our proprietary technologies. The coverage claimed in a patent application typically is significantly reduced before a patent is issued, either in the United States or abroad. Consequently, any of our pending or future patent applications may not result in the issuance of patents or, to the extent patents have been issued or will be issued, these patents may be subjected to further proceedings limiting their scope and

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may in any event not contain claims broad enough to provide meaningful protection. Patents that are issued to us or our collaborators may not provide significant proprietary protection or competitive advantage, and may be circumvented or invalidated.

We also rely on our trade secrets and the know-how of our officers, employees, consultants and other service providers. Our policy is to require our officers, employees, consultants and advisors to execute proprietary information and invention assignment agreements upon commencement of their relationships with us. These agreements provide that all confidential information developed or made known to the individual during the course of the relationship shall be kept confidential except in specified circumstances. These agreements also provide that all inventions developed by the individual on behalf of us shall be assigned to us and that the individual will cooperate with us in connection with securing patent protection for the invention if we wish to pursue such protection. These agreements may not provide meaningful protection for our inventions, trade secrets or other proprietary information in the event of unauthorized use or disclosure of such information.

We also execute confidentiality agreements with outside collaborators and consultants. However, disputes may arise as to the ownership of proprietary rights to the extent that outside collaborators or consultants apply technological information developed independently by them or others to our projects, or apply our technology or proprietary information to other projects, and any such disputes may not be resolved in our favor. Even if resolved in our favor, such disputes could result in substantial expense and diversion of management attention.

In addition to protecting our own intellectual property rights, we must be able to develop products without infringing the proprietary rights of other parties. Because the markets in which we operate involve established competitors with significant patent portfolios, including patents relating to compositions of matter, methods of use, methods of delivery and products in those markets, it may be difficult for us to develop products without infringing the proprietary rights of others.

We would incur substantial costs if we are required to defend ourselves in suits, regardless of their merit. These legal actions could seek damages and seek to enjoin development, testing, manufacturing and marketing of the allegedly infringing product. In addition to potential liability for significant damages, we could be required to obtain a license to continue to manufacture or market the allegedly infringing product and any license required under any such patent may not be available to us on acceptable terms, if at all.

Pulmaquin and Lipoquin are trademarks of Aradigm and are registered or pending in several countries around the world.

We may determine that litigation is necessary to enforce our proprietary rights against others. Such litigation could result in substantial expense and diversion of management attention, regardless of its outcome and any litigation may not be resolved in our favor.

Competition

We are in a highly competitive industry. We compete with pharmaceutical and biotechnology companies, hospitals, research organizations, individual scientists and nonprofit organizations engaged in the development of drugs and other therapies for the respiratory disease indications we are targeting. Our competitors may succeed, and many have already succeeded, in developing competing products, obtaining FDA approval for products or gaining patient and physician acceptance of products before us for the same markets and indications that we are targeting. Many of these

companies, and large pharmaceutical companies in particular, have greater research and development, regulatory, manufacturing, marketing, financial and managerial resources and experience than we have and many of these companies may have products and product candidates that are in a more advanced stage of development than our product candidates. If we are not first to market for a particular indication, it may be more difficult for us or our collaborators to enter markets unless we can demonstrate our products are clearly superior to existing therapies.

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There is no product currently approved in the United States specifically for the treatment of bronchiectasis (BE). Bayer is testing a ciprofloxacin dry powder inhaler for the management of BE in two Phase 3 studies and an experimental oral drug, BAY85-8501 that completed a Phase 2 study in BE patients. Currently marketed inhaled antibiotics for the management of infections associated with cystic fibrosis (CF) are several products containing tobramycin (nebulizer and dry powder formulations) marketed by multiple companies, and nebulized Cayston* marketed by Gilead Sciences. Inhaled products under development to treat respiratory infections in CF include dry powder ciprofloxacin by Bayer, nebulized liposomal amikacin by Insmed, and nebulized levofloxacin by Aptalis. Bayer was granted orphan drug designation in the U.S. and in the EU for their inhaled ciprofloxacin product in development for the treatment of infections associated with CF.

Several of these products have substantial current sales and long histories of effective and safe use. In addition, we believe there are a number of additional drug candidates in various stages of development that, if approved, could compete with any future products we may develop. Moreover, one or more of our competitors that have developed or are developing pulmonary drug delivery technologies, such as Alkermes, MAP (acquired by Allergan), Mannkind, Insmed or Alexza Pharmaceuticals, or other competitors with alternative drug delivery methods, may negatively impact our potential competitive position.

We believe that our respiratory expertise and pulmonary delivery and formulation technologies provide us with an important competitive advantage for our potential products. We intend to compete by developing products that are safer, more efficacious, more convenient, less costly, earlier to market or cheaper to develop than existing products, or any combination of the foregoing.

Government Regulation

United States

The research, development, testing, manufacturing, labeling, advertising, promotion, distribution, marketing and export, among other things, of any products we develop are subject to extensive regulation by governmental authorities in the United States and other countries. The FDA regulates drugs in the United States under the FDCA and implementing regulations thereunder.

If we fail to comply with the FDCA or FDA regulations, we and our products could be subject to regulatory actions. These may include delay in approval or refusal by the FDA to approve pending applications, injunctions ordering us to stop sale of any products we develop, seizure of our products, warning letters, imposition of civil penalties or other monetary payments, criminal prosecution, and recall of our products. Any such events would harm our reputation and our results of operations.

Before any of our drugs may be marketed in the United States, it must be approved by the FDA. None of our current product candidates has received such approval. We believe that our products currently in development will be regulated by the FDA as drugs.

The steps required before a drug may be approved for marketing in the United States generally include:

preclinical laboratory and animal tests, and formulation studies;

the submission to the FDA of an Investigational New Drug (IND) application for human clinical testing that must become effective before human clinical trials may begin;

adequate and well controlled human clinical trials to establish the safety and efficacy of the product candidate for each indication for which approval is sought;

the submission to the FDA of a New Drug Application (NDA) and FDA s acceptance of the NDA for filing;

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satisfactory completion of an FDA inspection of the manufacturing facilities at which the product is to be produced to assess compliance with the FDA s Good Manufacturing Practices (GMP); and

FDA review and approval of the NDA.

Preclinical Testing

The testing and approval process requires substantial time, effort, and financial resources, and the receipt and timing of approval, if any, is highly uncertain. Preclinical tests include laboratory evaluations of product chemistry, toxicity, and formulation, as well as animal studies. The results of the preclinical studies, together with manufacturing information and analytical data, are submitted to the FDA as part of the IND. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA raises concerns or questions about the conduct of the proposed clinical trials as outlined in the IND prior to that time. In such a case, the IND sponsor and the FDA must resolve any outstanding FDA concerns or questions before clinical trials can proceed. Submission of an IND may not result in FDA authorization to commence clinical trials. Once an IND is in effect, the protocol for each clinical trial to be conducted under the IND must be submitted to the FDA, which may or may not allow the trial to proceed.

In July 2009, we received clearance from the FDA for our IND for inhaled liposomal ciprofloxacin (ARD-3100, Lipoquin) for the treatment of non-cystic fibrosis bronchiectasis. In May 2010, we received clearance from the FDA for our IND for inhaled liposomal ciprofloxacin for the treatment of cystic fibrosis. However, an additional three month toxicity study in animals with Lipoquin (ARD-3100) and Pulmaquin (ARD-3150) was requested by the FDA to support longer term human clinical trials. This study was completed and the results were submitted to the FDA as part of our IND filing for the Phase 3 program for Pulmaquin in BE patients.

In March 2012, we received clearance from the FDA for our IND to start the first of two identical Phase 3 studies of Pulmaquin (ARD-3150) in BE patients. The FDA has requested a 2 year carcinogenicity study in rats with inhaled Pulmaquin to support the NDA for BE. We have initiated that study. The FDA indicated a 9 month inhalation safety study in dogs may also be needed to support approval for marketing this product for BE in the U.S. and the EU. Neither of these studies were required prior to beginning the Phase 3 clinical trials; however, we have taken the initiative to conduct them in the interest of reducing time to approval of Pulmaquin. The 9 month inhalation safety study in dogs has been completed and the study report has been submitted to the FDA. The 2 year rat carcinogenicity study is being conducted in parallel with the Phase 3 program.

Clinical Trials

Clinical trials involve the administration of the investigational drug to human subjects under the supervision of qualified investigators and healthcare personnel. Clinical trials are conducted under protocols detailing, for example, the parameters to be used in monitoring patient safety and the safety and effectiveness criteria, or end points, to be evaluated. Clinical trials are typically conducted in three defined phases, but the phases may overlap or be combined. Each trial must be reviewed and approved by an independent institutional review board overseeing the institution conducting the trial before it can begin.

These phases generally include the following:

Phase 1. Phase 1 clinical trials usually involve the initial introduction of the drug into human subjects, frequently healthy volunteers. In Phase 1, the drug is usually evaluated for safety, including adverse effects, dosage tolerance, absorption, distribution, metabolism, excretion and pharmacodynamics.

Phase 2. Phase 2 usually involves studies in a limited patient population with the disease or condition for which the drug is being developed to (1) preliminarily evaluate the efficacy of the drug for specific, targeted indications; (2) determine dosage tolerance and appropriate dosage; and (3) identify possible adverse effects and safety risks.

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Phase 3. If a drug is found to be potentially effective and to have an acceptable safety profile in preclinical (animal), Phase 1 and Phase 2 human studies, the clinical trial program will be expanded, usually to further evaluate clinical efficacy and safety by administering the drug in its final form to an expanded patient population at geographically dispersed clinical trial sites. Phase 3 studies usually include several hundred to several thousand patients.

In November 2009, the first patient was dosed in the ORBIT-2 (Once-daily Respiratory Bronchiectasis Inhalation Treatment) trial, a 168 day, multicenter, international Phase 2b clinical trial of inhaled ciprofloxacin (Pulmaquin, ARD-3150) in 42 adult patients with BE.

In February 2010, the first patient was dosed in the U.S. as part of the ORBIT-1 trial. This Phase 2b trial, an international, double-blind, placebo-controlled study being conducted under a U.S. FDA IND randomized 95 patients and completed enrollment in March 2011. The ORBIT-1 study design called for four weeks of once-daily inhaled doses of Lipoquin (ARD-3100) or once-daily inhaled placebo. Two doses of the active drug were included in the study 100 or 150 mg ciprofloxacin delivered by inhalation as 2 or 3 mL of liposomal dispersion, respectively. The primary efficacy endpoint was a standard measure of antibacterial activity the change from baseline in sputum *Pseudomonas aeruginosa* colony forming units (CFUs). Secondary endpoints included quality of life measurements and improvement of outcomes with respect to exacerbations. Lung function changes were monitored for safety.

In October 2010, we announced positive top line data from the ORBIT-2 study. Statistical significance was achieved in the primary endpoint the mean change in *Pseudomonas aeruginosa* density in sputum from baseline to day 28. In the full analysis population (full analysis set includes all patients who were randomized, received at least one dose and provided samples for at least two time points), there was a significant mean reduction of 4.2 $\log_{10}$ units in the Pulmaquin group, reflecting an almost sixteen-thousand fold decrease in bacterial load, versus a very small mean decrease of 0.1 $\log_{10}$ units in the placebo group ($p=0.004$). Secondary endpoint analysis showed that 17 subjects in the placebo group required supplemental antibiotics for respiratory-related infections versus 8 subjects in the Pulmaquin group ($p=0.05$). As announced in January 2011, the Kaplan-Meier analysis showed that the median time to first pulmonary exacerbation in the per protocol population evaluation increased from 58 days in the placebo group to 134 days in the active treatment group and was statistically significant ($p<0.05$, log rank test). Pulmaquin was well tolerated and there were no significant decreases in lung function, as measured by FEV1 (forced expiratory volume in one second), at 28 days in either group. Overall, the incidence and severity of adverse events were similar in both the placebo and treatment groups; however, Pulmaquin had a superior pulmonary safety profile reflected in the number and severity of pulmonary adverse events.

In June 2011, we announced positive top line data from the ORBIT-1 study. The primary endpoint - the mean change in *Pseudomonas aeruginosa* colony forming units per gram of sputum (CFUs) from baseline to day 28 was met in the full analysis population: The full analysis set included all patients who were randomized, received at least one dose and provided samples for at least two time points. There was a significant mean reduction ($p<0.001$) of 2.942 log10 CFUs in the 3mL Lipoquin group and a significant mean reduction ($p< 0.001$) of 3.842 log10 CFUs in the 2mL Lipoquin group compared to placebos. Pooled placebo groups had a mean reduction of log10 CFUs of 0.437. There was no statistically significant difference between the 2 mL and 3 mL Lipoquin doses. Lipoquin was well-tolerated and no bronchodilator treatment was mandated before inhaled study treatments. There were no statistically significant differences between the active and placebo groups in the number of patients experiencing at least one respiratory treatment-emergent adverse event. The incidence of serious adverse events (SAEs) was low; there were a total of 6 SAEs and none of them were treatment related.

The Phase 3 clinical program for Pulmaquin in BE consists of two international, double-blind, placebo-controlled pivotal trials that are identical in design except for a pharmacokinetics sub-study that will be conducted in one of the trials. Each Phase 3 trial will enroll approximately 255 patients who will receive 6 cycles of once-daily treatment followed by one 28 day open label extension. Each cycle consists of 28 days on-

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treatment followed by 28 days off-treatment. The trial randomization will have two patients on active drug for every patient on placebo. The primary endpoint is an increase in the median time to first pulmonary exacerbation.

The first of the Phase 3 trials, ORBIT-3, dosed its first patient in April 2014. The second of the Phase 3 trials, ORBIT-4, dosed its first patient in June 2014. Enrollment in both trials is ongoing with over 140 sites in 14 countries participating.

Phase 1, Phase 2, or Phase 3 clinical trials may not be completed successfully within any specified period of time, if at all. Further, we or the FDA may suspend clinical trials at any time on various grounds, including a finding that the patients are being exposed to an unacceptable health risk.

Assuming successful completion of the required clinical testing, the results of preclinical studies and clinical trials, together with detailed information on the manufacture and composition of the product, are submitted to the FDA in the form of an NDA requesting approval to market the product for one or more indications. Before approving an application, the FDA usually will inspect the facility or facilities at which the product is manufactured, and will not approve the product unless continuing GMP compliance is satisfactory. If the FDA determines the NDA is not acceptable, the FDA may outline the deficiencies in the NDA and often will request additional information or additional clinical trials. Notwithstanding the submission of any requested additional testing or information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval.

If regulatory approval of a product is granted, such approval will usually entail limitations on the indicated uses for which the product may be marketed. Once approved, the FDA may withdraw the product approval if compliance with pre- and post-marketing regulatory requirements and conditions of approvals are not maintained, if GMP compliance is not maintained or if problems occur after the product reaches the marketplace. In addition, the FDA may require post-marketing studies, referred to as Phase 4 studies, to monitor the effect of approved products and may limit further marketing of the product based on the results of these post-marketing studies.

After approval, certain changes to the approved product, such as adding new indications, certain manufacturing changes, or additional labeling claims are subject to further FDA review and approval. Post-approval marketing of products can lead to new findings about the safety or efficacy of the products. This information can lead to a product sponsor making, or the FDA requiring, changes in the labeling of the product or even the withdrawal of the product from the market.

Section 505(b)(2) Applications

Some of our product candidates may be eligible for submission of applications for approval under the FDA s Section 505(b)(2) approval process, which requires less information than the NDAs described above. Section 505(b)(2) applications may be submitted for drug products that represent a modification (*e.g.*, a new indication or new dosage form) of an eligible approved drug and for which investigations other than bioavailability or bioequivalence studies are essential to the drug s approval. Section 505(b)(2) applications may rely on the FDA s previous findings for the safety and effectiveness of the listed drug, scientific literature, and information obtained by the 505(b)(2) applicant needed to support the modification of the listed drug. For this reason, preparing Section 505(b)(2) applications is generally less costly and time-consuming than preparing an NDA based entirely on new data and information from a full set of clinical trials. The law governing Section 505(b)(2) or FDA s current policies may change in such a way as to adversely affect our applications for approval that seek to utilize the Section 505(b)(2) approach. Such changes could result in additional costs associated with additional studies or clinical

trials and delays.

The FDCA provides that reviews and/or approvals of applications submitted under Section 505(b)(2) may be delayed in various circumstances. For example, the holder of the NDA for the listed drug may be entitled to a period of market exclusivity, during which the FDA will not approve, and may not even review a

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Section 505(b)(2) application from other sponsors. If the listed drug is claimed by a patent that the NDA holder has listed with the FDA, the Section 505(b)(2) applicant must submit a patent certification that: the patent information has not been filed; the patent has expired; the patent listing will expire on a given date; or that the patent is invalid, unenforceable, or not infringed by the product that is the subject of the Section 505(b)(2) application. FDA itself will determine the accuracy of the first three certification bases for purposes of application approval timing. For the fourth basis (a Paragraph IV claim of no validity, non-enforceability, or non-infringement), the patent holder must sue the 505(b)(2) applicant within 45 days of the patent certification notice to prevent FDA approval until the earlier of a court decision favorable to the Section 505(b)(2) applicant or the expiration of 30 months. The regulations governing marketing exclusivity and patent protection are complex, and it is often unclear how they will be applied in particular circumstances.

In addition, both before and after approval is sought, we are required to comply with a number of FDA requirements. For example, we are required to report certain adverse reactions and production problems, if any, to the FDA, and to comply with certain limitations and other requirements concerning advertising and promotion for our products. Also, quality control and manufacturing procedures must continue to conform to continuing GMP after approval, and the FDA periodically inspects manufacturing facilities to assess compliance with continuing GMP. In addition, discovery of problems, such as safety problems, may result in changes in labeling or restrictions on a product manufacturer or NDA holder, including removal of the product from the market.

Orphan Drug Designation

The FDA may grant orphan drug designation to drugs intended to treat a rare disease or condition which generally is a disease or condition that affects fewer than 200,000 individuals in the United States. A sponsor may request orphan drug designation of a previously unapproved drug, or of a new indication for an already marketed drug. Orphan drug designation must be requested before an NDA is submitted. If the FDA grants orphan drug designation, which it may not, the identity of the therapeutic agent and its potential orphan status are publicly disclosed by the FDA. Orphan drug designation does not convey an advantage in, or shorten the duration of, the review and approval process. If a drug which has orphan drug designation subsequently receives the first FDA approval for the indication for which it has such designation, the drug is entitled to orphan drug exclusivity, meaning that the FDA may not approve any other applications to market the same drug for the same indication for a period of seven years, unless the subsequent application is able to demonstrate clinical superiority in efficacy or safety or that it represents a major contribution to patient care. Orphan drug designation does not prevent competitors from developing or marketing different drugs for that indication, or the same drug for other indications.

We received orphan drug designations for Lipoquin for the management of cystic fibrosis and non-cystic fibrosis bronchiectasis in the U.S. We requested orphan drug designation from the FDA for Pulmaquin for the management of bronchiectasis and in June 2011 we were granted orphan drug designation for ciprofloxacin for inhalation for this indication. In June 2012, we received orphan drug designation in the U.S. for liposomal ciprofloxacin plus ciprofloxacin for cystic fibrosis.

We may seek orphan drug designation for other eligible product candidates we develop. However, our inhaled ciprofloxacin may not receive orphan drug marketing exclusivity. Also, it is possible that our competitors could obtain approval, and attendant orphan drug designation or exclusivity, for products that would preclude us from marketing our inhaled ciprofloxacin for these indications for some time.

Foreign regulatory authorities may also provide for orphan drug designations in countries outside the United States. For example, under European guidelines, Orphan Medicinal Product Designation provides 10 years of potential market exclusivity if the product candidate is the first product candidate for the indication approved for marketing in the EU. Orphan drug designation also allows the candidate s sponsor to seek assistance from the European Medicines Agency in optimizing the candidate s clinical development through participation in designing the clinical protocol and preparing the marketing application. Additionally, a drug candidate

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designated by the Commission as an Orphan Medicinal Product may qualify for a reduction in regulatory fees as well as a EU-funded research grant.

In August 2009, the European Medicines Agency granted Orphan Drug Designation to our inhaled liposomal ciprofloxacin drug product candidate Lipoquin (ARD-3100) for the management of lung infections associated with cystic fibrosis.

International Regulation

We are also subject to foreign regulatory requirements governing clinical trials, product manufacturing, marketing and product sales. Our ability to market and sell our products in countries outside the United States will depend upon receiving marketing authorization(s) from appropriate regulatory authorities. We will only be permitted to commercialize our products in a foreign country if the appropriate regulatory authority is satisfied that we have presented adequate evidence of safety, quality and efficacy. Whether or not FDA approval has been obtained, approval of a product by the comparable regulatory authorities of foreign countries must be obtained prior to the commencement of marketing of the product in those countries. Approval of a product by the FDA does not assure approval by foreign regulators. Regulatory requirements, and the approval process, vary widely from country to country, and the time, cost and data needed to secure approval may be longer or shorter than that required for FDA approval. The regulatory approval and oversight process in other countries includes all of the risks associated with the FDA process described above.

Principal Supplier

We currently contract exclusively with Sigma-Tau PharmaSource, Inc. to manufacture inhaled ciprofloxacin, however, we are exploring developing a second source to manufacture inhaled ciprofloxacin. For more information on the risks associated with this arrangement, please see Item 1A Risk Factors We have limited manufacturing capacity and will have to depend on contract manufacturers and collaborators; if they do not perform as expected, our revenues and customer relations will suffer.

Research and Development

Our research and development expenses were approximately $31.2 million for the year ended December 31, 2014 and $8.9 million for the year ended December 31, 2013. For more information regarding our research and development, please see Item 7 Management s Discussion and Analysis Research and Development.

Scientific Advisory Board

We have assembled a scientific advisory board comprised of scientific and product development advisors who provide expertise, on a consulting basis from time to time, in the areas of respiratory diseases, allergy and immunology, pharmaceutical development and drug delivery, including pulmonary delivery, but are employed elsewhere on a full-time basis. As a result, they can only spend a limited amount of time on our affairs. We access scientific and medical experts in academia, as needed, to support our scientific advisory board. The scientific advisory board assists us on issues related to potential product applications, product development and clinical testing. Its members, and their affiliations and areas of expertise, include:

Name	Affiliation	Area of Expertise
Peter R. Byron, Ph.D.	Medical College of Virginia, Virginia Commonwealth University	Aerosol Science/Pharmaceutics
Stephen J. Farr, Ph.D.	Zogenix, Inc.	Pulmonary Delivery/Pharmaceutics
Babatunde Otulana, M.D.	Boehringer Ingelheim	Pulmonary Diseases/Cystic Fibrosis/Regulatory
Adam Wanner, M.D.	University of Miami	Chronic Obstructive Pulmonary Diseases (COPD)

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In addition to our scientific advisory board, for certain indications and programs we assemble groups of experts to assist us on issues specific to such indications and programs.

Employees

As of December 31, 2014, we had eighteen employees. Twelve employees are involved in research and development and product development and six employees are involved in finance and administration. Six employees have advanced scientific degrees.

Our employees are not represented by any collective bargaining agreement.

We also utilize an international network of consultants and contractors, such as clinical research organizations (CROs), clinical manufacturing organizations (CMOs) and various specialists in areas, such as regulatory affairs and business and corporate development.

Corporate History and Website Information

We were incorporated in California in 1991. Our principal executive offices are located at 3929 Point Eden Way, Hayward, California 94545, and our main telephone number is (510) 265-9000. Investors can obtain access to this Annual Report on Form 10-K, our Quarterly Reports on Form 10-Q, our Current Reports on Form 8-K and all amendments to these reports, free of charge, on our website at http://www.aradigm.com as soon as reasonably practicable after such filings are electronically filed with the Securities and Exchange Commission (SEC). Information contained on our website is not part of this Annual Report on Form 10-K or of our other filings with the SEC. The public may read and copy any material we file with the SEC at the SEC s Public Reference Room at 100 F Street, N.W., Washington, D.C., 20549. The public may obtain information on the operations of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an Internet site, http://www.sec.gov that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC.

We have adopted a code of ethics, which is part of our Code of Business Conduct and Ethics that applies to all of our employees, including our principal executive officer and our principal financial and accounting officer. This code of ethics is posted on our website. If we amend or waive a provision of our Code of Business Conduct and Ethics, we intend to post such amendment or waiver on our website, as required by applicable rules.

Executive Officers and Directors

Our directors and executive officers and their ages as of February 28, 2015 are as follows:

Name	Age	Position
Igor Gonda, Ph.D.	67	President, Chief Executive Officer and Director
Nancy E. Pecota	55	Vice President, Finance and Chief Financial Officer and Corporate Secretary
Juergen Froehlich, MD	58	Chief Medical Officer
David Bell	60	Director
Frederick M. Hudson (1)	69	Director

Lafmin Morgan (2)	50	Director
John M. Siebert, Ph.D.(1)(2)(3)	74	Director
Virgil D. Thompson(1)(2)(3)	75	Chairman of the Board and Director

(1) Member of the Audit Committee.
(2) Member of the Compensation Committee.
(3) Member of the Nominating and Corporate Governance Committee.

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Igor Gonda, Ph.D. has served as our President and Chief Executive Officer since August 2006 and as a director since September 2001. From December 2001 to August 2006, Dr. Gonda was the Chief Executive Officer and Managing Director of Acrux Limited, a publicly traded specialty pharmaceutical company located in Melbourne, Australia. From July 2001 to December 2001, Dr. Gonda was our Chief Scientific Officer and, from October 1995 to July 2001, was our Vice President, Research and Development. From February 1992 to September 1995, Dr. Gonda was a Senior Scientist and Group Leader at Genentech, Inc. His key responsibilities at Genentech were the development of the inhalation delivery of rhDNase (Pulmozyme) for the treatment of cystic fibrosis and non-parenteral methods of delivery of biologics. Prior to that, Dr. Gonda held academic positions at the University of Aston in Birmingham, United Kingdom, and the University of Sydney, Australia. Dr. Gonda holds a B.Sc. in Chemistry and a Ph.D. in Physical Chemistry from Leeds University, United Kingdom. Dr. Gonda was the Chairman of our Scientific Advisory Board until August 2006. We believe that Dr. Gonda possesses specific attributes that qualify him to serve as a member of our Board of Directors, including his experience in leading publicly traded pharmaceutical companies, his tenure with our Company and his knowledge of the pharmaceutical industry.

Nancy E. Pecota has served as our Vice President, Finance and Chief Financial Officer since September 2008. From October 2005 to July 2008, Ms. Pecota was the Chief Financial Officer for NuGEN Technologies, Inc., a privately held life sciences tools company. From August 2003 to September 2005, Ms. Pecota was a consultant for early to mid-stage biopharmaceutical companies assisting them in developing fundable business models and assessing and improving internal financial preparation and reporting processes. From March 2001 to April 2003, she was Vice President, Finance and Administration at Signature BioScience, Inc., a privately held biopharmaceutical company. Prior to that, she was Director, Finance and Accounting for ACLARA BioSciences, Inc., a publicly traded biotechnology company. Ms. Pecota holds a B.S. in Economics from San Jose State University.

Juergen Froehlich, MD has served as our Chief Medical Officer since November 2013. He has more than 20 years of pharmaceutical industry experience in preclinical, clinical and regulatory activities at Boehringer Ingelheim, Genentech, Quintiles, Bristol-Myers Squibb, Ipsen and Vertex Pharmaceuticals. While at Genentech, Dr. Froehlich directed the clinical development, submission and approval of Activase for acute ischemic stroke and the early development of Xolair for the treatment of allergic rhinitis and allergic asthma. At Bristol-Myers Squibb, Dr. Froehlich oversaw the global life cycle management for Plavix and Avapro. At Ipsen, he directed the FDA submission and approval for Somatuline for acromegaly, oversaw development Dysport for cervical dystonia as well as clinical studies and regulatory strategies for recombinant porcine factor VIII in hemophilia. Dr. Forehlich was closely involved in the commercialization of various drugs and biologics and alliance activities with other companies. Dr. Froehlich graduated from the Medical School at Wuerzburg University in Germany. He is a Diplomate of the American Board of Clinical Pharmacology, a Fellow of the American College of Clinical Pharmacology and a Fellow of the Faculty of Pharmaceutical Medicine. He also holds a dual executive MBA degree from the Graduate School of Business Administration in Zurich, Switzerland and from the State University of New York at Albany.

David Bell has been a director since August 2013. He currently serves as General Counsel and Vice President of Corporate Operations and Development of Grifols and Corporate Vice President of Grifols. He joined Grifols when it entered the U.S. market in 2003. Prior to joining Grifols, Mr. Bell was general counsel to Alpha Therapeutic Corporation following a 23-year career as a corporate litigator. We believe that Mr. Bell is qualified to serve as a member of our Board of Directors because of his legal experience, experience in the pharmaceutical industry and the perspective he brings as an affiliate of one of our major shareholders.

Frederick Hudson has been a director since May 2014. Mr. Hudson retired as a partner in charge of the health care audit practice for the Washington-Baltimore business unit of the accounting firm of KPMG, LLP on January 1, 2006

after a 37-year career with the firm. He also serves in a board capacity with the Board of Financial Administration of the Catholic Archdiocese of Baltimore. He chairs the audit committees of each of the Boards of Directors of Supermus Pharmaceuticals, Inc. and Educate, Inc. and chairs the finance committee of

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GBMC Healthcare, Inc. and its affiliate, Greater Baltimore Medical Center. He is also the director of Maxim Health Care Services, Inc. Mr. Hudson received a B.S. in accounting from Loyola University Maryland and is a Certified Public Accountant. Mr. Hudson is the Chairman of our Audit Committee and the designated audit committee financial expert . We believe that Mr. Hudson s extensive accounting and health care audit experience qualify him to serve as a member of our board of directors.

Lafmin Morgan has been a director since August 2013. . He currently serves as President of Bioscience and Hospital Divisions of Grifols and Corporate Vice President of Grifols. Previously, he served as Vice President of U.S. Product Management of Talecris Biotherapeutics Holdings Corp, a wholly owned indirect subsidiary of Grifols (Talecris). Mr. Morgan joined Talecris from GlaxoSmithKline, where he served for more than twenty years in finance, sales, commercial strategy and marketing roles across multiple therapeutic areas. We believe that Mr. Morgan is qualified to serve as a member of our Board of Directors because of his experience in the pharmaceutical industry and the perspective he brings as an affiliate of one of our major shareholders.

John M. Siebert, Ph.D. has been a director since November 2006. From May 2014 to present Dr. Siebert has been CEO of Chase Pharmaceuticals Corporation. Dr. Siebert served as a Partner and Chief Operating Officer of New Rhein Healthcare Investors, LLC from 2009 to 2014. From May 2003 to October 2008, Dr. Siebert was the Chairman and Chief Executive Officer of CyDex, Pharmaceuticals, Inc., a privately held specialty pharmaceutical company. From September 1995 to April 2003, he was President and Chief Executive Officer of CIMA Labs Inc., a publicly traded drug delivery company. From 1992 to 1995, Dr. Siebert was Vice President, Technical Affairs at Dey Laboratories, Inc., a privately held pharmaceutical company. From 1988 to 1992, he headed a division R&D and Quality group at Bayer Corporation. Prior to that, Dr. Siebert was employed by E.R. Squibb & Sons, Inc., G.D. Searle & Co., Gillette and The Procter & Gamble Company. Dr. Siebert holds a B.S. in Chemistry from Illinois Benedictine University, an M.S. in Organic Chemistry from Wichita State University and a Ph.D. in Organic Chemistry from the University of Missouri. Dr. Siebert is a Director of Supernus Pharmaceuticals, Inc., a publicly traded pharmaceutical company. Dr. Siebert serves on the Audit Committee and Compensation Committees at Supernus. Dr. Siebert is also a member of the Board of Directors of Accu-Break Pharmaceuticals. We believe that Dr. Siebert is qualified to serve as a member of our board of directors because of his experience as an executive officer with both publicly traded and private corporations in the pharmaceutical industry.

Virgil D. Thompson has been a director since June 1995 and has been Chairman of the Board since January 2005. Since July 2009, Mr. Thompson has been Chief Executive Officer and a director of Spinnaker Biosciences, Inc., a privately held ophthalmic drug delivery company. From November 2002 until June 2007, Mr. Thompson served as President and Chief Executive Officer of Angstrom Pharmaceuticals, Inc., a privately held pharmaceutical company. From September 2000 to November 2002, Mr. Thompson was President, Chief Executive Officer and a director of Chimeric Therapies, Inc., a privately held biotechnology company. From May 1999 until September 2000, Mr. Thompson was the President, Chief Operating Officer and a director of Savient Pharmaceuticals, a publicly traded specialty pharmaceutical company. From January 1996 to April 1999, Mr. Thompson was the President and Chief Executive Officer and a director of Cytel Corporation, a publicly traded biopharmaceutical company that was subsequently acquired by IDM Pharma, Inc. From 1994 to 1996, Mr. Thompson was President and Chief Executive Officer of Cibus Pharmaceuticals, Inc., a privately held drug delivery device company. From 1991 to 1993, Mr. Thompson was President of Syntex Laboratories, Inc., a U.S. subsidiary of Syntex Corporation, a publicly traded pharmaceutical company. Mr. Thompson holds a B.S. in Pharmacy from Kansas University and a J.D. from The George Washington University Law School. Mr. Thompson is a director of Mallinckrodt Pharmaceuticals, a publicly traded pharmaceutical company. Mr. Thompson is also a director of GenZ Corp., a private agribusiness company. We believe that Mr. Thompson possesses specific attributes that qualify him to serve as a member of our board of

directors, including his experience as both an executive officer and director of publicly traded and private corporations in the pharmaceutical industry.

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Item 1A. *Risk Factors*

Except for historical information contained herein, the discussion in this Annual Report on Form 10-K contains forward-looking statements, including, without limitation, statements regarding timing and results of clinical trials, the maintenance and establishment of corporate partnering arrangements, the anticipated commercial introduction of our products and the timing of our cash requirements. These forward-looking statements involve certain risks and uncertainties that could cause actual results to differ materially from those expressed in, or implied by, any such forward-looking statements. Potential risks and uncertainties include, without limitation, those mentioned in this report and in particular the factors described below.

Risks Related to Our Business

Our dependence on collaborators may delay or require that we terminate certain of our programs, and any such delay or termination would harm our business prospects and stock price.

Our commercialization strategy for certain of our product candidates depends on our ability to enter into or maintain agreements with collaborators (such as the Grifols collaboration transaction) and to obtain assistance and funding for the development and potential commercialization of our product candidates. Supporting diligence activities conducted by potential collaborators and negotiating the financial and other terms of a collaboration agreement are long and complex processes with uncertain results. Collaborations may involve greater uncertainty for us, as we have less control over certain aspects of our collaborative programs than we do over our proprietary development and commercialization programs. We may determine that continuing a collaboration under the terms provided is not in our best interest and, if we are able to under the terms of the agreement, we may terminate the collaboration. Our collaborators could delay or terminate their agreements with us, and our products subject to collaborative arrangements may never be successfully commercialized.

Further, our present or future collaborators may pursue alternative technologies or develop alternative products either on their own or in collaboration with others, including our competitors, and the priorities or focus of our collaborators may shift such that our programs receive less attention or resources than we would like, or they may be terminated altogether. Any such actions by our collaborators may adversely affect our business prospects and ability to earn revenues. In addition, we could have disputes with our present or future collaborators, such as the interpretation of terms in our agreements. Any such disagreements could lead to delays in the development or commercialization of any potential products or could result in time-consuming and expensive litigation or arbitration, which may not be resolved in our favor.

Even with respect to certain other programs that we intend to commercialize ourselves, we may enter into agreements with collaborators to share in the burden of conducting clinical trials, manufacturing and marketing our product candidates or products. In addition, our ability to apply our proprietary technologies to develop proprietary drugs will depend on our ability to establish and maintain licensing arrangements or other collaborative arrangements with the holders of proprietary rights to such drugs. We may not be able to establish such arrangements on favorable terms or at all, and our future collaborative arrangements may not be successful.

We are a development-stage company and will require substantial capital to complete the development of our product candidates and commercialize them.

You must evaluate us in light of the uncertainties and complexities present in a development-stage company. All of our potential products are in research or development. Our potential drug products require extensive research, development and pre-clinical and clinical testing. Our potential products also may involve lengthy regulatory reviews before they can be sold. Because none of our product candidates has yet received approval by the FDA, we cannot assure you that our research and development efforts will be successful, any of our potential products will be proven safe and effective or regulatory clearance or approval to sell any of our potential products will be obtained. We cannot assure you that any of our potential products can be manufactured in commercial quantities or at an acceptable cost or marketed successfully. We may abandon the development of

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some or all of our product candidates at any time and without prior notice. We must incur substantial up-front expenses to develop and commercialize products and failure to achieve commercial feasibility, demonstrate safety, achieve clinical efficacy, obtain regulatory approval or successfully manufacture and market products will negatively impact our business. Running clinical trials and developing an investigational drug for commercialization involve significant expense, and any unexpected delays or other issues in the development process can result in significant additional expense. We will likely need to raise additional capital prior to commercialization of our leading product candidate. We cannot assure you that we will be able to raise additional capital when needed on terms acceptable to the Company or at all.

We have a history of losses, we expect to incur losses for at least the foreseeable future, and we may never attain or maintain profitability.

We have never been profitable and have incurred significant losses in each year since our inception. As of December 31, 2014, we have an accumulated deficit of approximately $388.3 million. We have not had any significant direct product sales and do not anticipate receiving revenues from the sale of any of our products for at least the next few years, if ever. While our agreement with Grifols, which includes reimbursement of the majority of development expenses associated with our Pulmaquin program, has resulted in reduced operating expenses and capital expenditures, we expect to continue to incur losses for the foreseeable future as we:

- continue drug product development efforts;
- conduct preclinical testing and clinical trials;
- pursue additional applications for our existing delivery technologies;
- outsource the commercial-scale production of our products; and
- establish a sales and marketing force to commercialize certain of our proprietary products if these products obtain regulatory approval.

To achieve and sustain profitability, we must, alone or with others such as our partner Grifols, successfully develop, obtain regulatory approval for, manufacture, market and sell our products. We expect to incur substantial expenses in our efforts to develop and commercialize products and we may never generate sufficient product or contract research revenues to become profitable or to sustain profitability.

The results of later stage clinical trials of our product candidates may not be as favorable as earlier trials and that could result in additional costs and delay or prevent commercialization of our products.

Although we believe the limited and preliminary data we have regarding our potential products are encouraging, the results of initial preclinical safety testing and clinical trials do not necessarily predict the results that we will get from subsequent or more extensive preclinical safety testing and clinical trials. Pre-clinical safety testing and clinical trials

of our product candidates may not demonstrate that they are safe and effective to the extent necessary to obtain collaborative partnerships and/or regulatory approvals. Many companies in the biopharmaceutical industry have suffered significant setbacks in advanced clinical trials, even after receiving promising results in earlier trials. If we cannot adequately demonstrate through pre-clinical studies and the clinical trial process that a therapeutic product we are developing is safe and effective, regulatory approval of that product would be delayed or prevented, which would impair our reputation, increase our costs and prevent us from earning revenues. For example, while both of our Phase 2b clinical trials (ORBIT-1 and ORBIT-2) with inhaled ciprofloxacin showed promising initial efficacy and safety results in patients with BE and our Phase 2a clinical trials showed promising results in both patients with CF and BE, there is no guarantee that longer term studies such as our Phase 3 studies (ORBIT-3 and ORBIT-4), in larger patient populations will confirm these results or that we will be able to conduct studies that will provide satisfactory evidence of all efficacy and safety endpoints required by the regulatory authorities.

At present we intend to use Pulmaquin in our future clinical trials in cystic fibrosis. We have not yet tested Pulmaquin in CF patients; all previous clinical trial work in CF patients was conducted using our Lipoquin

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formulation. Although Pulmaquin performed well in BE patients in the Phase 2b study ORBIT-2 and the liposomal component of Pulmaquin (Lipoquin) performed well in a Phase 2a study in CF patients, there is no guarantee that Pulmaquin will prove safe and effective in CF patients.

For our lead product candidate, Pulmaquin, regulatory authorities have requested additional animal toxicology and safety studies prior to product approval for bronchiectasis (BE). Our Phase 3 clinical trials in BE may be successful but the results of these animal toxicology studies may be unacceptable to the regulatory authorities and may delay or prevent the approval of Pulmaquin for BE.

Although we have already submitted a substantial amount of safety data to the regulatory authorities on Pulmaquin and we also have conducted a variety of preclinical studies to support our product development, regulatory authorities have requested that we conduct a 2 year carcinogenicity study in rats with inhaled Pulmaquin prior to product approval for BE. This study is currently underway. A 9 month inhalation safety study in dogs may also be needed to support approval for marketing this product for BE in the U.S. and the EU. We have taken the initiative to conduct this study. Although this study has been completed and the final audited study report has been submitted to the FDA we do not know if the FDA will require further toxicology studies. Longer term animal safety studies may produce toxicity findings that were not found in shorter, earlier studies, which could prevent commercialization of Pulmaquin or could necessitate the conduct of further animal safety studies, leading to delays and additional costs. Toxicology findings from animal studies may also be the reason for more extensive safety monitoring and longer and larger human clinical trials than we originally anticipated, further adding to the cost and time prior to product commercialization.

If our future clinical trials are delayed because of delays in obtaining patient enrollment or other problems, we would incur additional costs and delay the potential receipt of revenues.

Before we or any current or future collaborators can file for regulatory approval for the commercial sale of our potential products, the FDA will require extensive preclinical safety testing and clinical trials to demonstrate their safety and efficacy. Completing clinical trials in a timely manner depends on, among other factors, obtaining the timely startup of clinical study sites and the timely enrollment of patients. Our ability to recruit patients depends on a number of factors, including the size of the patient population, the proximity of patients to clinical sites, the eligibility criteria for the study and the existence of competing clinical trials. We are aware that Bayer is continuing to recruit patients for their Phase 3 clinical trials of their inhaled ciprofloxacin dry powder formulation in non-cystic fibrosis bronchiectasis patients in several countries where we are conducting our Pulmaquin Phase 3 trials, which makes recruiting individuals for our clinical trials more difficult.

We are currently conducting or planning to conduct our ORBIT-3 and ORBIT-4 clinical trials in numerous countries throughout the world. Each country has regulatory and contractual requirements that must be met prior to the enrollment of any patients in our clinical trials. This process can be time consuming and result in additional delays and expenses. We cannot guarantee that we will be successful in obtaining on a timely basis, or at all, the regulatory and contractual approvals required in each country and for each clinical site that are necessary to enroll patients in our studies and this could delay the completion of our studies.

Delays in our present or future clinical trials because of delays in patient enrollment or other problems may result in increased costs, program delays, or both, and the loss of potential revenues.

We are subject to extensive regulation, including the requirement of approval before any of our product candidates can be marketed. We may not obtain regulatory approval for our product candidates on a timely basis, or at all.

We and our products are subject to extensive and rigorous regulation by the federal government, principally the FDA, and by state and local government agencies. Both before and after regulatory approval, the development, testing, manufacture, quality control, labeling, storage, approval, advertising, promotion, sale,

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distribution and export of our potential products are subject to regulation. Pharmaceutical products that are marketed abroad are also subject to regulation by foreign governments. Our products cannot be marketed in the United States without FDA approval. The process for obtaining FDA approval for drug products is generally lengthy, expensive and uncertain. In September 2014, we were granted Fast Track Designation for Pulmaquin for non-CF BE patients with chronic lung infections with *Pseudomonas aeruginosa*, The FDA gives Fast Track status to facilitate the development of new drugs intended to treat serious or life-threatening conditions and which demonstrate the potential to address unmet medical needs, with the goal of getting important new drugs to patients earlier. However, having Fast Track Designation is no guarantee that the approval process will actually result in a faster or more streamlined process and to date, we have not sought or received approval from the FDA or any corresponding foreign authority for any of our product candidates.

Even though we intend to apply for approval of most of our products in the United States under Section 505(b)(2) of the FDCA, which applies to reformulations of approved drugs and which may require smaller and shorter safety and efficacy testing than that for entirely new drugs, the approval process will still be costly, time-consuming and uncertain. We, or our collaborators, may not be able to obtain necessary regulatory approvals on a timely basis, if at all, for any of our potential products. Even if granted, regulatory approvals may include significant limitations on the uses for which products may be marketed. Failure to comply with applicable regulatory requirements can, among other things, result in warning letters, imposition of civil penalties or other monetary payments, delay in approving or refusal to approve a product candidate, suspension or withdrawal of regulatory approval, product recall or seizure, operating restrictions, interruption of clinical trials or manufacturing, injunctions and criminal prosecution.

Regulatory authorities may delay or not approve our product candidates even if the product candidates meet safety and efficacy endpoints in clinical trials or the approvals may be too limited for us to earn sufficient revenues.

The FDA and other foreign regulatory agencies can delay approval of, or refuse to approve, our product candidates for a variety of reasons, including failure to meet safety and/or efficacy endpoints in our clinical trials. Our pharmaceutical product candidates may not be approved even if they achieve their endpoints in clinical trials. Regulatory agencies, including the FDA, may disagree with our trial design and our interpretations of data from preclinical studies and clinical trials. Even if a product candidate is approved, it may be approved for fewer or more limited indications than requested or the approval may be subject to the performance of significant post-marketing studies that can be long and costly. In addition, regulatory agencies may not approve the labeling claims that are necessary or desirable for the successful commercialization of our product candidates. Any limitation, condition or denial of approval would have an adverse effect on our business, reputation and results of operations.

Even if we are granted initial FDA approval for any of our product candidates, we may not be able to maintain such approval, which would reduce our revenues.

Even if we are granted initial regulatory approval for a product candidate, the FDA and similar foreign regulatory agencies can limit or withdraw product approvals for a variety of reasons, including failure to comply with regulatory requirements, changes in regulatory requirements, problems with manufacturing facilities or processes or the occurrence of unforeseen problems, such as the discovery of previously undiscovered side effects. If we are able to obtain any product approvals, they may be limited or withdrawn or we may be unable to remain in compliance with regulatory requirements. Both before and after approval we, our present and future collaborators and our products are subject to a number of additional requirements. For example, certain changes to the approved product, such as adding new indications, certain manufacturing changes and additional labeling claims are subject to additional FDA review and approval. Advertising and other promotional material must comply with FDA requirements. We, our collaborators

and our manufacturers will be subject to continuing review and periodic inspections by the FDA and other authorities, where applicable, and must comply with ongoing requirements, including the FDA s GMP requirements. Once the FDA approves a product, a

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manufacturer must provide certain updated safety and efficacy information, submit copies of promotional materials to the FDA and make certain other required reports. Product approvals may be withdrawn if regulatory requirements are not complied with or if problems concerning safety or efficacy of the product occur following approval. Any limitation or withdrawal of approval of any of our products could delay or prevent sales of our products, which would adversely affect our revenues. Further continuing regulatory requirements may involve expensive ongoing monitoring and testing requirements.

Because our inhaled ciprofloxacin programs may rely on the FDA s and European Medicines Agency s grant of orphan drug designation for potential market exclusivity, the product may not be able to obtain market exclusivity and could be barred from the market in the US for up to seven years or European Union for up to ten years.

The FDA has granted orphan drug designation for our liposomal ciprofloxacin drug product candidate for the management of CF and BE and to our ciprofloxacin for inhalation for the management of bronchiectasis. FDA also granted orphan drug designation to our proprietary drug product of liposomal ciprofloxacin for the management of CF. Orphan drug designation is intended to encourage research and development of new therapies for diseases that affect fewer than 200,000 patients in the United States. The designation provides the opportunity to obtain market exclusivity, even in the absence of a granted patent or other intellectual property protection, for seven years from the date of the FDA s approval of an NDA. However, the market exclusivity is granted only to the first chemical entity to be approved by the FDA for a given indication. Therefore, if another similar inhaled ciprofloxacin product were to be approved by the FDA for a CF or BE indication before our product, then we may be blocked from launching our product in the United States for seven years, unless we are able to demonstrate to the FDA clinical superiority of our product on the basis of safety or efficacy. For example, Bayer HealthCare is developing an inhaled dry powder formulation of ciprofloxacin for the treatment of respiratory infections in CF and BE. Bayer has obtained orphan drug status for their inhaled powder formulation of ciprofloxacin in the United States for the treatment of BE and in the United States and European Union for the treatment of CF.

In August 2009, the European Medicines Agency granted orphan drug designation to our inhaled liposomal ciprofloxacin drug product candidate Lipoquin (ARD-3100) for the treatment of lung infections associated with CF. Under European guidelines, Orphan Medicinal Product Designation provides 10 years of potential market exclusivity if the product candidate is the first product candidate for the indication approved for marketing in the EU. We may seek to develop additional products that incorporate drugs that have received orphan drug designations for specific indications. In each case, if our product is not the first to be approved by the FDA or European Medicines Agency for a given orphan indication, we may not be able to access the target market in the United States and/or the EU, which would adversely affect our ability to earn revenues.

We will have to depend on contract manufacturers and collaborators: if they do not perform as expected, our revenues and customer relations will suffer.

We intend to use contract manufacturers to produce our products. We may not be able to maintain satisfactory contract manufacturing arrangements. If we are not, there may be a significant delay before we find an alternative contract manufacturer or we may not find an alternative contract manufacturer at all. Further, we, our contract manufacturers and our collaborators are required to comply with the FDA s GMP requirements that relate to product testing, quality assurance, manufacturing and maintaining records and documentation. We and our contract manufacturers or our collaborators may not be able to comply with the applicable GMP and other FDA regulatory requirements for manufacturing, which could result in an enforcement or other action, prevent commercialization of our product candidates and impair our reputation and results of operations.

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If any products that we or our collaborators may develop do not attain adequate market acceptance by healthcare professionals and patients, our business prospects and results of operations will suffer.

Even if we or our collaborators successfully develop one or more products, such products may not be commercially acceptable to healthcare professionals and patients, who will have to choose our products over alternative products for the same disease indications, and many of these alternative products will be more established than ours. For our products to be commercially viable we will need to demonstrate to healthcare professionals and patients that our products afford benefits to the patients that are cost-effective as compared to the benefits of alternative therapies. Our ability to demonstrate this depends on a variety of factors, including:

- the demonstration of efficacy and safety in clinical trials;
- the existence, prevalence and severity of any side effects;
- the potential or perceived advantages or disadvantages compared to alternative treatments;
- the timing of market entry relative to competitive treatments;
- the pricing relative to competitive products;
- the relative cost, convenience, product dependability and ease of administration;
- the strength of marketing and distribution support;
- the sufficiency of coverage and reimbursement of our product candidates by governmental and other third-party payors; and
- the product labeling or product insert required by the FDA or regulatory authorities in other countries.

Our product revenues will be adversely affected if, due to these or other factors, the products we or our collaborators are able to commercialize do not gain significant market acceptance.

We are in the early stages of development and commercialization for our inhaled nicotine product and commercialization of this product cannot be assured.

While the preliminary development work and early testing of the commercial potential of this direct-to-consumer product have been favorable, there are many significant issues that are unresolved and could severely limit the

commercial potential of this product. The changes to the regulatory environment discussed in Management s Discussion and Analysis of Financial Condition and Results of Operations-Overview are evolving and the resolution of any necessary regulatory approvals is uncertain at this time. Smokers acceptance of this product for use in smoking cessation or as a cigarette replacement is unknown. Competition for our product exists from currently marketed smoking cessation products, such as nicotine replacement products, as well as from electronic cigarettes. In order to commercialize this product, substantial amounts of capital will be required to establish and operate a high volume manufacturing facility. We have no experience with developing, manufacturing or selling commercial products.

In order to market certain of our proprietary products, we may establish our own sales, marketing and distribution capabilities. We have no experience in these areas, and if we have problems establishing these capabilities, the commercialization of our products would be impaired.

Except for our inhaled ciprofloxacin program which we have licensed to Grifols, we may establish our own sales, marketing and distribution capabilities to market certain products to concentrated, easily addressable prescriber markets. We have no experience in these areas, and developing these capabilities will require significant expenditures on personnel and infrastructure. While we may market products that are aimed at a small patient population, we may not be able to create an effective sales force around even a niche market. In addition, some of our product candidates will require a large sales force to call on, educate and support physicians and patients. While we have entered into collaborations and intend to enter into future collaborations with one or

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more pharmaceutical companies to sell, market and distribute such products, we may not be able to maintain such an arrangement or enter into any future arrangement on acceptable terms, if at all. Any collaboration we enter into may not be effective in generating meaningful product royalties or other revenues for us.

We depend upon our proprietary technologies, and we may not be able to protect our potential competitive proprietary advantage.

Our business and competitive position is dependent upon our and our present and future collaborators ability to protect our proprietary technologies related to various aspects of pulmonary drug delivery and drug formulation. While our intellectual property rights may not provide a significant commercial advantage for us, our patents and know-how are intended to provide protection for important aspects of our technology, including methods for aerosol generation, devices used to generate aerosols, breath control, compliance monitoring, certain pharmaceutical formulations, design of dosage forms and their manufacturing and testing methods. In addition, we are maintaining as non-patented trade secrets some of the key elements of our manufacturing technologies, for example, those associated with the production of inhaled ciprofloxacin.

Our ability to compete effectively will also depend to a significant extent on our and our present and future collaborators ability to obtain and enforce patents and maintain trade secret protection over our proprietary technologies. The coverage claimed in a patent application typically is significantly reduced before a patent is issued, either in the United States or abroad. Consequently, any of our pending or future patent applications may not result in the issuance of patents and any patents issued may be subjected to further proceedings limiting their scope and may in any event not contain claims broad enough to provide meaningful protection. Any patents that are issued to us or our present and future collaborators may not provide significant proprietary protection or competitive advantage, and may be circumvented or invalidated. In addition, unpatented proprietary rights, including trade secrets and know-how, can be difficult to protect and may lose their value if they are independently developed by a third party or if their secrecy is lost. Further, because development and commercialization of pharmaceutical products can be subject to substantial delays, patents may expire and provide only a short period of protection, if any, following commercialization of products.

We may infringe on the intellectual property rights of others, and any litigation could force us to stop developing or selling potential products and could be costly, divert management attention and harm our business.

We must be able to develop products without infringing the proprietary rights of other parties. Because the markets in which we operate involve established competitors with significant patent portfolios, including patents relating to compositions of matter, methods of use and methods of drug delivery, it could be difficult for us to use our technologies or develop products without infringing the proprietary rights of others. We may not be able to design around the patented technologies or inventions of others and we may not be able to obtain licenses to use patented technologies on acceptable terms, or at all. If we cannot operate without infringing on the proprietary rights of others, we will not earn product revenues.

If we are required to defend ourselves in a lawsuit, we could incur substantial costs and the lawsuit could divert management s attention, regardless of the lawsuit s merit or outcome. These legal actions could seek damages and seek to enjoin testing, manufacturing and marketing of the accused product or process. In addition to potential liability for significant damages, we could be required to obtain a license to continue to manufacture or market the accused product or process and any license required under any such patent may not be made available to us on acceptable terms, if at all.

Periodically, we review publicly available information regarding the development efforts of others in order to determine whether these efforts may violate our proprietary rights. We may determine that litigation is necessary to enforce our proprietary rights against others. Such litigation could result in substantial expense, regardless of its outcome, and may not be resolved in our favor.

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Furthermore, patents already issued to us or our pending patent applications may become subject to dispute, and any disputes could be resolved against us. In addition, because patent applications in the United States are currently maintained in secrecy for a period of time prior to issuance, patent applications in certain other countries generally are not published until more than 18 months after they are first filed, and publication of discoveries in scientific or patent literature often lags behind actual discoveries, we cannot be certain that we were the first creator of inventions covered by our pending patent applications or that we were the first to file patent applications on such inventions.

We are in a highly competitive market, and our competitors have developed or may develop alternative therapies for our target indications, which would limit the revenue potential of any product we may develop.

We compete with pharmaceutical, biotechnology and drug delivery companies, hospitals, research organizations, individual scientists and nonprofit organizations engaged in the development of drugs and therapies for the disease indications we are targeting. Our competitors may succeed, and many already have succeeded, in developing competing technologies for the same disease indications, obtaining FDA approval for products or gaining acceptance for the same markets that we are targeting. If we are not first to market, it may be more difficult for us and our present and future collaborators to enter markets as second or subsequent competitors and become commercially successful.

We are aware of a number of companies that are developing or have developed therapies to address indications we are targeting, including major pharmaceutical companies such as Bayer, Genentech (now a part of Roche), Gilead Sciences, GlaxoSmith Kline, Johnson & Johnson, Novartis and Pfizer. For example, we are aware that Bayer is currently conducting two Phase 3 clinical trials of their inhaled ciprofloxacin dry powder formulation in non-cystic fibrosis bronchiectasis patients in several countries. Certain of these companies are addressing these target markets with pulmonary products that are similar to ours. These companies and many other potential competitors have greater research and development, manufacturing, marketing, sales, distribution, financial and managerial resources and experience than we have and many of these companies may have products and product candidates that are on the market or in a more advanced stage of development than our product candidates. Our ability to earn product revenues and our market share would be substantially harmed if any existing or potential competitors brought a product to market before we or our present and future collaborators were able to, or if a competitor introduced at any time a product superior to or more cost-effective than ours.

If we do not continue to attract and retain key employees, our product development efforts will be delayed and impaired.

We depend on a small number of key management and technical personnel. Our success also depends on our ability to attract and retain additional highly qualified management, clinical, regulatory and development personnel. There is a shortage of skilled personnel in our industry, we face competition in our recruiting activities, and we may not be able to attract or retain qualified personnel. Losing any of our key employees, particularly our President and Chief Executive Officer, Dr. Igor Gonda, and Dr. Juergen Froehlich, our Chief Medical Officer, could impair our product development efforts and otherwise harm our business. Any of our employees may terminate their employment with us at will.

If we market our products in other countries, we will be subject to different laws and regulations and we may not be able to adapt to those laws and regulations, which could increase our costs while reducing our revenues.

If we market any approved products in foreign countries, we will be subject to different laws and regulations, particularly with respect to intellectual property rights and regulatory approval. To maintain a proprietary market

position in foreign countries, we may seek to protect some of our proprietary inventions

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through foreign counterpart patent applications. Statutory differences in patentable subject matter may limit the protection we can obtain on some of our inventions outside of the United States. The diversity of patent laws may make our expenses associated with the development and maintenance of intellectual property in foreign jurisdictions more expensive than we anticipate. We probably will not obtain the same patent protection in every market in which we may otherwise be able to potentially generate revenues. In addition, in order to market our products in foreign jurisdictions, we and our present and future collaborators must obtain required regulatory approvals from foreign regulatory agencies and comply with extensive regulations regarding safety and quality. We may not be able to obtain regulatory approvals in such jurisdictions and we may have to incur significant costs in obtaining or maintaining any foreign regulatory approvals. If approvals to market our products are delayed, if we fail to receive these approvals, or if we lose previously received approvals, our business would be impaired as we could not earn revenues from sales in those countries.

We may be exposed to product liability claims, which would hurt our reputation, market position and operating results.

We face an inherent risk of product liability as a result of the clinical testing of our product candidates in humans and will face an even greater risk upon commercialization of any products. These claims may be made directly by consumers or by pharmaceutical companies or others selling such products. We may be held liable if any product we develop causes injury or is found otherwise unsuitable during product testing, manufacturing or sale. Regardless of merit or eventual outcome, liability claims would likely result in negative publicity, decreased demand for any products that we may develop, injury to our reputation and suspension or withdrawal of clinical trials. Any such claim will be very costly to defend and also may result in substantial monetary awards to clinical trial participants or customers, loss of revenues and the inability to commercialize products that we develop. Although we currently have clinical trials and product liability insurance, we may not be able to maintain such insurance or obtain additional insurance on acceptable terms, in amounts sufficient to protect our business, or at all. A successful claim brought against us in excess of our insurance coverage would have a material adverse effect on our results of operations.

If we cannot arrange for adequate third-party reimbursement for our products, our revenues will suffer.

In both domestic and foreign markets, sales of our potential products will depend in substantial part on the availability of adequate reimbursement from third-party payors such as government health administration authorities, private health insurers and other organizations. Third-party payors often challenge the price and cost-effectiveness of medical products and services. Significant uncertainty exists as to the adequate reimbursement status of newly approved health care products. Any products we are able to successfully develop may not be reimbursable by third-party payors. In addition, our products may not be considered cost-effective and adequate third-party reimbursement may not be available to enable us to maintain price levels sufficient to realize a profit. Legislation and regulations affecting the pricing of pharmaceuticals may change before our products are approved for marketing and any such changes could further limit reimbursement. If any products we develop do not receive adequate reimbursement, our revenues will be severely limited.

Our use of hazardous materials could subject us to liabilities, fines and sanctions.

Our laboratory and clinical testing sometimes involves the use of hazardous and toxic materials. We are subject to federal, state and local laws and regulations governing how we use, manufacture, handle, store and dispose of these materials. Although we believe that our safety procedures for handling and disposing of such materials comply in all material respects with all federal, state and local regulations and standards, there is always the risk of accidental

contamination or injury from these materials. In the event of an accident, we could be held liable for any damages that result and such liability could exceed our financial resources. Compliance with environmental and other laws may be expensive and current or future regulations may impair our development or commercialization efforts.

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If we are unable to effectively implement or maintain a system of internal control over financial reporting, we may not be able to accurately or timely report our financial results and our stock price could be adversely affected.

Section 404 of the Sarbanes-Oxley Act of 2002 requires us to evaluate the effectiveness of our internal control over financial reporting as of the end of each fiscal year, and to include a management report assessing the effectiveness of our internal control over financial reporting in our Annual Report on Form 10-K for that fiscal year. Our ability to comply with the annual internal control report requirements will depend on the effectiveness of our financial reporting and data systems and controls across our company. We expect these systems and controls to involve significant expenditures and to become increasingly complex as our business grows. To effectively manage this complexity, we will need to continue to improve our operational, financial and management controls and our reporting systems and procedures. Any failure to implement required new or improved controls, or difficulties encountered in the implementation or operation of these controls, could harm our operating results and cause us to fail to meet our financial reporting obligations, which could adversely affect our business and reduce our stock price.

Risks Related to Our Common Stock

The price of our common stock has been and may continue to be volatile.

The stock markets, in general, and the markets for drug delivery and pharmaceutical stocks, in particular, have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. These broad market fluctuations may adversely affect the trading price of our common stock. In addition, the limited trading volume of our stock may contribute to its volatility.

Although our shares were approved for listing by NASDAQ, we cannot assure you that we will be successful in maintaining a NASDAQ listing continuously or that we will be able to meet NASDAQ listing standards going forward. Further, our stock price may be subject to additional volatility as a result of our relisting on the NASDAQ Capital Market or as a result of the Reverse Split. Because the Reverse Split resulted in a reduction in the number of our outstanding shares of capital stock and the fact that our stock has a limited trading volume, the price of our common stock may experience volatility.

Our stock price is likely to remain volatile.

The market prices for securities of many companies in the drug delivery and pharmaceutical industries, including ours, have historically been highly volatile, and the market from time to time has experienced significant price and volume fluctuations unrelated to the operating performance of particular companies. The market prices for our common stock may continue to be highly volatile in the future. The market prices for our common stock may be influenced by many factors, including:

investor perception of us;

failure to maintain or establish collaborative relationships;

market conditions relating to our segment of the industry or the securities markets in general;

sales of our stock by certain large institutional shareholders;

research analyst recommendations and our ability to meet or exceed quarterly performance expectations of analysts or investors;

fluctuations in our operating results;

announcements of technological innovations or new commercial products by us or our competitors;

publicity regarding actual or potential developments relating to products under development by us or our competitors;

developments or disputes concerning patents or proprietary rights;

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delays in the development or approval of our product candidates;

regulatory developments in both the United States and foreign countries;

concern of the public or the medical community as to the safety or efficacy of our products, or products deemed to have similar safety risk factors or other similar characteristics to our products;

future sales or expected sales of substantial amounts of common stock by shareholders;

our ability to raise capital; and

economic and other external factors.

In the past, class action securities litigation has often been instituted against companies promptly following volatility in the market price of their securities. Any such litigation instigated against us would, regardless of its merit, result in substantial costs and a diversion of management s attention and resources.

We have implemented certain anti-takeover provisions, which may make an acquisition less likely or might result in costly litigation or proxy battles.

Certain provisions of our articles of incorporation and the California Corporations Code could discourage a party from acquiring, or make it more difficult for a party to acquire, control of our company without approval of our Board of Directors. These provisions could also limit the price that certain investors might be willing to pay in the future for shares of our common stock. Certain provisions allow our Board of Directors to authorize the issuance, without shareholder approval, of preferred stock with rights superior to those of the common stock. We are also subject to the provisions of Section 1203 of the California Corporations Code, which requires us to provide a fairness opinion to our shareholders in connection with their consideration of any proposed interested party reorganization transaction.

We have adopted a shareholder rights plan, commonly known as a poison pill. We have also adopted an executive officer severance plan and entered into change of control agreements with our executive officers, both of which may provide for the payment of benefits to our officers and other key employees in connection with an acquisition. The provisions of our articles of incorporation, our poison pill, our severance plan and our change of control agreements, and provisions of the California Corporations Code may discourage, delay or prevent another party from acquiring us or reduce the price that a buyer is willing to pay for our common stock.

One of our shareholders may choose to pursue a lawsuit or engage in a proxy battle with management to limit our use of one or more of these anti-takeover protections. Any such lawsuit or proxy battle would, regardless of its merit or outcome, result in substantial costs and a diversion of management s attention and resources.

We have never paid dividends on our capital stock, and we do not anticipate paying cash dividends for at least the foreseeable future.

We have never declared or paid cash dividends on our capital stock. We do not anticipate paying any cash dividends on our common stock for at least the foreseeable future. We currently intend to retain all available funds and future earnings, if any, to fund the development and growth of our business. Therefore, our shareholders will not receive any funds absent a sale of their shares. We cannot assure shareholders of a positive return on their investment if they sell their shares, nor can we assure that shareholders will not lose the entire amount of their investment.

Conflicts of interest and other disputes may arise between Grifols and us that may be resolved in a manner unfavorable to us and our other shareholders.

In August 2013, we entered into several agreements with Grifols as part of the completion of a private sale of shares of common stock to Grifols, including in particular the License Agreement, the Governance Agreement, and a registration rights agreement with respect to the shares of common stock owned by Grifols. As

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a result of the various obligations under these agreements, in addition to Grifols ownership of a significant amount of our outstanding common stock, conflicts of interest may arise between us and Grifols from time to time. Disagreements regarding the rights and obligations of Grifols or us under these agreements could create conflicts of interest for certain of our directors who have been appointed by Grifols. Any such disagreements could also lead to actual disputes or legal proceedings that may be resolved in a manner unfavorable to us and our other shareholders. In addition, Grifols has a number of consent rights under the Governance Agreement, including the right to consent to any termination of our Chief Executive Officer or our appointment of a successor Chief Executive Officer and certain preemptive rights to participate in any future issuances of common stock (or common stock equivalents) by us or to acquire shares in the open market to maintain ownership thresholds specified in the Governance Agreement. Grifols may exercise any of these rights, or any of its other rights contained in its agreements with us, in a manner which is not necessarily in the best interest of us or our other shareholders. The result of any of these conflicts could adversely affect our business, financial condition, results of operations or the price of our common stock.

A small number of shareholders own a large percentage of our common stock and can influence the outcome of matters submitted to our shareholders for approval.

A small number of our shareholders own a large percentage of our common stock and can, therefore, influence the outcome of matters submitted to our shareholders for approval. Based on information known to us as of February 12, 2015, our two largest shareholders, collectively, control in excess of a majority of our outstanding common stock. As a result, these shareholders have the ability to influence the outcome of matters submitted to our shareholders for approval, including certain proposed amendments to our amended and restated articles of incorporation (for example, amendments to increase the number of our authorized shares) and any proposed merger, consolidation or sale of all or substantially all of our assets. These shareholders may support proposals and actions with which you may disagree. The concentration of ownership could delay or prevent a change in control of our company or otherwise discourage a potential acquirer from attempting to obtain control of our company, which in turn could reduce the price of our common stock.

Item 1B. ***Unresolved Staff Comments***

None.

Item 2. ***Properties***

As of December 31, 2014, we leased one building with an aggregate of 72,000 square feet of office and laboratory facilities at 3929 Point Eden Way, Hayward, California. This building serves as our Corporate office and our research and development facility with a lease expiration of July 2016. In 2007, we entered into a long-term sublease with Mendel Biotechnology, Inc. (Mendel). The sublease with Mendel is for approximately 48,000 square feet and expires concurrently with our lease. In April 2009, we entered into an amendment to our sublease agreement with Mendel to sublease to Mendel an additional 1,550 square feet. In January 2012, Mendel waived their right to early termination of the sublease and we entered into a second amendment to the sublease for an additional approximately 3,300 square feet which commenced on April 1, 2012. The sublease with Mendel substantially reduced our net outstanding lease commitment (see Note 8 to the consolidated financial statements included in this Annual Report on Form 10-K). Our current building is expected to meet our facility requirements for the foreseeable future.

Item 3. ***Legal Proceedings***

None

Item 4. ***Mine Safety Disclosures***

Not Applicable.

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PART II

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

Market Information

Since June 11, 2014, our common stock has been traded on the NASDAQ Capital Market under the symbol ARDM . From December 21, 2006 to June 10, 2014, our common stock was quoted on the OTC Bulletin Board, an electronic quotation service for securities traded over-the-counter.

The following table sets forth the high and low closing sale prices of our common stock for the periods indicated as reported on the NASDAQ Capital Market or the OTC Bulletin Board, as appropriate.

	High	Low
2013		
First Quarter	$ 5.20	$ 4.40
Second Quarter	8.00	3.60
Third Quarter	8.40	6.00
Fourth Quarter	8.40	6.80
2014		
First Quarter	$ 15.20	$ 7.20
Second Quarter	10.80	7.08
Third Quarter	10.56	8.13
Fourth Quarter	9.14	6.82

As of March 6, 2015, there were 52 holders of record of our common stock. A greater number of holders of common stock are street name or beneficial holders, whose shares are held of record by banks, brokers and other financial institutions.

Dividend Policy

We have never declared or paid any cash dividends on our capital stock and we do not currently intend to pay any cash dividends on our capital stock for at least the foreseeable future. We expect to retain future earnings, if any, to fund the development and growth of our business. Any future determination to pay dividends on our capital stock will be, subject to applicable law, at the discretion of our Board of Directors and will depend upon, among other factors, our results of operations, financial condition, capital requirements and contractual restrictions in loan agreements or other agreements.

Recent Sales of Unregistered Securities

All information under this Item has been previously reported on our Current Reports on Form 8-K, filed with the SEC.

Item 6. ***Selected Financial Data***

The following selected financial data should be read in conjunction with Management s Discussion and Analysis of Financial Condition and Results of Operations and the consolidated financial statements and notes thereto included elsewhere in this Annual Report on Form 10-K.

We have derived the selected financial data for the years ended and as of December 31, 2014 and 2013 from our consolidated financial statements and notes thereto included elsewhere in this Annual Report on Form 10-K.

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The selected financial data for the years ended and as of December 31, 2012, 2011, and 2010 has been derived from financial statements not included in this Annual Report on Form 10-K.

	Years Ended December 31,				
	2014	2013	2012	2011	2010
	(In thousands, except per share data)				
Statements of operations data:					
Total revenues	$ 33,561	$ 9,717	$ 1,007	$ 791	$ 4,383
Total operating expenses	37,417	29,629	7,711	9,320	14,743
Loss from operations	(3,856)	(19,912)	(6,704)	(8,529)	(10,360)
Interest expense, net	(271)	(1,643)	(1,520)	(784)	(298)
Other income (expense), including extinguishment of debt	8,779	(9)	(2)	4	5,279
Net income (loss)	4,652	(21,564)	(8,226)	(9,309)	(5,379)
Basic net income (loss) per share	0.32	(2.36)	(1.63)	(2.03)	(1.67)
Diluted net income (loss) per share	0.32	(2.36)	(1.63)	(2.03)	(1.67)
Shares used in computing basic net income (loss) per share	14,700	9,154	5,032	4,585	3,216
Shares used in computing diluted net income (loss) per share	14,726	9,154	5,032	4,585	3,216

	As of December 31,				
	2014	2013	2012	2011	2010
	(In thousands)				
Balance sheet data:					
Cash, cash equivalents and short-term investments	$ 47,990	$ 48,131	$ 7,617	$ 8,664	$ 5,546
Working capital	43,736	42,394	6,479	8,017	3,780
Total assets	53,963	50,424	8,966	10,556	7,628
Deferred revenue current	790	4,379			
Deferred revenue non current	7,845				
Note payable and accrued interest net of discount		9,035	8,513	8,207	
Accumulated deficit	(388,272)	(392,924)	(371,360)	(363,134)	(353,825)
Total shareholders equity (deficit)	39,115	33,683	(1,441)	689	4,599

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

Cautionary Note Regarding Forward-Looking Statements

The discussion below contains forward-looking statements that are based on the current beliefs of our management, as well as current assumptions made by, and information currently available to, our management. All statements contained in the discussion below, other than statements that are purely historical, are forward-looking statements. These forward-looking statements are subject to risks and uncertainties that could cause our future actual results, performance or achievements to differ materially from those expressed in, or implied by, any such forward-looking

statements as a result of certain factors, including, but not limited to, those risks and uncertainties discussed in this section, as well as in the section entitled Risk Factors , and elsewhere in our other filings with the SEC. See Cautionary Note Regarding Forward-Looking Statements elsewhere in this Annual Report on Form 10-K.

Our business is subject to significant risks including, but not limited to, our ability to maintain our collaboration agreement with Grifols, our ability to implement our product development strategy, the success of product development efforts, obtaining and enforcing patents important to our business, clearing the lengthy and

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expensive regulatory approval process and possible competition from other products. Even if product candidates appear promising at various stages of development, they may not reach the market or may not be commercially successful for a number of reasons. Such reasons include, but are not limited to, the possibilities that the potential products may be found to be ineffective during clinical trials, may fail to receive necessary regulatory approvals, may be difficult to manufacture on a large scale, are uneconomical to market, may be precluded from commercialization by proprietary rights of third parties or may not gain acceptance from health care professionals and patients.

Investors are cautioned not to place undue reliance on the forward-looking statements contained herein. We undertake no obligation to update these forward-looking statements in light of events or circumstances occurring after the date hereof or to reflect the occurrence of unanticipated events.

Overview

We are an emerging specialty pharmaceutical company focused on the development and commercialization of products for the treatment of severe respiratory diseases by pulmonologists. Over the last decade, we invested a large amount of capital to develop drug delivery technologies, particularly the development of a significant amount of expertise in pulmonary (respiratory) drug delivery as incorporated in our lead product candidate in Phase 3 clinical trials, Pulmaquin. We also invested considerable effort into the generation of a large volume of laboratory and clinical data demonstrating the performance of our AERx pulmonary drug delivery platform and other proprietary technologies, including our inhaled ciprofloxacin formulations. We have not been profitable since inception and expect to incur additional operating losses over at least the foreseeable future as we continue product development efforts, clinical trial activities, animal toxicology and safety testing and contract manufacturing efforts. To date, we have not had any significant product sales and do not anticipate receiving revenues from the sale of any of our products in the near term. As of December 31, 2014, we had an accumulated deficit of $388.3 million. Historically, we have funded our operations primarily through public offerings and private placements of our capital stock, license fees, development expense reimbursements, borrowings, milestone payments from collaborators, the milestone and royalty payments associated with the sale of assets to Zogenix, proceeds from our June 2011 royalty financing transaction and interest earned on cash equivalents and short-term investments.

More recently, our business has focused on opportunities in the development of drugs for the treatment of severe respiratory disease that could be developed by us and commercialized in the United States and/or another significant territory such as the European Union (EU). With the exception of our inhaled ciprofloxacin program which is partnered with Grifols, our longer term strategy is to commercialize our respiratory product candidates with our own focused marketing and sales force addressing pulmonary specialty doctors in the United States and/or in the EU, where we believe that a proprietary sales force will enhance the return to our shareholders. Where our products can benefit a broader population of patients in the United States or in other countries, we may enter into co-development, co-promotion or other marketing arrangements with collaborators, thereby reducing costs and increasing revenues through license fees, milestone payments and royalties. In selecting our proprietary development programs, we primarily seek drugs approved by the FDA that can be reformulated for both existing and new indications in respiratory disease. Our intent is to use our pulmonary delivery methods and formulations to improve their safety, efficacy and convenience of administration to patients. We believe that this strategy will allow us to reduce cost, development time and risk of failure, when compared to the discovery and development of new chemical entities.

Changes in the regulatory environment in the U.S. and other countries brought about by the introduction of electronic cigarettes have created the opportunity to develop our AERx nicotine product for direct to consumer markets outside of the traditional pharmaceutical markets, thus potentially significantly decreasing the time-to-market for this product.

We are also exploring the traditional regulatory path of approval of our nicotine inhaler as an approval under the FDA drug regulations may enable us to make health benefits claims. Such approval would also mitigate the risk the FDA in the future would prevent the marketing of unregulated nicotine-containing products.

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Inhaled Ciprofloxacin Program

Our lead development candidates are proprietary formulations of the potent antibiotic ciprofloxacin (Pulmaquin (ARD-3150) and Lipoquin (ARD-3100)) that are delivered by inhalation for the management of infections associated with the severe respiratory diseases cystic fibrosis (CF) and non-cystic fibrosis bronchiectasis (BE). The formulations differ in the proportion of rapidly available and slow release ciprofloxacin. Pulmaquin uses the slow release liposomal formulation (Lipoquin) mixed with a small amount of ciprofloxacin dissolved in an aqueous medium. We received orphan drug designations for Lipoquin for both of these indications in the United States and for CF in the EU. We have been granted orphan drug designation from the FDA for ciprofloxacin for inhalation for the management of BE. We may seek orphan drug designation for other eligible product candidates we develop. In May 2014, the FDA designated Pulmaquin as a Qualified Infectious Disease Product (QIDP). The QIDP designation, granted for the treatment of non-cystic fibrosis bronchiectasis patients with chronic lung infections with *Pseudomonas aeruginosa*, makes Pulmaquin eligible to benefit from certain incentives for the development of new antibiotics provided under Generating Antibiotic Incentives NOW Act (GAIN Act). These incentives include priority review and eligibility for fast-track status. In September 2014, we announced that the FDA granted Fast Track Designation to Pulmaquin for non-CF BE patients with chronic lung infections with *Pseudomonas aeruginosa*. We have been issued four U.S. patents covering composition of matter and method of treatment for our inhaled ciprofloxacin formulations with the longest patent protection until 2031. We have also been granted key composition of matter patents for our inhaled ciprofloxacin formulations in Europe and Australia. We are currently activating clinical sites and dosing patients in two Phase 3 clinical trials with Pulmaquin in BE.

In June 2008, we completed a multi-center 14-day treatment Phase 2a trial in Australia and New Zealand in 21 CF patients with once daily dosing of 6 mL of inhaled liposomal ciprofloxacin (Lipoquin, ARD-3100). The primary efficacy endpoint in this Phase 2a study was the change from baseline in the sputum *Pseudomonas aeruginosa* colony forming units (CFU), an objective measure of the reduction in pulmonary bacterial load. Data analysis in 21 patients who completed the study demonstrated that the CFUs decreased by a mean 1.43 log against baseline over the 14-day treatment period ($p<0.0001$). Evaluation one week after study treatment was discontinued showed that the Pseudomonas bacterial density in the lung was still reduced from the baseline without additional antibiotic use. Pulmonary function testing as measured by the forced expiratory volume in one second (FEV1) showed a significant mean increase of 6.86% from baseline after 14 days of treatment ($p=0.04$). The study drug was well tolerated and there were no serious adverse events reported during the trial.

In December 2008, we completed an open-label, four week treatment study with once daily inhaled liposomal ciprofloxacin (Lipoquin, ARD-3100) in patients with BE. The study was conducted at eight leading centers in the United Kingdom and enrolled a total of 36 patients. The patients were randomized into two equal size groups, one receiving 3 mL of inhaled liposomal ciprofloxacin and the other receiving 6 mL of inhaled liposomal ciprofloxacin, once-a-day for the four-week treatment period. The primary efficacy endpoint was the change from baseline in the sputum *Pseudomonas aeruginosa* CFUs, the standard objective measure of the reduction in pulmonary bacterial load. The 3 mL and 6 mL doses of inhaled liposomal ciprofloxacin in the evaluable patient population demonstrated significant mean decreases against baseline in the CFUs over the 28-day treatment period of 3.5 log ($p<0.001$) and 4.0 log ($p<0.001$) units, respectively.

In August 2009, the European Medicines Agency granted Orphan Drug Designation to our inhaled liposomal ciprofloxacin drug product candidate Lipoquin (ARD-3100) for the treatment of lung infections associated with CF. Under European guidelines, Orphan Medicinal Product Designation provides 10 years of potential market exclusivity if the product candidate is the first product candidate for the indication approved for marketing in the EU. Orphan

drug designation also allows the candidate s sponsor to seek assistance from the European Medicines Agency in optimizing the candidate s clinical development through participation in designing the clinical protocol and preparing the marketing application. Additionally, a drug candidate designated by the Commission as an Orphan Medicinal Product may qualify for a reduction in regulatory fees as well as a EU-funded research grant. We had previously been granted orphan drug designations by the FDA for inhaled liposomal ciprofloxacin Lipoquin (ARD-3100) for the management of CF and for BE.

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In November 2009, the first patient was dosed in the ORBIT-2 (Once-daily Respiratory Bronchiectasis Inhalation Treatment) trial, a 168 day, multicenter, international Phase 2b clinical trial of inhaled ciprofloxacin with the Pulmaquin (ARD-3150) formulation in 42 adult patients with BE. ORBIT-2 explored whether the novel formulation Pulmaquin, which has a different drug release profile than Lipoquin, may have additional therapeutic benefits. The randomized, double-blind, placebo-controlled trial was conducted in Australia and New Zealand. Following a 14 day screening period, the patients were treated once-a-day for 28 days with either the active drug, or placebo, followed by a 28 day off-treatment period. This on-off sequence was repeated three times. The primary endpoint was defined as the mean change in *Pseudomonas aeruginosa* density in sputum (CFUs - per gram) from baseline to day 28 of the active treatment group versus placebo. Safety and tolerability assessments of the treatment versus placebo group were performed. Secondary efficacy endpoints being assessed included long term microbiological responses, time to an exacerbation, severity of exacerbations, length of time to resolve exacerbations and changes in lung function and in quality of life measurements.

In October 2010, we announced positive top line data from the ORBIT-2 study. Statistical significance was achieved in the primary endpoint the mean change in *Pseudomonas aeruginosa* density in sputum from baseline to day 28. In the full analysis population (full analysis set includes all patients who were randomized, received at least one dose and provided samples for at least two time points), there was a significant mean reduction of 4.2 log10 units in the Pulmaquin group, reflecting an almost sixteen-thousand fold decrease in bacterial load, versus a very small mean decrease of 0.1 log10 units in the placebo group ($p=0.004$). Secondary endpoint analysis showed that 17 subjects in the placebo group required supplemental antibiotics for respiratory-related infections versus 8 subjects in the Pulmaquin group ($p=0.05$). As announced in January 2011, the Kaplan-Meier analysis showed that the median time to first pulmonary exacerbation in the per protocol population evaluation increased from 58 days in the placebo group to 134 days in the active treatment group and was statistically significant ($p<0.05$, log rank test). Pulmaquin was well tolerated and there were no significant decreases in lung function, as measured by FEV1 (forced expiratory volume in one second), at 28 days in either group. Overall, the incidence and severity of adverse events were similar in both the placebo and treatment groups; however, Pulmaquin had a superior pulmonary safety profile reflected in the number and severity of pulmonary adverse events. As announced in May 2011, further statistical analysis concluded that the reduction from baseline in *Pseudomonas aeruginosa* CFUs with Pulmaquin was rapid and persistent throughout the treatment cycles as exemplified by the statistically significant reductions of the mean log CFU values in the Pulmaquin group versus the placebo at day 14 and day 28 during the first treatment cycle, as well as at the end of the second and third cycles of treatment (days 84 and 140, respectively).

In February 2010, the first patient was dosed in the U.S. as part of the ORBIT-1 trial. This Phase 2b trial, an international, double-blind, placebo-controlled study being conducted under a U.S. FDA IND, randomized 95 patients and completed enrollment in March 2011. The ORBIT-1 study design called for four weeks of once-daily inhaled doses of the active drug (Lipoquin) or once-daily inhaled placebo. Two doses of the active drug were included in the study 100 or 150 mg ciprofloxacin delivered by inhalation as 2 or 3 mL of liposomal dispersion, respectively. The primary efficacy endpoint was a standard measure of antibacterial activity the change from baseline in sputum *Pseudomonas aeruginosa* CFUs. Secondary endpoints included quality of life measurements and improvement of outcomes with respect to exacerbations. Lung function changes were monitored for safety.

In June 2011, we announced positive top line data from the ORBIT-1 study. The primary endpoint - the mean change in *Pseudomonas aeruginosa* CFUs per gram of sputum from baseline to day 28 was met in the full analysis population: The full analysis set included all patients who were randomized, received at least one dose and provided samples for at least two time points. There was a significant mean reduction ($p<0.001$) of 2.942 log10 CFUs in the 3mL Lipoquin group and a significant mean reduction ($p< 0.001$) of 3.842 log10 CFUs in the 2mL Lipoquin group

compared to placebos. Pooled placebo groups had a mean reduction of log10 CFUs of 0.437. There was no statistically significant difference between the 2 mL and 3 mL Lipoquin doses. Lipoquin was well-tolerated and no bronchodilator treatment was mandated before inhaled study treatments. There were no statistically significant differences between the active and placebo groups in the number of patients experiencing at least one respiratory treatment-emergent adverse event. The incidence of serious adverse events (SAEs) was low; there were a total of 6 SAEs and none of them were treatment related.

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In October 2012, scientists from the Virginia Commonwealth University (Richmond, VA) reported findings about the anti-inflammatory effects of our inhaled ciprofloxacin in human bronchial lung cells stimulated by the lipopolysaccharide (LPS) produced by *Pseudomonas aeruginosa. Pseudomonas aeruginosa* is one of the most significant bacterial pathogens in patients with cystic fibrosis, bronchiectasis and severe COPD. LPS produced by this organism is a key virulence-causing factor associated with the respiratory infections due to this microorganism.

In the experiments reported by the School of Pharmacy, Virginia Commonwealth University, liposomal ciprofloxacin and free ciprofloxacin were applied onto the monolayer of human bronchial lung cells for 24 hours. LPS from *Pseudomonas aeruginosa* was then added to stimulate the inflammatory response. At 24 and 48 hours of this stimulation, samples were taken for determination of cellular release of an important pro-inflammatory cytokine, interleukin-8 (IL-8). IL-8 release was negligible from the unstimulated negative control cells. In contrast, 10 mg/ml LPS stimulation for 24 and 48 hours caused significant 24.1 ± 9.2 and 39.5 ± 11.6 ng of IL-8 release, respectively (positive control). Despite its application 24 hours prior to the LPS stimulation, liposomal ciprofloxacin at 0.1 mg/ml still inhibited this LPS-induced IL-8 release (60.1 ± 9.8% and 45.6 ± 4.8% inhibition, respectively). Free ciprofloxacin alone also showed comparable inhibition, but was eliminated much faster from the surface of the cells.

Chronic respiratory infections with *Pseudomonas aeruginosa* with the associated airway inflammation are the key cause of the deterioration in the quality of life and premature death of patients with cystic fibrosis and bronchiectasis. These findings suggest that liposomal ciprofloxacin could exert both anti-pseudomonal and anti-inflammatory effects in the lungs.

We have completed the analysis of all preclinical and clinical data from the two different formulations of inhaled ciprofloxacin (Pulmaquin and Lipoquin) and determined that Pulmaquin showed superior performance. We have taken Pulmaquin forward into two Phase 3 clinical trials. In order to expedite anticipated time to market and increase market acceptance, we have elected to deliver our formulations via an FDA-approved, widely-accepted nebulizer system for each of our clinical trials and we intend to continue using this approach and obtain initial marketing approval also with a currently FDA-approved nebulizer system. In March 2012, we announced the FDA clearance of the Phase 3 IND for Pulmaquin in BE patients; the first human studies under this IND are the two identical Phase 3 studies in BE patients with Pulmaquin.

The ongoing Phase 3 clinical program for Pulmaquin in BE consists of two worldwide, double-blind, placebo-controlled pivotal trials (ORBIT-3 and ORBIT-4) that are identical in design except for a pharmacokinetics sub-study to be conducted in one of the trials. Each trial is enrolling approximately 255 patients into a 48 week double blind period consisting of 6 cycles of 28 days on treatment with Pulmaquin or placebo plus 28 days off treatment, followed by a 28 day open label extension in which all participants will receive Pulmaquin (total treatment duration approximately one year). The superiority of Pulmaquin vs. placebo during the double blind period is being evaluated in terms of the time to first pulmonary exacerbation (primary endpoint), while key secondary endpoints include the reduction in the number of pulmonary exacerbations and improvements in the quality of life measures. Lung function is being monitored as a safety indicator.

See Note 6 to the accompanying consolidated financial statements included in this Annual Report on Form 10-K for information on the Grifols Collaboration Transaction.

Liposomal Ciprofloxacin for Biodefense Purposes: Treatment of Q Fever, Tularemia, Pneumonic Plague, Inhalation Anthrax and other biodefense purposes

In addition to our programs addressing bronchiectasis and cystic fibrosis licensed to Grifols, our inhaled ciprofloxacin has also been tested for the prevention and treatment of inhaled bioterrorism infections, such as Q fever, inhalation anthrax, tularemia and pneumonic plague. We have obtained a royalty-bearing license for the biodefense applications from Grifols.

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In September 2012, UK scientists from the Health Protection Agency (HPA) and Defence Science and Technology Laboratory (Dstl) reported the successful testing of our inhaled liposomal ciprofloxacin against *Coxiella burnetii* (Q fever) in a mouse model of this virulent infection. This work was conducted as part of the collaborative consortium that we formed with HPA and Dstl to evaluate the efficacy of our inhaled liposomal ciprofloxacin against high threat microbial agents.

Coxiella burnetii is a Gram-negative intracellular bacterium and the causative agent of the disease Q fever. *C. burnetii* is endemic worldwide, infects a wide variety of animals and humans and has a low infectious dose by the inhalational route. Clinical presentation in humans may lead to an acute infection with flu-like symptoms, or a chronic life-threatening disease. A recent epidemic of Q fever in humans took place in the Netherlands in 2009, with 2,357 reported cases and 6 deaths. Current oral antibiotic treatment of Q fever can be lengthy and complex.

In the experiments reported by the UK scientists, mice that were infected with *C. burnetii* via inhalation and treated 24 hours later with twice-daily oral ciprofloxacin continuing for 6 additional days, or infected drug-free control-treated animals that had the same treatment schedule, lost almost 20% of body weight by day 7 and exhibited clinical signs of the disease. In contrast, infected mice treated 24 hours later with once-daily lung-delivered liposomal ciprofloxacin continuing for 6 additional days, were significantly protected against weight loss and showed no clinical signs of disease throughout the 14-day duration of the study.

In November 2012, scientists from the UK Defence Science and Technology Laboratory (Dstl) reported in a preliminary study that they demonstrated that a single dose of Aradigm s liposomal ciprofloxacin formulation Lipoquin administered 24 hours after exposure to a lethal dose of the bacterium *Yersinia pestis* provided full protection in a murine model of pneumonic plague. In comparison, a single dose of oral ciprofloxacin administered 24 hours post-exposure provided no protection.

The Gram-negative bacterium *Yersinia pestis* is the causative agent of plague, a disease thought to be responsible for the death of 200 million people through devastating pandemics such as the Black Death. Inhalation of *Y. pestis* can result in the most severe form of the disease, pneumonic plague, which if untreated may have a mortality rate of 100%. Currently, there is no licensed vaccine for use in humans.

In the study, exposure to aerosolized *Y. pestis* was lethal. Animals were followed for up to 28 days post-exposure. All untreated mice succumbing to a systemic infection by day 3 post-exposure. A single dose of oral ciprofloxacin administered at 24 hours post-exposure did not prevent mortality and only increased the mean time to death to 5 days compared to 3 days for untreated mice. In comparison, a single dose of Lipoquin delivered via the nose into the lungs of the animals provided 100% protection and significantly improved survival compared to a single dose of oral ciprofloxacin ($P<0.0001$); a single dose of aerosolized Lipoquin administered at 24 hours post-exposure provided approximately 70% protection and significantly improved survival when compared to a single dose of oral ciprofloxacin ($P<0.001$).

In their report, the scientists state that the study demonstrated the superior efficacy of Lipoquin compared to oral ciprofloxacin as post-exposure prophylaxis against *Y. pestis*.

The Dstl team also demonstrated in another series of experiments that a single dose of our inhaled liposomal ciprofloxacin protects animals against lethal doses of inhaled *Francisella tularensis* (tularemia) infection another microbial threat. These results confirmed and extended the research that we began originally under a technology demonstration program funded by the Defence Research and Development Canada (DRDC) as part of their interest in

developing products to counter bioterrorism, such as inhaled anthrax and tularemia infections. DRDC had already demonstrated the feasibility of inhaled liposomal ciprofloxacin for post-exposure prophylaxis of *Francisella tularensis.* Mice were exposed to a lethal dose of *Francisella tularensis* and then 24 hours later were exposed via inhalation to a single dose of free ciprofloxacin, liposomal ciprofloxacin or saline. All the mice in the control group and the free ciprofloxacin group were dead within 11 days post-infection; in contrast, all the mice in the liposomal ciprofloxacin group were alive 14 days post-infection. The same results were obtained when the mice received the single inhaled treatment as late as 48 or 72 hours post-infection.

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With inhalation anthrax, once symptoms appear, fatality rates are high even with the initiation of antibiotic and supportive therapy. Further, a portion of the anthrax spores, once inhaled, may remain dormant in the lung for several months and then germinate. Anthrax has been identified by the Centers for Disease Control as a likely potential agent of bioterrorism.

Ciprofloxacin has been approved by the FDA for use orally and via injection for the treatment of inhalation anthrax (post-exposure) since 2000. We believe that our product candidate may be able to deliver a long-acting formulation of ciprofloxacin directly into the lungs and be more effective and could potentially have fewer side effects, which is important for patient compliance, to prevent and treat inhalation tularemia and anthrax, Q fever, pneumonic plague and other inhaled bacterial bioterrorism agents than currently available therapies.

If we can obtain sufficient additional funding, including government grants or collaborative funding from organizations such as the Canadian DRDC and the UK Dstl, we may be able to complete the development of our liposomal ciprofloxacin for approval under FDA regulations relating to new drugs or biologics for potentially fatal diseases where human studies cannot be conducted ethically or practically. Unlike most drugs, which require large, well-controlled Phase 3 clinical trials in patients with the disease or condition being targeted, these regulations allow a drug to be evaluated and approved by the FDA on the basis of demonstrated safety in humans combined with studies in animal models to show effectiveness. We plan to use our preclinical and clinical safety data from our BE and CF programs to supplement the data needed to have this product candidate considered for approval for use in prevention and treatment of a number of potential bioterrorism infections including anthrax, tularemia, Q fever and pneumonic plague.

Liposomal Ciprofloxacin for Non-Tuberculous Mycobacteria

In August 2013, the National Institutes of Health (NIH) awarded us a Small Business Initiative Research (SBIR) grant in the amount of approximately $278,000 to investigate the treatment of pulmonary non-tuberculous mycobacteria (PNTM) infections with our inhaled liposomal ciprofloxacin products Pulmaquin and Lipoquin. The research program is being conducted in collaboration with Oregon State University, Corvalis.

According to a recent report from the National Institutes of Health based on an epidemiological study in U.S. adults aged 65 years or older, PNTM infections are an important cause of morbidity among older adults in the United States. From 1997 to 2007, the annual prevalence significantly increased from 20 to 47 cases/100,000 persons or 8.2% per year. Forty-four percent of PNTM-affected people in the study had bronchiectasis compared to 1% in the non-PNTM cases pointing to an important co-morbidity. PNTM infections are common also in patients with other chronic lung conditions, such as cystic fibrosis and emphysema. In patients with AIDS, the infection is disseminated. These infections are particularly difficult to treat as the mycobacteria can form biofilms in the airways and they are able to cause intracellular infections, e.g. by invasion of pulmonary macrophages. The current clinical paradigm is to treat patients with lung or disseminated disease with combination therapy given orally or by IV. Unfortunately, these therapies often fail, and may have significant side effects.

On April 15, 2014, we announced the first results from the collaboration between scientists from the Oregon State University, Corvallis (OSU) and Aradigm funded by NIH. The research demonstrated that after 4 days of in vitro treatment of human macrophages infected with *Mycobacterium avium* and *Mycobacterium abscessus*, Aradigm s liposomal ciprofloxacin was associated with a decrease of greater than 99% of these infections at ciprofloxacin concentrations of 200 mcg/ml, which approximate the peak sputum levels observed in humans in prior Aradigm clinical studies. At a lower concentration of 20 mcg/ml, the liposomal concentrations still showed statistically

significant decreases greater than 70% for *M. avium* and greater than 90% for *M. abscessus*. Unencapsulated ciprofloxacin showed smaller decreases which were only statistically significant at 200 mcg/ml. Liposomal ciprofloxacin at a concentration of 100 mcg/ml significantly reduced the population of these mycobacteria in a biofilm assay by more than 50% whereas unencapsulated ciprofloxacin did not show statistically significant decreases.

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Inhaled Nicotine Program

According to the National Center for Health Statistics (NCHS), 19% of the U.S. population age 18 and above currently smoke cigarettes. Statistics from the National Cancer Institute indicate that cigarette smoking in the U.S. causes an estimated 443,000 deaths each year, including approximately 49,400 deaths due to exposure of secondhand smoke. According to the American Cancer Society, almost a third of all cancer deaths in the U.S. are caused by smoking. The World Health Organization s (WHO) recent report states that tobacco smoking is the single most preventable cause of death in the world today. Already tobacco kills more than five million people per year more than tuberculosis, HIV/AIDS and malaria combined. WHO warns that by 2030, the death toll could exceed eight million a year. Unless urgent action is taken, tobacco could kill one billion people during this century. According to the National Institute on Drug Abuse, more than $75 billion of total U.S. healthcare costs each year is attributable directly to smoking. However, this cost is well below the total cost to society because it does not include burn care from smoking-related fires, perinatal care for low birth-weight infants of mothers who smoke, and medical care costs associated with disease caused by secondhand smoke. In addition to healthcare costs, the costs of lost productivity due to smoking effects are estimated at $82 billion per year, bringing a conservative estimate of the economic burden of smoking to more than $150 billion per year.

NCHS indicates that nicotine dependence is the most common form of chemical dependence in this country. Quitting tobacco use is difficult and often requires multiple attempts, as users often relapse because of withdrawal symptoms and the acute craving for cigarettes. Smokers attempting to quit often turn to nicotine replacement products (gums, lozenges, patches) in order to reduce these cravings. However, recent research indicates that, while these products help in the short term, they are ineffective in preventing long term relapse in many smokers trying to quit. Many smokers will not even try to use the existing nicotine replacement products because they believe that these products will not satisfy their craving for cigarettes.

Our goal is to develop an inhaled nicotine product that would address the acute craving for cigarettes and, therefore, could provide a significantly more effective tool to quit tobacco smoking than the currently available products.

The initial laboratory work on this program was partly funded under grants from the National Institutes of Health.

We have encouraging data from our first human clinical trial delivering aqueous solutions of nicotine using the palm-size AERx Essence® system. Our randomized, open-label, single-site Phase 1 trial evaluated arterial plasma pharmacokinetics and subjective acute cigarette craving when one of three nicotine doses was administered to 18 adult male smokers. Blood levels of nicotine rose much more rapidly following a single-breath inhalation compared to published data on other approved nicotine delivery systems. Cravings for cigarettes were measured on a scale from 0-10 before and after dosing for up to four hours. Prior to dosing, mean craving scores were 5.5, 5.5 and 5.0, respectively, for the three doses. At five minutes following inhalation of the nicotine solution through the AERx Essence device, craving scores were reduced to 1.3, 1.7 and 1.3, respectively, and did not return to pre-dose baseline during the four hours of monitoring. Nearly all subjects reported an acute reduction in craving or an absence of craving immediately following dosing. No serious adverse reactions were reported in the study.

We believe these results provide the foundation to complete the development of our inhaled nicotine product candidate as a means toward smoking cessation as it demonstrates in smokers cigarette-like nicotine concentrations with nearly instantaneous high plasma levels of nicotine, and a rapid and lasting reduction in the craving for cigarettes. To achieve the best safety profile our inhaled nicotine formulation is pure nicotine salt dissolved in a very small amount of water. No heating is used to generate the fine nicotine mist and there is no secondhand smoke as the

user takes a single deep inhalation from the inhaler, instead of puffing on it.

In September 2012, we were issued a new U.S. patent for our inhaled nicotine technology from a second patent family that provides protection until at least 2024. Previously, we had two issued U.S. patents covering systems for

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effective smoking cessation, which provided exclusivity until 2019. The first two patents are method of treatment patents, covering systems, devices and containers for delivering aerosolized nicotine formulations in specific ways which we believe to be important for cigarette smokers who want to quit smoking. This new patent extends the coverage to containers with novel features anticipated to provide additional smoking cessation benefits.

Presently, the FDA has no mandate to regulate nicotine products derived from tobacco that do not make healthcare claims and are not already a part of the current FDA mandate. This is a reflection of the recent Sottera, Inc. v. FDA, No. 10-5032 D.C. Circuit court decision that has allowed electronic cigarettes to stay on the market in the U.S. after the FDA attempted to remove them from the market because they were deemed to be drug / device products. As a result, we believe that the AERx nicotine inhaler may be introduced to the U.S. market today as a non-regulated product; however, no health claims can be made. A similar opportunity to enter the market may exist in other countries where electronic cigarettes are not regulated as drugs (e.g., UK, most of Europe, New Zealand and China). We are also exploring the traditional regulatory path of approval of our nicotine inhaler as an approval under the FDA drug regulations may enable us to make health benefits claims and such approval would also mitigate the risk that the FDA in the future would prevent the marketing of unregulated nicotine-containing products.

We are seeking collaborations and non-dilutive financing to further develop this product for either the pharmaceutical market or the direct-to-consumer market or both.

Other Programs

In August 2013, the NIH awarded us an SBIR grant in the amount of approximately $340,000 to investigate the development and validation of tests for gastro-esophageal reflux with aspirations into the respiratory tract. The Principal Investigators and co-inventors of the new diagnostic tests are Professor Homer Boushey, University of California, San Francisco (UCSF) and Dr. Igor Gonda, Aradigm Corporation. The grant is funding laboratory work and a human clinical trial to be conducted at UCSF.

Aspiration of gastric contents into the respiratory tract causes significant morbidity and mortality and is accepted as the key initiating event for aspiration pneumonitis a form of acute lung injury caused by the acidity of the gastric contents, and aspiration pneumonia the consequence of the growth of pathogenic bacteria contained in the oropharynx aspirated into the tracheobronchial tree. When subclinical events of gastric aspiration occur, it is described as silent aspiration or microaspiration. Chronic, recurrent micoroaspirations have been implicated in the pathogenesis and worsening of many severe chronic pulmonary diseases of unknown origin, such as idiopathic pulmonary fibrosis, bronchiolitis obliterans after lung transplantation, pulmonary disease in conditions associated with esophageal dysfunction and delayed gastric emptying such as cystic fibrosis and scleroderma, and the very common conditions of community acquired pneumonia in the elderly, asthma and COPD.

Research into the role of microaspirations has been severely hampered by the insensitivity, expense, inconvenience, invasiveness, and discomfort of current diagnostic methods for this condition. Development of a simple, patient-convenient, diagnostic test that is safe and can be used repeatedly over time could significantly impact the diagnosis and management of several pulmonary diseases that may be affected by recurrent microaspirations of gastro-intestinal contents into the respiratory tract.

Grifols Collaboration Transaction

See Note 6 to the accompanying consolidated financial statements included in Item 8 of this Annual Report on Form 10-K for information on the Grifols Collaboration Transaction.

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Critical Accounting Policies and Estimates

We consider certain accounting policies related to revenue recognition, impairment of long-lived assets, exit/disposal activities, research and development, income taxes and stock-based compensation to be critical accounting policies that require the use of significant judgments and estimates relating to matters that are inherently uncertain and may result in materially different results under different assumptions and conditions. The preparation of financial statements in conformity with United States generally accepted accounting principles requires us to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes to the consolidated financial statements. These estimates include useful lives for property and equipment and related depreciation calculations, estimated amortization periods for payments received from product development and license agreements as they relate to the revenue recognition, and assumptions for valuing options, warrants and other stock-based compensation. Our actual results could differ from these estimates.

Revenue Recognition

Contract revenues consist of revenues from grants, collaboration agreements and feasibility studies. We recognize revenue under the provisions of the Securities and Exchange Commission issued Staff Accounting Bulletin 104, Topic 13, *Revenue Recognition Revised and Updated* (SAB 104) and Accounting Standards Codification (ASC) 605-25, *Revenue Arrangements-Multiple Element Arrangements* (ASC 605-25). Revenue for arrangements not having multiple deliverables, as outlined in ASC 605-25, is recognized once costs are incurred and collectability is reasonably assured.

Collaborative license and development agreements often require us to provide multiple deliverables, such as a license, research and development, product steering committee services and other performance obligations. These agreements are accounted for in accordance with ASC 605-25. Under this standard, delivered items are evaluated to determine whether such items 1) have value to our collaborators on a stand-alone basis and 2) if the item includes a general right of return relative to the delivered item, delivery or performance of the undelivered item(s) is considered probable and substantially in the control of the vendor.

Deliverables that meet these criteria are considered a separate unit of accounting. Deliverables that do not meet these criteria are combined and accounted for as a single unit of accounting. When deliverables are separable, consideration received is allocated to the separate units of accounting based on the relative selling price method and the appropriate revenue recognition principles are applied to each unit. We allocate non-contingent consideration to each stand-alone deliverable based upon the relative selling price of each element. When applying the relative selling price method, we determine the selling price for each deliverable using vendor-specific objective evidence, or VSOE, of selling price, if it exists, or third-party evidence, or TPE, of selling price, if it exists. If neither VSOE nor TPE of selling price exist for a deliverable, we use best estimated selling price, or BESP, for that deliverable. Significant management judgment may be required to determine the relative selling price of each element.

When we determine that an arrangement should be accounted for as a single unit of accounting, we must determine the period over which the performance obligations will be performed and revenue will be recognized. We estimate our performance period used for revenue recognition based on the specific terms of each agreement, and adjust the performance periods, if appropriate, based on the applicable facts and circumstances. Significant management judgment may be required to determine the level of effort required under an arrangement and the period over which we are expected to complete our performance obligations under the arrangement. If we cannot reasonably estimate when our performance obligations either are completed or become inconsequential, then revenue recognition is

deferred until we can reasonably make such estimates. Revenue is then recognized over the remaining estimated period of performance using the cumulative catch-up method.

Royalty revenue has been earned under the terms of the asset sale agreement with Zogenix through March 31, 2014 and may be earned in the future under the Grifols License Agreement. We recognize royalty

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revenue when the amounts can be determined and when collectability is probable. We anticipate recognizing revenue from quarterly royalty payments one quarter in arreas since we believe that we will not be able to determine quarterly royalty earnings until we receive our royalty statements from collaboration partners.

Impairment of Long-Lived Assets

We review for impairment whenever events or changes in circumstances indicate that the carrying amount of property and equipment may not be recoverable. Determination of recoverability is based on an estimate of undiscounted future cash flows resulting from the use of the asset and its eventual disposition. In the event that such cash flows are not expected to be sufficient to recover the carrying amount of the assets, we write down the assets to their estimated fair values and recognize the loss in the consolidated statements of operations.

Research and Development

Research and development expenses consist of costs incurred for company-sponsored, collaborative and contracted research and development activities. These costs include direct and research-related overhead expenses. Research and development expenses that are reimbursed under collaborative and government grants approximate the revenue recognized under such agreements. We expense research and development costs as incurred.

Income Taxes

We make certain estimates and judgments in determining income tax expense for financial statement purposes. These estimates and judgments occur in the calculation of certain tax assets and liabilities, which arise from differences in the timing of recognition of revenue and expense for tax and financial statement purposes. As part of the process of preparing our consolidated financial statements, we are required to estimate our income taxes in each of the jurisdictions in which we operate. This process involves us estimating our current tax exposure under the most recent tax laws and assessing temporary differences resulting from differing treatment of items for tax and accounting purposes. In addition, we evaluate our tax positions to ensure that a minimum recognition threshold is met before we recognize the tax position in the consolidated financial statements. The aforementioned differences result in deferred tax assets and liabilities, which are included in our consolidated balance sheets.

We assess the likelihood that we will be able to recover our deferred tax assets. We consider all available evidence, both positive and negative, including our historical levels of income and losses, expectations and risks associated with estimates of future taxable income and ongoing prudent and feasible tax planning strategies in assessing the need for a valuation allowance. If we do not consider it more likely than not that we will recover our deferred tax assets, we will record a valuation allowance against the deferred tax assets that we estimate will not ultimately be recoverable. At December 31, 2014 and 2013, we believed that the amount of our deferred income taxes would not be ultimately recovered. Accordingly, we recorded a full valuation allowance for deferred tax assets. However, should there be a change in our ability to recover our deferred tax assets, we would recognize a benefit to our tax provision in the period in which we determine that it is more likely than not that we will recover our deferred tax assets.

During the twelve months ended December 31, 2014, the Company had pre-tax income of $4.7 million. The provision for Federal and state income taxes related to such pre-tax income has been offset by the utilization of available net operating loss carryovers.

Stock-Based Compensation

We recognize compensation expense, using a fair-value based method, for all costs related to stock-based payments including stock options, restricted stock awards and stock issued under the Employee Stock Purchase

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Plan (ESPP). ASC topics require companies to estimate the fair value of stock-based payment awards on the date of the grant using an option pricing model.

We use the Black-Scholes option pricing model to estimate the fair value of stock-based awards as of the grant date. The Black-Scholes model is complex and dependent upon key data input estimates. The primary data inputs with the greatest degree of judgment are the expected terms of the stock options and the estimated volatility of our stock price. The Black-Scholes model is highly sensitive to changes in these two inputs. The expected term of the options represents the period of time that options granted are expected to be outstanding. We use the simplified method to estimate the expected term as an input into the Black-Scholes option pricing model. We determine expected volatility using the historical method, which is based on the historical daily trading data of our common stock over the expected term of the option. For more information about our accounting for stock-based compensation, see Note 9 to the consolidated financial statements included in this Annual Report on Form 10-K.

Recent Accounting Pronouncements

See Note 1 to the consolidated financial statements included in this Annual Report on Form 10-K for information on recent accounting pronouncements.

Results of Operations

Years ended December 31, 2014 and 2013

Our net income increased by approximately $26.2 million for the year ended December 31, 2014, as compared to the year ended December 31, 2013. The increase in the net income resulted primarily from the non-recurrence of a one-time, non-cash collaboration arrangement acquisition cost of approximately $15.9 million in 2013. Net income was further increased in 2014 by the one-time non-cash gain of approximately $8.9 million from the assignment of royalty rights and extinguishment of debt in February 2014 combined with the related $1.4 million decrease in interest expense, which was partially offset by the related decrease in royalty revenue of $0.8 million in 2014 over 2013. In addition, net income increased in 2014 over 2013 due to higher collaboration revenue of approximately $24.4 million for 2014 as the Grifols agreement was effective for all of 2014 as compared to four months in 2013, which was offset by the increase in Pulmaquin-related project expenses of approximately $22.2 million and the increase in general and administrative costs of $1.5 million in 2014 compared to the 2013.

Total revenue was approximately $33.6 million for the year ended December 31, 2014 as compared to approximately $9.7 million for the year ended December 31, 2013. We recognized approximately $33.1 million in revenue under the Grifols License Agreement, as well as approximately $0.3 million in government grant revenue and approximately $0.2 million in royalty revenue for the SUMAVEL DosePro sales (now extinguished) for the twelve months ended December 31, 2014 as compared to approximately $8.7 million under the Grifols License Agreement and approximately $1.0 million in royalty revenue for the SUMAVEL program for the twelve months ended December 31, 2013.

Operating expenses were approximately $37.4 million for the year ended December 31, 2014, which represented an approximately $7.8 million increase as compared to the year ended December 31, 2013. Research and development expenses increased approximately $22.3 million and general and administrative expenses increased approximately $1.5 million. The increase in research and development expenses was due to higher contract manufacturing, contract testing and clinical trial costs related to the Pulmaquin program, higher employee related expenses due to the addition

of staff, as well as increases in travel and consulting expenses in support of the Pulmaquin program. The increase in general and administrative costs was due to officer bonuses - related to the $5.0 million milestone payment from Grifols received upon dosing of the first patient in the Pulmaquin program, an increase in employee-related costs for the addition of staff, increases in consulting

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and insurance costs in support of the Pulmaquin program, increases in legal and consulting fees incurred for the filing of registration statements, expenses related to the listing of our common stock on NASDAQ and increased patent activity, as well as increases in costs for our board of directors related to the addition of directors and higher fees. In the twelve months ended December 31, 2013 the Company recognized approximately $15.9 million in one-time, non-cash collaboration arrangement acquisition cost resulting from the Grifols transaction which occurred in that period.

Liquidity and Capital Resources

As of December 31, 2014, we had cash and cash equivalents of approximately $48.0 million, total working capital of approximately $43.7 million and shareholders equity of approximately $39.1 million. We assess our liquidity primarily by the amount of our cash and cash equivalents and short term investments less our current liabilities. We believe that this amount will be sufficient to enable us to fund our operations through at least December 31, 2015.

On May 20, 2013, the Company and Grifols, S.A., (Grifols) and certain other investors (the Investors) entered into a Stock Purchase Agreement (the Stock Purchase Agreement), pursuant to which the Company agreed, subject to the terms and conditions set forth in the Stock Purchase Agreement, to issue and sell a total of 5,244,363 shares of the Company s common stock (Common Stock) (209,744,558 shares prior to the 1-for-40 Reverse Split), to Grifols and an additional 3,104,838 shares of Common Stock to the Investors (124,193,546 shares prior to the 1-for-40 Reverse Split), for a total sale of 8,349,201 shares of Common Stock (the Company Stock Sale) (333,968,104 shares prior to the 1-for-40 Reverse Split), for a purchase price of $4.96 per share ($0.124 per share prior to the 1-for-40 Reverse Split. The aggregate gross consideration paid to the Company in the Company Stock Sale was approximately $41.4 million.

Since inception, we have funded our operations primarily through public offerings and private placements of our capital stock, license fees and milestone payments from collaborators, borrowings, the milestone and royalty payments associated with the sale of assets to Zogenix and interest earned on investments. We have incurred significant losses and negative cash flows from operations since our inception.

Our business strategy may require us to, or we may otherwise determine to, raise additional capital at any time through equity financing(s), strategic transactions or otherwise. Such additional funding may be necessary to continue to develop our potential product candidates. In addition we may determine to raise capital opportunistically. We cannot assure you that adequate capital will be available on favorable terms, or at all when needed. If we are unable to obtain additional funds when required, we may be forced to delay or restrict all or a portion of our research and development programs or dispose of assets or technology.

Year ended December 31, 2014

As of December 31, 2014, we had cash and cash equivalents of approximately $48.0 million, slightly down from approximately $48.1 million at December 31, 2013. The nominal use of cash primarily resulted from the Company s use of cash to fund operations of approximately $36.1 million, offset by the receipt of approximately $31.3 million from Grifols for incurred and future Pulmaquin program-related expenses and the receipt of the $5.0 million milestone for the dosing of the first patient.

Net cash provided by operating activities for the year ended December 31, 2014 was approximately $0.1 million reflecting the result of operating activities after adjusting our approximately $4.7 million net income for non-cash

gains, including approximately $8.9 million from the assignment of royalty rights for future Zogenix royalties and extinguishment of debt, offset by non-cash expenses of approximately $0.9 million in depreciation and stock based compensation, and adjusting for net changes in operating assets and liabilities of approximately $3.4 million. Net cash used in investing activities was approximately $0.4 million as the company invested in equipment to support the Pulmaquin program. Net cash provided by financing activities for the year

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ended December 31, 2014 was approximately $0.2 million from the proceeds from the purchase of stock primarily through the Employee Stock Purchase Plan (ESPP).

Year ended December 31, 2013

As of December 31, 2013, we had cash and cash equivalents of approximately $48.1 million, up from approximately $7.6 million at December 31, 2012. The overall increase primarily resulted from the sale of common stock to Grifols and the Investors for net proceeds of approximately $40.2 million along with the receipt of approximately $13.1 million from Grifols for incurred and future Pulmaquin program-related expenses offset by the Company s use of cash to fund operations.

Net cash provided by operating activities for the year ended December 31, 2013 was approximately $0.3 million reflecting the result of operating activities after adjusting our approximately $21.6 million net loss for non-cash expenses, including approximately $15.9 million in collaboration arrangement acquisition cost, approximately $0.8 million in depreciation and stock based compensation and by changes in operating assets and liabilities of approximately $5.0 million. Net cash provided by financing activities for the year ended December 31, 2013 was approximately $40.3 million from the sale of common stock in the Company Stock Sale and the proceeds from the purchase of stock through the ESPP.

Off-Balance Sheet Financings and Liabilities

Other than contractual obligations incurred in the normal course of business, we do not have any off-balance sheet financing arrangements or liabilities, guarantee contracts, retained or contingent interests in transferred assets or any obligation arising out of a material variable interest in an unconsolidated entity. We have one inactive, wholly-owned subsidiary incorporated in Delaware, Aradigm Royalty Financing LLC, one active wholly-owned subsidiary domiciled in Australia and one inactive, wholly-owned subsidiary domiciled in the UK.

Item 7A. ***Quantitative and Qualitative Disclosure About Market Risk***

The disclosures in this section are not required since we qualify as a smaller reporting company.

Item 8. ***Financial Statements and Supplementary Data***

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors and Shareholders of Aradigm Corporation

We have audited the accompanying consolidated balance sheets of Aradigm Corporation as of December 31, 2014 and 2013, and the related consolidated statements of operations and comprehensive income (loss), shareholders equity and cash flows for the years then ended. These financial statements are the responsibility of the Company s management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Company is not required to have, nor were we engaged to perform, an audit of the Company s internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, 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. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of Aradigm Corporation at December 31, 2014 and 2013 and the consolidated results of its operations and its cash flows for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

/s/ OUM & Co, LLP

San Francisco, California

March 16, 2015

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ARADIGM CORPORATION

CONSOLIDATED BALANCE SHEETS

(In thousands, except share data)

	December 31, 2014	December 31, 2013
ASSETS		
Current assets:		
Cash and cash equivalents	$ 47,990	$ 48,131
Restricted cash	250	
Receivables	1,058	92
Prepaid and other current assets	1,207	1,448
Total current assets	50,505	49,671
Property and equipment, net	502	400
Other assets	2,956	353
Total assets	$ 53,963	$ 50,424
LIABILITIES AND SHAREHOLDERS EQUITY		
Current liabilities:		
Accounts payable	$ 2,706	$ 619
Accrued clinical and cost of other studies	2,070	1,831
Accrued compensation	819	198
Deferred revenue	790	4,379
Facility lease exit obligation	193	168
Other accrued liabilities	191	82
Total current liabilities	6,769	7,277
Accrued clinical and cost of other studies, non-current	33	
Deferred rent, non-current	97	132
Facility lease exit obligation, non-current	104	297
Deferred revenue, non-current	7,845	
Note payable and accrued interest		9,035
Total liabilities	14,848	16,741
Commitments and contingencies (Note 8)		
Shareholders equity:		
Preferred stock, 5,000,000 shares authorized, none outstanding		
Common stock, no par value; authorized shares: 25,045,765 at December 31, 2014	427,387	426,607

and December 31, 2013; issued and outstanding shares: 14,726,960 at December 31, 2014; 14,681,274 at December 31, 2013		
Accumulated deficit	(388,272)	(392,924)
Total shareholders equity	39,115	33,683
Total liabilities and shareholders equity	$ 53,963	$ 50,424

See accompanying Notes to Consolidated Financial Statements.

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ARADIGM CORPORATION

CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE INCOME (LOSS)

(In thousands, except per share data)

	Years Ended December 31,	
	2014	**2013**
Revenue:		
Contract revenue related party	$ 33,038	$ 8,672
Grant revenue	323	
Royalty revenue	200	1,045
Total revenues	33,561	9,717
Operating expenses:		
Research and development	31,172	8,884
General and administrative	6,226	4,775
Collaboration arrangement acquisition cost		15,943
Restructuring and asset impairment	19	27
Total operating expenses	37,417	29,629
Loss from operations	(3,856)	(19,912)
Interest income	17	6
Interest expense	(288)	(1,649)
Other expense, net	(85)	(9)
Gain on assignment of royalty interests	5,823	
Gain from extinguishment of debt	3,041	
Net income (loss) and comprehensive income (loss)	$ 4,652	$ (21,564)
Basic net income (loss) per common share	$ 0.32	$ (2.36)
Diluted net income (loss) per common share	$ 0.32	$ (2.36)
Shares used in computing basic net income (loss) per common share	14,700	9,154
Shares used in computing diluted net income (loss) per common share	14,726	9,154

See accompanying Notes to Consolidated Financial Statements.

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ARADIGM CORPORATION

CONSOLIDATED STATEMENTS OF SHAREHOLDERS EQUITY

(In thousands, except share data)

	Common Stock			Total Shareholders Equity
	Shares	Amount	Accumulated Deficit	
Balances at December 31, 2012	6,283,622	$ 369,919	$ (371,360)	(1,441)
Issuance of common stock in a private offering, net of issuance costs	8,349,201	40,227		40,227
Issuance of common stock under the employee stock purchase plan	21,618	95		95
Issuance of restricted stock awards	30,333			
Cancellation of restricted stock awards	(3,750)			
Exercise of options	250	2		2
Non-cash stock-based compensation expense for stock options, restricted stock and restricted stock units		421		421
Stock discount on Grifols arrangement		15,943		15,943
Net loss			(21,564)	(21,564)
Balances at December 31, 2013	14,681,274	426,607	(392,924)	$ 33,683
Issuance of common stock under the employee stock purchase plan	33,161	157		157
Issuance of restricted stock awards	11,250			
Exercise of options	1,275	7		7
Non-cash stock-based compensation expense for stock options, restricted stock and restricted stock units		616		616
Net income			4,652	4,652
Balances at December 31, 2014	14,726,960	$ 427,387	$ (388,272)	$ 39,115

See accompanying Notes to Consolidated Financial Statements.

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ARADIGM CORPORATION

CONSOLIDATED STATEMENTS OF CASH FLOWS

(In thousands)

	Years Ended December 31,	
	2014	2013
Cash flows from operating activities:		
Net income (loss)	$ 4,652	$ (21,564)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:		
Amortization and accretion of investments		29
Depreciation and amortization	310	370
Stock-based compensation expense	616	421
Collaboration arrangement acquisition cost		15,943
Gain on assignment of royalty interests	(5,823)	
Gain from extinguishment of debt	(3,041)	
Amortization of note discount	19	94
Changes in operating assets and liabilities:		
Receivables	(966)	(49)
Restricted cash	(250)	
Prepaid and other current assets	241	(1,342)
Other assets	(2,840)	121
Accounts payable	2,087	289
Accrued compensation	621	14
Current deferred revenue	(3,589)	4,379
Accrued liabilities	395	1,714
Accrued clinical and cost of other studies, non-current	33	
Deferred rent, non-current	(35)	(12)
Deferred revenue, non-current	7,845	
Facility lease exit obligation	(168)	(143)
Net cash provided by operating activities	107	264
Cash flows from investing activities:		
Capital expenditures	(412)	(43)
Purchases of available-for-sale investments		(2,852)
Proceeds from maturities of available-for-sale investments		3,026
Net cash provided by (used in) investing activities	(412)	131

Cash flows from financing activities:

Proceeds from private offering of common stock, net		40,227
Proceeds from issuance of common stock to Employee Stock Purchase Plan	164	95
Net cash provided by financing activities	164	40,322
Net increase (decrease) in cash and cash equivalents	(141)	40,717
Cash and cash equivalents at beginning of year	48,131	7,414
Cash and cash equivalents at end of year	$ 47,990	$ 48,131
Supplemental disclosure of cash flow information:		
Non cash reduction in other assets from extinguishment of debt and assignment of royalty interests	(237)	
Non cash reduction in note payable from extinguishment of debt and assignment of royalty interests	(9,101)	

See accompanying Notes to Consolidated Financial Statements.

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ARADIGM CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Organization and Summary of Significant Accounting Policies

Organization

Aradigm Corporation (the Company) is a California corporation, incorporated in 1991, focused on the development and commercialization of drugs delivered by inhalation for the prevention and treatment of severe respiratory diseases. The Company s principal activities to date have included conducting research and development and developing collaborations. Management does not anticipate receiving revenues from the sale of any of its products in the upcoming year. The Company operates as a single operating segment.

Basis of Presentation and Consolidation

The accompanying consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries. All inter-company accounts and transactions have been eliminated in consolidation.

Liquidity and Financial Condition

The Company has incurred significant operating losses and negative cash flows from operations. At December 31, 2014, the Company had an accumulated deficit of approximately $388.3 million, working capital of approximately $43.7 million and shareholders equity of approximately $39.1 million. The Company believes that its cash and cash equivalents totaling approximately $48.0 million as of December 31, 2014 will be sufficient to fund its operations at least through 2015. However, the Company s business strategy may require it to, or it may otherwise determine to, raise additional capital at any time through equity financing(s), strategic transactions or otherwise. Such additional funding may be necessary to develop the Company s potential product candidates. In addition, the Company may determine to raise capital opportunistically.

Use of Estimates

The preparation of financial statements, in conformity with United States generally accepted accounting principles, requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. These estimates include useful lives for property and equipment and related depreciation calculations, assumptions for valuing options and warrants, and income taxes. Actual results could differ from these estimates.

Cash Equivalents

All highly liquid investments with maturities of three months or less at the time of purchase are classified as cash equivalents.

Property and Equipment

The Company records property and equipment at cost and calculates depreciation using the straight-line method over the estimated useful lives of the respective assets. Machinery and equipment includes external costs incurred for validation of the equipment. The Company does not capitalize internal validation expense. Computer equipment and software includes capitalized computer software. All of the Company s capitalized software is purchased; the Company has no internally developed computer software. Leasehold improvements are depreciated over the shorter of the term of the lease or useful life of the improvement.

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

Computer equipment and software	3 to 5 years
Furniture and fixtures	5 to 7 years
Lab equipment	5 to 7 years
Machinery and equipment	5 years
Leasehold improvements	5 to 17 years

Impairment of Long-Lived Assets

The Company reviews for impairment whenever events or changes in circumstances indicate that the carrying amount of property and equipment may not be recoverable. Determination of recoverability is based on an estimate of undiscounted future cash flows resulting from the use of the asset and its eventual disposition. In the event that such cash flows are not expected to be sufficient to recover the carrying amount of the assets, the assets are written down to their estimated fair values and the loss is recognized in the consolidated statements of operations.

Accounting for Costs Associated with Exit or Disposal Activities

The Company recognizes a liability for the cost associated with an exit or disposal activity that is measured initially at its fair value in the period in which the liability is incurred.

Costs to terminate an operating lease or other contracts are (a) costs to terminate the contract before the end of its term or (b) costs that will continue to be incurred under the contract for its remaining term without economic benefit to the entity. In periods subsequent to initial measurement, changes to the liability are measured using the credit adjusted risk-free rate that was used to measure the liability initially.

Revenue Recognition

Contract revenues consist of revenues from grants, collaboration agreements and feasibility studies. License and collaboration revenue is primarily generated through agreements with strategic partners for the development and commercialization of our product candidates. The terms of the agreement typically include non-refundable upfront fees, funding of research and development activities, payments based upon achievement of milestones and royalties on net product sales. The Company recognizes revenue under the provisions of the Securities and Exchange Commission issued Staff Accounting Bulletin 104, Topic 13, *Revenue Recognition Revised and Updated (* SAB Topic 13) and ASC 605-25, *Revenue Recognition-Multiple Elements.* Revenue for arrangements not having multiple deliverables, as outlined in ASC 605-25, is recognized once costs are incurred and collectability is reasonably assured.

Revenue is recognized when there is persuasive evidence that an arrangement exists, delivery has occurred, the price is fixed and determinable and collection is reasonably assured. Multiple-deliverable arrangements, such as license and development agreements, are analyzed to determine whether the deliverables can be separated or whether they must be accounted for as a single unit of accounting. When deliverables are separable, consideration received is allocated to the separate units of accounting based on the relative selling price method and the appropriate revenue recognition principles are applied to each unit. When the Company determines that an arrangement should be accounted for as a single unit of accounting, it must determine the period over which the performance obligations will be performed and revenue will be recognized.

The Company estimates its performance period used for revenue recognition based on the specific terms of each agreement, and adjusts the performance periods, if appropriate, based on the applicable facts and circumstances. Significant management judgment may be required to determine the level of effort required under an arrangement and the period over which the Company is expected to complete its performance obligations

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under the arrangement. If the Company cannot reasonably estimate when its performance obligations either are completed or become inconsequential, then revenue recognition is deferred until the Company can reasonably make such estimates. Revenue is then recognized over the remaining estimated period of performance using the cumulative catch-up method.

The Company prospectively adopted the provisions of Accounting Standards Update No. 2009-13, Revenue Recognition (Topic 605); *Multiple-Deliverable Revenue Arrangements* (ASU 2009-13) for new and materially modified arrangements originating on or after January 1, 2010. ASU 2009-13 provides updated guidance on how the deliverables in an arrangement should be separated, and how consideration should be allocated, and it changes the level of evidence of standalone selling price required to separate deliverables by allowing a vendor to make its best estimate of the standalone selling price of deliverables when vendor-specific objective evidence or third-party evidence of selling price is not available.

The Company allocates non-contingent consideration to each stand-alone deliverable based upon the relative selling price of each element. When applying the relative selling price method, the Company determines the selling price for each deliverable using vendor-specific objective evidence, or VSOE, of selling price, if it exists, or third-party evidence, or TPE, of selling price, if it exists. If neither VSOE nor TPE of selling price exist for a deliverable, the Company uses best estimated selling price, or BESP, for that deliverable.

Assuming the elements meet the revenue recognition guidelines, the revenue recognition methodology prescribed for each unit of accounting is summarized below:

Upfront Fees The Company defers recognition of non-refundable upfront fees if there are continuing performance obligations without which the technology licensed has no utility to the licensee. If the Company has continuing performance obligations through research and development services that are required because know-how and expertise related to the technology is proprietary to the Company, or can only be performed by the Company, then such up-front fees are deferred and recognized over the estimated period of the performance obligation. The Company bases the estimate of the period of performance on factors in the contract. Actual time frames could vary and could result in material changes to the results of operations. When the collaboration partners request the Company to continue performing the research and development services in collaboration beyond the initial period of performance the remaining unamortized deferred revenue and any new continuation or license fees are recognized over the extended period of performance.

Funded Research and Development and Grant Revenue Revenue from research and development services is recognized during the period in which the services are performed and is based upon the number of full-time-equivalent personnel working on the specific project at the agreed-upon rate. The full-time equivalent amount can vary each year if the contracts allow for a percentage increase determined by relevant salary surveys, if applicable. Reimbursements from collaborative partners and grants for agreed upon direct costs including direct materials and outsourced, or subcontracted, pre-clinical studies are classified as revenue and recognized in the period the reimbursable expenses are incurred. Payments received in advance are recorded as deferred revenue until the research and development services are performed or costs are incurred.

Milestones Substantive milestone payments are considered to be performance bonuses that are recognized upon achievement of the milestone only if all of the following conditions are met: the milestone payments are non-refundable; achievement of the milestone involves a degree of risk and was not reasonably assured at the inception of the arrangement; substantive effort is involved in achieving the milestone; the amount of the milestone is

reasonable in relation to the effort expended or the risk associated with achievement of the milestone; and a reasonable amount of time passes between the up-front license payment and the first milestone payment as well as between each subsequent milestone payment. If any of these conditions are not met, the milestone payments are deferred and recognized as revenue over the term of the arrangement as the Company completes its performance obligations.

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Royalties The Company recognizes royalty revenues from licensed products upon the sale of the related products.

Research and Development

Research and development expenses consist of costs incurred for company-sponsored, collaborative and contracted research and development activities. These costs include direct and research-related overhead expenses. The Company expenses research and development costs as such costs are incurred.

Stock-Based Compensation

The Company accounts for share-based payment arrangements in accordance with ASC 718, *Compensation-Stock Compensation* and *ASC 505-50, Equity-Equity Based Payments to Non-Employees* which requires the recognition of compensation expense, using a fair-value based method, for all costs related to share-based payments including stock options and restricted stock awards and stock issued under the Employee Stock Purchase Plan (ESPP). These standards require companies to estimate the fair value of share-based payment awards on the date of the grant using an option-pricing model. See Note 9 for further discussion of the Company s stock-based compensation plans.

Income Taxes

The Company makes certain estimates and judgments in determining income tax expense for consolidated financial statement purposes. These estimates and judgments occur in the calculation of certain tax assets and liabilities, which arise from differences in the timing of the recognition of revenue and expense for tax and financial statement purposes. As part of the process of preparing the financial statements, the Company is required to estimate its income taxes in each of the jurisdictions in which it operates. This process involves the estimation of the current tax exposure under the most recent tax laws and assessing temporary differences resulting from differing treatment of items for tax and accounting purposes. These differences result in deferred tax assets and liabilities which are included in the Company s consolidated balance sheets.

The Company assesses the likelihood that it will be able to recover its deferred tax assets. The Company considers all available evidence, both positive and negative, including its historical levels of income and losses, expectations and risks associated with estimates of future taxable income and ongoing prudent and feasible tax planning strategies in assessing the need for a valuation allowance. If the Company does not consider it more likely than not that it will recover its deferred tax assets, it will record a valuation allowance against the deferred tax assets that it estimates will not ultimately be recoverable. At December 31, 2014 and 2013, the Company believed that the amount of its deferred income taxes would not be ultimately recovered. Accordingly, the Company recorded a full valuation allowance for deferred tax assets. However, should there be a change in the Company s ability to recover its deferred tax assets, it would recognize a benefit to its tax provision in the period in which it determines that it is more likely than not that it will recover its deferred tax assets.

During the twelve months ended December 31, 2014, the Company had pre-tax income of $4.7 million. The provision for Federal and state income taxes related to such pre-tax income has been offset by the utilization of available net operating loss carryovers.

Net Income/(Loss) Per Common Share

Basic net income/(loss) per common share is computed using the weighted-average number of shares of common stock outstanding during the period less the weighted-average number of shares subject to repurchase. Diluted net income/(loss) per common share is based on the weighted average number of common and common equivalent shares, such as stock options and unvested restricted stock shares outstanding during the period. Unvested restricted stock awards subject to repurchase totaled 300 shares and 19,217 shares for the years ended

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December 31, 2014 and 2013, respectively. Potentially dilutive securities were included for the year ended December 31, 2014 but were excluded for the year ended December 31, 2013 because the inclusion of such shares would have had an anti-dilutive effect.

Potentially dilutive securities include the following (in thousands):

	Years Ended December 31,	
	2014	2013
Outstanding stock options	515	194
Unvested restricted stock awards		19
Unvested stock units	10	10
Outstanding warrants	71	71

Significant Concentrations

Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of cash, cash equivalents and short-term investments. Risks associated with these instruments are mitigated by banking with, and only purchasing commercial paper and corporate notes from, creditworthy institutions. The maximum amount of loss due to credit risk associated with these financial instruments is their respective fair values as stated in the accompanying Consolidated Balance Sheets.

Comprehensive Income (Loss)

ASC 220, *Comprehensive Income* requires that an entity s change in equity or net assets during a period from transactions and other events from non-owner sources be reported. The Company reports unrealized gains or losses on its available-for-sale securities as other comprehensive income (loss). Total comprehensive income (loss) has been disclosed on the Consolidated Statement of Operations and Comprehensive Income (Loss).

Recently Issued Accounting Pronouncements

In April 2014, the FASB issued Accounting Standards Update (ASU) No. 2014-08, Presentation of Financial Statements (Topic 205) and Property, Plant, and Equipment (Topic 360): Reporting Discontinued Operations and Disclosures of Disposals of Components of an Entity (ASU 2014-08) which raises the threshold for a disposal to qualify as a discontinued operation and requires new disclosures of both discontinued operations and certain other disposals that do not meet the definition of a discontinued operation. ASU 2014-08 is effective for annual periods beginning on or after December 15, 2014. Early adoption is permitted but only for disposals that have not been reported in financial statements previously issued. The adoption of this guidance is not expected to have an impact on the Company s consolidated financial statements.

In May 2014, the FASB issued ASU No. 2014-09, Revenue from Contracts with Customers (ASU 2014-09). The standard provides companies with a single model for use in accounting for revenue arising from contracts with customers and supersedes current revenue recognition guidance, including industry-specific revenue guidance. The core principle of the model is to recognize revenue when control of the goods or services transfers to the customer, as opposed to recognizing revenue when the risks and rewards transfer to the customer under the existing revenue guidance. ASU 2014-09 is effective for annual reporting periods beginning after December 15, 2016. Early adoption

is not permitted. The guidance permits companies to either apply the requirements retrospectively to all prior periods presented, or apply the requirements in the year of adoption, through a cumulative adjustment. The Company is in the process of evaluating the impact of adoption on its consolidated financial statements.

In June 2014, the FASB issued ASU No. 2014-12, Accounting for Share-Based Payments When the Terms of an Award Provide That a Performance Target Could Be Achieved after the Requisite Service Period.

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(ASU 2014-12). The standard provides guidance that a performance target that affects vesting of a share-based payment and that could be achieved after the requisite service condition is a performance condition. As a result, the target is not reflected in the estimation of the award s grant date fair value. Compensation cost for such award would be recognized over the required service period, if it is probable that the performance condition will be achieved. ASU 2014-12 is effective for annual reporting periods beginning after December 15, 2015. Early adoption is permitted. The guidance should be applied on a prospective basis to awards that are granted or modified on or after the effective date. Companies also have the option to apply the amendments on a modified retrospective basis for performance targets outstanding on or after the beginning of the first annual period presented as of the adoption date. The Company is in the process of evaluating the impact of adoption on its consolidated financial statements.

In August 2014, the FASB issued ASU No. 2014-15, Disclosure of Uncertainties about an Entity s Ability to Continue as a Going Concern. (ASU 2014-15). This ASU provides guidance about management s responsibility to evaluate whether there is substantial doubt about the organization s ability to continue as a going concern and provides principles and definitions that are intended to reduce diversity in the timing and content of disclosures that are commonly provided by organizations today in the financial statement footnotes. ASU 2014-15 is effective for annual periods ending after December 15, 2016, and interim periods within annual periods beginning after December 15, 2016. Early application is permitted for annual or interim reporting periods for which the financial statements have not previously been issued. The Company is in the process of evaluating the impact of adoption on its consolidated financial statements.

In January 2015, the FASB issued ASU No. 2015-01, Simplifying Income Statement Presentation by Eliminating the Concept of Extraordinary Items. (ASU 2015-01). This ASU eliminates from U.S. GAAP the concept of Extraordinary Items. ASU 2015-01 is effective for annual reporting periods beginning after December 15, 2015. Early adoption is permitted, provided that the guidance is applied from the beginning of the fiscal year of adoption. The guidance may be applied prospectively or retrospectively. The adoption of this guidance is not expected to have an impact on the Company s consolidated financial statements.

2. Cash and Cash Equivalents

At December 31, 2014 and December 31, 2013, the amortized cost of the Company s cash and cash equivalents approximated their fair values. The Company currently invests its cash and cash equivalents in money market funds.

3. Fair Value Measurements

The Company follows ASC 820, *Fair Value Measurement* which clarifies the definition of fair value, prescribes methods for measuring fair value, establishes a fair value hierarchy based on the inputs used to measure fair value and requires certain disclosures about the use of fair value measurements. The fair value hierarchy has three levels based on the reliability of the inputs used to determine fair value. Level 1 values are based on quoted prices in active markets. Level 2 values are based on significant other observable inputs. Level 3 values are based on significant unobservable inputs.

The Company s cash and cash equivalents at December 31, 2014 and December 31, 2013 consist of cash and money market funds. Money market funds are valued using quoted market prices.

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4. Property and Equipment

Property and equipment consist of the following (in thousands):

	December 31,	
	2014	2013
Machinery and equipment	$ 4,792	$ 4,412
Furniture and fixtures	1,139	1,138
Lab equipment	2,138	2,138
Computer equipment and software	2,682	2,651
Leasehold improvements	1,844	1,844
Property and equipment	12,595	12,183
Less accumulated depreciation and amortization	(12,093)	(11,783)
Property and equipment, net	$ 502	$ 400

Depreciation expense was $310,000 and $370,000 for the years ended December 31, 2014 and 2013, respectively.

5. Sublease Agreement and Lease Exit Liability:

On July 18, 2007, the Company entered into a sublease agreement with Mendel Biotechnology, Inc. (Mendel) to lease approximately 48,000 square feet of the Company s 72,000 square foot headquarters facility located in Hayward, California. In April 2009, the Company entered into an amendment to its sublease agreement with Mendel to sublease an additional 1,550 square feet. The Company recorded an additional sublease loss on the amendment since the monthly payments the Company expects to receive are less than what the Company will owe the lessor for the subleased space. In January 2012, the Company entered into a second amendment to the sublease with Mendel in which Mendel leased an additional 3,300 square feet and at this time Mendel waived their right to early termination. The sublease with Mendel now expires concurrently with the Company s master lease for the Hayward facility.

During the year ended December 31, 2007, the Company recorded a $2.1 million lease exit liability and related expense for the expected loss on the sublease, in accordance with ASC 420 *Exit or Disposal Cost Obligations,* because the monthly payments the Company expects to receive under the sublease are less than the amounts that the Company will owe the lessor for the sublease space. The fair value of the lease exit liability was determined using a credit-adjusted risk-free rate to discount the estimated future net cash flows, consisting of the minimum lease payments to the lessor for the sublease space and payments the Company will receive under the sublease. The sublease loss and ongoing accretion expense required to record the lease exit liability at its fair value using the interest method were recorded as part of restructuring and asset impairment expense in the Consolidated Statement of Operations and Comprehensive Loss in the year ended December 31, 2007. The lease exit liability activity for the years ended December 31, 2014 and 2013 are as follows (in thousands):

Year Ended December 31,

	2014	2013
Balance at beginning of year	$ 465	$ 609
Accretion expense	19	26
Lease payments	(187)	(170)
Balance at end of the year	$ 297	$ 465

The Company classified $193,000 of the $297,000 lease exit liability in current liabilities and the remaining $104,000 in non-current liabilities in the accompanying consolidated balance sheet at December 31, 2014.

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6. Collaboration Agreement

Grifols License and Collaboration Agreement

On May 20, 2013, the Company and Grifols, S.A., (Grifols) and certain other investors (the Investors) entered into a Stock Purchase Agreement (the Stock Purchase Agreement), pursuant to which the Company agreed, subject to the terms and conditions set forth in the Stock Purchase Agreement, to issue and sell a total of 5,244,363 shares of the Company s common stock (Common Stock) (209,774,558 shares prior to the 1-for-40 Reverse Split), to Grifols and an additional 3,104,838 shares of Common Stock (124,193,546 shares prior to the 1-for-40 Reverse Split) to the Investors, for a total sale of 8,349,201 shares of Common Stock (the Company Stock Sale) (333,968,104 shares prior to the 1-for-40 Reverse Split), for a purchase price of $4.96 per share ($0.124 per share prior to the 1-for-40 Reverse Split). The aggregate gross consideration paid to the Company in August 2013 in the Company Stock Sale was approximately $41.4 million.

In conjunction with signing the Stock Purchase Agreement, the Company and Grifols agreed to enter into a License and Collaboration Agreement (the License Agreement) at the closing of the Company Stock Sale; Grifols and the Company are considered to be related parties and as a result, all transactions between the two entities will be recognized as related party transactions. The License Agreement exclusively licenses the Company s inhaled liposomal ciprofloxacin compounds for the indication of non-cystic fibrosis bronchiectasis and other indications (the Program) to Grifols on a worldwide basis. Grifols funds development expenses and will commercialize products from the Program (Products), and pay development milestones and royalties on future commercial sales of Products. The License Agreement is described further below.

On July 15, 2013 shareholders of the Company (i) approved certain amendments to the Company s charter including amendments necessary to increase the total number of shares of Common Stock authorized to be issued by the Company to at least 17,670,765 shares (706,830,627 shares prior to the 1-for-40 Reverse Split), including the 8,349,201 shares (333,968,104 shares prior to the 1-for- 40 Reverse Split) to be sold in the Company Stock Sale (the Charter Amendment) and (ii) approved the Company s closing of the Company Stock Sale and entering into the License Agreement, Governance Agreement and other agreements described below and in the Stock Purchase Agreement (the Transactions). Shareholders of the Company holding more than 50% of the outstanding shares of the Company s Common Stock voted in favor of these proposals at a special meeting.

The closing of the Transactions was subject to certain closing conditions, including, among others the Company s entering into binding terms with a third party to commercially manufacture Products to permit the Company to satisfy its obligation to commercially supply Grifols with Products. All conditions to the closing of the Transactions were met as of August 27, 2013 and the Company Stock Sale was completed on August 27, 2013.

In August of 2013 Grifols paid approximately $26.0 million for the shares of the Company s common stock at a purchase price of $4.96 per share ($0.124 per share prior to the 1-for-40 Reverse Split), which reflected the contractual price for the Company s common stock as stated in the Stock Purchase Agreement on May 20, 2013. Following the announcement of the collaboration, execution of a supply agreement and satisfaction of the other conditions of closing, the stock price rose to $8.00 per share at the time of closing ($0.20 per share prior to the 1-for-40 Reverse Split). Consequently, the contractual price of $4.96 per share ($0.124 per share prior to the 1-for-40 Reverse Split) resulted in a $3.04 per share ($0.076 per share prior to the 1-for-40 Reverse Split) discount from the August 27, 2013 closing price of $8.00 per share ($0.20 per share prior to the 1-for-40 Reverse Split), or a discount of approximately $15.9 million from the fair market value of the common stock on the effective date of the Grifols

License and Collaboration Agreement. The Company determined this transaction was not within the scope of ASC 605-25 and accordingly, the Company recorded the sale of common stock to Grifols at fair value based on the closing price of the Company s stock on August 27, 2013 at $8.00 per share ($0.20 per share price prior to the 1-for-40 Reverse Split). This discount, which is a non-cash charge, has been recorded as Collaboration Arrangement Acquisition Cost in the Company s Consolidated Statement of Operations and Comprehensive Loss for the year ended December 31, 2013.

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License Agreement

The License Agreement was signed simultaneously with the closing of the Company Stock Sale. Under the License Agreement, the Company granted to Grifols an exclusive license to the Program, the lead product candidate of which is named Pulmaquin. The license permits Grifols to commercialize Products throughout the world and grants Grifols a back-up manufacturing right to produce Products.

The Company is responsible for developing the Product for non-cystic fibrosis bronchiectasis or pulmonary infections associated with non-cystic fibrosis bronchiectasis, in accordance with an agreed upon development plan and pursuant to a Grifols-funded budget of $65 million (which includes allocations for the Company s internal, fully-burdened expenses). Any excess expenses are the responsibility of the Company. The Company will develop the Product for additional indications at Grifols sole expense if Grifols elects to pursue such development. Pursuant to the License Agreement, the Company recognized reimbursements of development costs from Grifols as Contract revenue related party totaling $8.1 million and $33.0 million for the three and twelve month periods ended December 31, 2014, respectively. The Company recognized $8.7 million from Grifols as Contract revenue related party for the year ended December 31, 2013 for the reimbursement of fully burdened development expenses for collaboration services performed and costs incurred related to the development of Pulmaquin for non-cystic fibrosis bronchiectasis prior to the execution of the License Agreement on August 27, 2013 and through December 31, 2013.

The Company is responsible for obtaining regulatory approval of the first indication for the Product in the United States and the European Union. Grifols is responsible for additional regulatory expenses, including the cost of obtaining approval outside the United States and European Union, and the cost of maintaining approvals globally. Grifols is responsible to use diligent efforts to commercialize the Product in countries where regulatory approval has been obtained.

The Company is responsible for supplying Grifols requirements of the Product, and must establish primary and back-up suppliers acceptable to Grifols. Grifols will purchase Products from the Company on a cost pass-through basis plus a margin.

The collaboration between Grifols and the Company is governed by a joint committee comprised of equal representation by the Company and Grifols and operated on a consensus basis. In the event that the parties do not agree, Grifols has deciding authority, except with respect to specific matters specified in the License Agreement. The Company has no obligation to participate in the joint committee after the first commercial sale of the product, but may do so at its discretion. Accordingly, the Company determined that it can separate performance obligations that occur over the development period from performance obligations that will occur during the commercialization period.

With respect to the US and EU development and approval of Pulmaquin for non-cystic fibrosis bronchiectasis management, Grifols will pay to Aradigm reimbursements of development costs up to $65 million and development milestone payments of up to $25 million. Additionally, royalty payments on a country-by-country basis on net sales at a rate of either 12.5% or 20% (depending on the amount of net sales) for so long as there is patent coverage or orphan drug designation (or, if longer, 10 years), except that payments will be reduced by half on a country-by-country basis in the event that another inhaled liposomal product containing ciprofloxacin is being sold for an indication for which the Aradigm product has regulatory approval. Royalty payments may also be reduced by 50% if Aradigm has no valid patent claim or orphan drug protection in that country.

The Company s deliverables include an exclusive license for inhaled ciprofloxacin compounds for the indication of non-cystic fibrosis bronchiectasis and other indications, payment of development costs over $65 million for the non-cystic fibrosis bronchiectasis indication and participation on a Joint Steering Committee (JSC). Having determined that both the development and JSC do not have standalone value from the license,

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the Company combined these deliverables into a single unit of accounting. The Company is recognizing reimbursements of development expenses as collaboration services are performed and costs are incurred. During the year ended December 31, 2014, the Company recognized $33.0 million in contract revenue related party relating to services performed and costs incurred during the period under the License Agreement. Contract revenue- related party of $8.1 million has been recognized for the quarter ended December 31, 2014 for the reimbursement of fully burdened development expenses for collaboration services performed and costs incurred related to the development of Pulmaquin for non-cystic fibrosis bronchiectasis. In addition, the Company has a current deferred revenue balance at December 31, 2014 of $0.8 million and a long-term deferred revenue balance of $7.8 million. The long-term deferred revenue balance consists of: (i) a $5 million milestone received upon the dosing of the first patient in a Phase III clinical trial and (ii) reimbursements billed in advance of collaboration services to be performed beyond a one year period. The $5 million milestone payment will be recognized as revenue upon receiving the first regulatory approval. Finally, the Company has an accounts receivable balance of $1.0 million for unreimbursed fourth quarter expenses for the Pulmaquin project and $43,000 of the accounts payable balance is for board of director expenses for fourth quarter with Grifols as of December 31, 2014.

Costs incurred under the Grifols License Agreement in the quarters ended December 31, 2014 and 2013 are $8.1 million and $4.4 million, respectively. Costs incurred under the Grifols License Agreement for the twelve months ended December 31, 2014 and 2013 are $33.0 million and $8.7 million, respectively. Expenses reimbursed in the twelve months ended December 31, 2013 include services performed and costs incurred in the year ended December 31, 2012 of $1.1 million and in the twelve months ended December 31, 2013 of $7.6 million. Development expenses are fully burdened and include direct costs reported as research and development expenses and collaboration-related general and administrative expenses.

Governance Agreement

The Governance Agreement sets forth certain rights and obligations of the Company and Grifols concerning, among other things, certain corporate governance matters, certain limitations on future acquisitions of shares of Common Stock by Grifols, and certain rights by Grifols to maintain a target level of ownership in the Company.

On the date the Governance Agreement was executed, the Company s board of directors was reconstituted to consist of its chief executive officer, three independent directors under the NASDAQ Marketplace Rules and two persons designated by Grifols. The number of persons Grifols is entitled to designate for consideration for election to the Company s board of directors by the Company s nominating committee will thereafter depend on the percentage of beneficial ownership of the Company held by Grifols.

The Governance Agreement also provides that during the period beginning on the date of Closing and ending 12 months after the first commercial sale of a Product (the Restricted Period), Grifols will not directly or indirectly acquire or offer to acquire any shares of Common Stock except (i) with the approval of the Company s board of directors and a majority of its independent directors, (ii) effected solely to the extent necessary to maintain the beneficial ownership of Grifols and its affiliates at an amount equal to 35% (the Target Percentage) of the shares of Common Stock on a Fully Diluted Basis (as defined in the Governance Agreement), or (iii) in order to maintain its ownership percentage in the event that the Company issues new securities, in accordance with the provisions of the Governance Agreement. The Restricted Period terminates upon the occurrence of certain events, including a change in control of the Company and a third party publicly proposing to acquire the Company. The Governance Agreement further imposes certain standstill obligations on Grifols during the Restricted Period, pursuant to which Grifols and certain related persons are prohibited from soliciting proxies from the Company s shareholders, granting proxies or

entering into voting agreements and seeking additional representation on the Company s Board of Directors.

The Governance Agreement provides Grifols with certain preemptive rights to participate in future issuances of Common Stock or equivalents of Common Stock by the Company, or the right to acquire shares of

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Common Stock from third parties or on the open market to maintain its Fully Diluted Ownership at the Target Percentage.

The Governance Agreement requires the approval of Grifols for certain actions by the Company which would adversely affect Grifols rights under the Governance Agreement, and for the Company to terminate the employment of its Chief Executive Officer or to appoint any successor Chief Executive Officer.

Registration Rights Agreements

In connection with and concurrently with the closing of the Company Stock Sale, the Company entered into a Registration Rights Agreement with Grifols (the Grifols Registration Rights Agreement), pursuant to which the Company agreed to provide registration rights to Grifols with respect to the shares of Common Stock to be acquired in the Company Stock Sale. Under such agreement, Grifols will be entitled to require the Company to file with the SEC certain registration statements under the Securities Act of 1933, as amended (the Securities Act), with respect to the resale of the shares of Common Stock acquired by Grifols in the Company Stock Sale up to three times on Form S-1 and up to six times on Form S-3, and to include its shares of Common Stock in any registration the Company proposes for its own account or for the account of one or more of its shareholders.

In connection with and concurrently with the closing of the Company Stock Sale, the Company and the Investors also entered into a Registration Rights Agreement (the Investors Registration Rights Agreement). Pursuant to the Investors Registration Rights Agreement, the Company is required to file a registration statement to cover the resale of the shares of the Common Stock acquired by the investors in the Company Stock Sale. The failure on the part of the Company to satisfy the deadlines set forth in the Investors Registration Rights Agreement may subject the Company to payment of certain monetary penalties. In addition, pursuant to the terms of the Stock Purchase Agreement, the Company has agreed, among other things, not to file any other registration statement (other than any registration statement on Form S-4 or Form S-8, and subject to certain other limitations and exclusions) until the Common Stock subject thereto is covered by an effective registration statement or freely salable under Rule 144 under the Securities Act.

7. Royalty Agreement, Note Payable, and Accrued Interest

Zogenix

In August 2006, the Company sold all assets related to its needle-free injector technology platform and products, including 12 U.S. patents along with foreign counterparts, to Zogenix, Inc. In July 2009, Zogenix was granted approval by the U.S. Food and Drug Administration (FDA) of the SUMAVEL* DosePro* (sumatriptan injection) needle-free delivery system for the treatment of acute migraine and cluster headache. The Company was entitled to quarterly royalty payments of 3% of net sales on all SUMAVEL DosePro sales. The Company recorded royalty revenue of approximately $1.0 million for the twelve months ended December 31, 2013.

Royalty Financing

In June 2011, the Company entered into an $8.5 million royalty financing agreement with a syndicate of lenders. The agreement created a debt obligation (the Term Loan) that will be repaid through and secured by royalties from net sales of the SUMAVEL DosePro needle-free delivery system payable to the Company under its Asset Purchase Agreement (APA) with Zogenix.

The Company capitalized the fees and expenses of approximately $473,000 and recorded this amount in other assets. The capitalized expenses were to be amortized to interest expense using the effective interest method over a period of 48 months, however, the full amount of the remaining capitalized fees and expenses were recognized in the three months ended March 31, 2014, which was the accounting period following the completion of the transfer of payment rights to the lenders as described below.

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In connection with the original royalty financing transaction, the Company issued to the lenders warrants to purchase a total of 71,022 shares of the Company s common stock (2,840,909 shares prior to the 1-for-40 Reverse Split) at a strike price of $8.80 per share ($0.22 per share prior to the 1-for-40 Reverse Split), representing a 20% premium above the average closing price of the Company s common stock for the ten trading days immediately preceding the closing of the royalty financing transaction. The warrants expire on December 31, 2016. In accordance with Accounting Standards Topic 815 *Derivatives and Hedging*, the warrants were accounted for as equity instruments and their fair value was determined to be approximately $390,000. The relative fair value of the warrants is considered a discount against the note and was recorded as a reduction of the note payable. The note discount was being amortized to interest expense using the effective interest method with an annual rate of 18.7% over a period of 48 months, however, the full amount of the remaining note discount was recognized in the three months ended March 31, 2014, which was the accounting period following the completion of the transfer of payment rights to the lenders as described below.

While the term loan was non-recourse to the assets of Aradigm Corporation, the term loan agreement contained a minimum royalty covenant. If the minimum royalty covenant was breached and the subsidiary did not cure the breach through a cash contribution to pay down the accrued principal and interest, then the lenders had the right to declare the agreement in default and obtain the right to all future royalties and payments due to Aradigm under the Zogenix asset purchase agreement. In 2012, the minimum royalty covenant was breached and the Company made cash payments of approximately $167,000 to the lenders for accrued interest in order to cure the breach. In the twelve months ended December 31, 2013, the covenant was again breached and the cumulative cash shortfall the Company would need to contribute to keep the agreement from default stood at $525,000. In the first quarter of 2014, the Company elected not to make this or any future contributions.

On March 4, 2014, the Company and the other parties executed an Assignment Agreement that transferred the rights to the lenders, effective February 28, 2014, for all future royalty payments from Zogenix under the APA in full and complete satisfaction of the Company s obligations under the loan agreement and the other agreements entered into in connection with the royalty financing. Under the Assignment Agreement, the parties agreed that the value of the Assigned Interest is $5.8 million. Zogenix consented to the Assignment. The Company valued the assignment of the royalty rights at $5.8 million in the Condensed Consolidated Statement of Operations and Comprehensive Income (Loss) in accordance with the Assignment Agreement which was recorded as a gain on fair value of assigned royalty rights in the quarter ended March 31, 2014. The balance of the note payable and accrued interest extinguished in the transaction offset by deferred loan costs and unamortized debt discount as of the assignment date less the fair value of the royalty rights resulted in a gain from debt extinguishment of $3.0 million which was recognized in the quarter ended March 31, 2014 in the Condensed Consolidated Statement of Operations and Comprehensive Income (Loss). All debts and obligations of Aradigm and its subsidiary are considered to be paid and satisfied in full.

8. Leases, Commitments and Contingencies

The Company has a lease for a building containing offices, laboratory and manufacturing facilities, which expires in 2016. A portion of this lease obligation was offset by a sublease to Mendel Biotechnology, Inc. (Mendel). Future minimum non-cancelable lease payments at December 31, 2014 are as follows (in thousands):

	Operating Leases	Mendel Sub-Lease	Net Operating Lease Payments

Year ending December 31:			
2015	1,918	(1,202)	716
2016	1,020	(640)	380
Total minimum lease payments	$ 2,938	$ (1,842)	$ 1,096

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In July 2007, the Company entered into a sublease agreement with Mendel to lease approximately 48,000 square feet of its 72,000 square foot headquarters located in Hayward, California. In April 2009, the Company entered into an amendment to its sublease agreement with Mendel to sublease an additional 1,550 square feet. In January 2012, the Company entered into a second amendment to the sublease agreement with Mendel to sublease an additional 3,300 square feet during April 2012.

The sublease commenced in July 2007 and expires concurrently with the master lease in July 2016. Under the sublease and amendments, Mendel will make monthly base rent payments until the end of the term totaling $3.0 million that will offset a portion of the Company s existing building lease obligation. Under the terms of the second amendment to the sublease entered into in January 2012 Mendel waived their right to early termination. Mendel will also pay the Company for its share of all pass through costs such as taxes, operating expenses and utilities based on the percentage of the facility space occupied by them.

The Company s monthly rent payments fluctuate under the master lease. In accordance with U.S. generally accepted accounting principles, the Company recognizes rent expense on a straight-line basis. The Company records deferred rent for the difference between the amounts paid and recorded as expense. At December 31, 2014 and 2013, the Company had $97,000 and $132,000 of deferred rent, respectively.

For the years ended December 31, 2014 and 2013, building rent expense under operating leases totaled $593,000 and $594,000, respectively.

Indemnification

The Company from time to time enters into contracts that contingently require the Company to indemnify parties against third party claims. These contracts primarily relate to: (i) real estate leases, under which the Company may be required to indemnify property owners for environmental and other liabilities, and other claims arising from the Company s use of the applicable premises, and (ii) agreements with the Company s officers, directors and employees, under which the Company may be required to indemnify such persons from certain liabilities arising out of such persons relationships with the Company. To date, the Company has made no payments related to such indemnifications and no liabilities have been recorded for these obligations on the balance sheets at December 31, 2014 or 2013.

Legal Matters

From time to time, the Company is involved in litigation arising out of the ordinary course of its business. Currently there are no known claims or pending litigation expected to have a material effect on the Company s overall financial position, results of operations, or liquidity.

9. Shareholders Equity

On May 20, 2013, the Company and Grifols and certain other investors (the Investors) entered into a Stock Purchase Agreement, pursuant to which the Company agreed, subject to the terms and conditions set forth in the Stock Purchase Agreement, to issue and sell a total of 5,244,363 shares of the Company s Common Stock (209,774,558 shares prior to the 1-for-40 Reverse Split), to Grifols and an additional 3,104,838 shares of Common Stock (124,193,546 shares prior to the 1-for-40 Reverse Split) to the Investors, for a total sale of 8,349,201 shares of Common Stock (333,968,104 shares prior to the 1-for-40 Reverse Split), for a purchase price of $4.96 per share ($0.124 per share prior to the

1-for-40 Reverse Split). The aggregate gross consideration paid to the Company in August 2013 in the Company Stock Sale was approximately $41.4 million.

Reserved Shares

At December 31, 2014, the Company had 515,366 shares reserved for future issuance upon exercise of options under all stock option plans and 688,001 shares of common stock reserved for future issuance of new

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option grants. The Company had 35,184 shares available for future issuances under the ESPP. Additionally, the Company had 71,022 shares reserved for outstanding warrants and 12,500 shares reserved for issuance to an executive officer pursuant to a stand-alone non-statutory stock option agreement at December 31, 2014.

Shareholder Rights Plan

In September 2008, the Company adopted an amended and restated shareholder rights plan, which replaced the rights plan originally adopted in August 1998. Pursuant to the rights plan, as amended and restated, the Company distributes rights to purchase shares of Series A Junior Participating Preferred Stock as a dividend at the rate of one right for each share of common stock outstanding. Until the rights are distributed, the rights trade with, and are not separable from, the Company s common stock and are not exercisable. The rights are designed to guard against partial tender offers and other abusive and coercive tactics that might be used in an attempt to gain control of the Company or to deprive the Company s shareholders of their interest in the Company s long-term value. The shareholder rights plan seeks to achieve these goals by encouraging a potential acquirer to negotiate with the Company s Board of Directors. The rights will expire at the close of business on September 8, 2018.

Stock Option Plans: 1996 Equity Incentive Plan, 2005 Equity Incentive Plan and 1996 Non-Employee Directors Plan

The 1996 Equity Incentive Plan (the 1996 Plan) and the 2005 Equity Incentive Plan (the 2005 Plan), which amended, restated and retitled the 1996 Plan, were adopted to provide a means by which officers, non-employee directors, scientific advisory board members and employees of and consultants to the Company and its affiliates could be given an opportunity to acquire an equity interest in the Company. All officers, non-employee directors, scientific advisory board members and employees of and consultants to the Company are eligible to participate in the 2005 Plan.

In April 1996, the Company s Board of Directors adopted and the Company s shareholders approved the 1996 Plan, which amended and restated an earlier stock option plan. The 1996 Plan reserved 24,000 shares for future grants. During May 2001, the Company s shareholders approved an amendment to the Plan to include an evergreen provision. In 2003, the 1996 Plan was amended to increase the maximum number of shares available for issuance under the evergreen feature of the 1996 Plan by 10,000 shares to 50,000 shares. The evergreen provision automatically increased the number of shares reserved under the 1996 Plan, subject to certain limitations, by 6% of the issued and outstanding shares of common stock of the Company or such lesser number of shares as determined by the Board of Directors on the date of the annual meeting of shareholders of each fiscal year beginning in 2001 and ending 2005. As of December 31, 2014, the Company had 944 options outstanding and no shares were available for future grants under the 1996 Plan.

In March 2005, the Company s Board of Directors adopted and in May 2005 the Company s shareholders approved the 2005 Plan, which amended, restated and retitled the 1996 Plan. All outstanding awards granted under the 1996 Plan remain subject to the terms of the 1996 Plan. All stock awards granted on or after the adoption date are subject to the terms of the 2005 Plan. No shares were added to the share reserve under the 2005 Plan other than the shares available for future issuance under the 1996 Plan. Pursuant to the 2005 Plan, the Company had 72,965 shares of common stock authorized for issuance. Options (net of canceled or expired options) covering an aggregate of 49,981 shares of the Company s common stock had been granted under the 1996 Plan, and 22,984 shares became available for future grant under the 2005 Plan. In March 2006, the Company s Board of Directors amended, and in May 2006 the Company s shareholders approved, the amendment to the 2005 Plan, increasing the shares of common stock authorized for issuance by 50,000. In April 2007, the Company s Board of Directors amended, and in June 2007, the Company s

shareholders approved the amendment to the 2005 Plan, increasing the shares of common stock authorized for issuance by 40,000 shares. In March 2008, the Company s Board of Directors amended, and in May 2008 the Company shareholder s approved, the amendment to the 2005 Plan, increasing the shares of common stock authorized by 67,500. In

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March 2010, the Company s Board of Directors amended, and in May 2010, the Company shareholder s approved the amendment to the 2005 Plan, increasing the shares of common stock authorized by 100,000. In March 2012, the Company s Board of Directors amended, and in May 2012, the Company shareholder s approved the amendment to the 2005 Plan, increasing the shares of common stock authorized by 100,000. In May 2013, the Company s Board of Directors amended, and in July 2013, the Company s shareholder s approved the amendment to the 2005 Plan, increasing the shares of common stock authorized by 1,000,000. Shares available for future grants totaled 688,001 as of December 31, 2014 for the 2005 Plan.

On March 13, 2015, the Board of Directors adopted the 2015 Equity Incentive Plan (2015 Plan), subject to the approval of the Company s shareholders at the 2015 Annual Meeting. The 2015 Plan would replace the existing 2005 Equity Incentive Plan (2005 Plan) which expires by its terms in March 2015. The Company is submitting the 2015 Plan to its shareholders for approval. The Company is not requesting that shareholders authorize any new shares of Common Stock in connection with the approval of the 2015 Plan; rather, the remaining shares authorized under the 2005 Plan will be available for issuance under the 2015 Plan.

Options granted under the 2005 Plan expire no later than 10 years from the date of grant. Options granted under the 2005 Plan may be either incentive or non-statutory stock options. For incentive and non-statutory stock option grants, the option price shall be at least 100% and 85%, respectively, of the fair value on the date of grant, as determined by the Company s Board of Directors. If at any time the Company grants an option, and the optionee directly or by attribution owns stock possessing more than 10% of the total combined voting power of all classes of stock of the Company, the option price shall be at least 110% of the fair value and shall not be exercisable more than five years after the date of grant.

Options granted under the 2005 Plan may be immediately exercisable if permitted in the specific grant approved by the Board of Directors and, if exercised early may be subject to repurchase provisions. The shares acquired generally vest over a period of four years from the date of grant. The 2005 Plan also provides for a transition from employee to consultant status without termination of the vesting period as a result of such transition. Under the 2005 Plan, employees may exercise options in exchange for a note payable to the Company, if permitted under the applicable grant. As of December 31, 2014 and 2013, there were no outstanding notes receivable from shareholders. Any unvested stock issued is subject to repurchase agreements whereby the Company has the option to repurchase unvested shares upon termination of employment at the original issue price. The common stock subject to repurchase has voting rights, but cannot be resold prior to vesting. No grants with early exercise provisions have been made under the 2005 Plan and no shares have been repurchased. The Company granted options to purchase 338,121 shares and 29,250 shares during the years ended December 31, 2014 and 2013, respectively, under the 2005 Plan, which included option grants to the Company s non-employee directors in the amount of 21,875 shares and 14,000 shares during 2014 and 2013, respectively. The 2005 Plan had 514,422 option shares outstanding as of December 31, 2014.

The 1996 Non-Employee Directors Stock Option Plan (the Directors Plan) had 1,125 shares of common stock authorized for issuance. Options granted under the Directors Plan expire no later than 10 years from date of grant. The option price shall be at 100% of the fair value on the date of grant as determined by the Board of Directors. The options generally vest quarterly over a period of one year. During 2000, the Board of Directors approved the termination of the Directors Plan. No more options can be granted under the plan after its termination. The termination of the Directors Plan had no effect on the options already outstanding. As of December 31, 2014, there were no outstanding options in this plan and there were no additional shares available for grant.

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The following is a summary of activity under the 1996 Plan, the 2005 Plan and the Directors Plan as of December 31, 2014:

Stock Options	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value
Outstanding at December 31, 2013	194,147	$ 28.46		
Options granted	338,121	$ 9.34		
Options cancelled	(15,627)	$ 42.21		
Options exercised	(1,275)	$ 5.63		
Outstanding at December 31, 2014	515,366	$ 15.55	7.69	$ 101,580
Ending Vested + Expected To Vest	495,347	$ 15.80	7.63	$ 101,272
Ending Exercisable	199,661	$ 25.50	5.27	$ 94,288

The weighted-average grant-date fair value of options granted during the years 2014 and 2013 was $7.57 and $5.28 respectively. The intrinsic value of exercised stock options is calculated based on the difference between the exercise price and the quoted market price of our common stock as the of close of the exercise date. The total intrinsic value of stock options exercised in fiscal years 2014 and 2013 was $3,500 and $200.

A summary of the activity of the Company s unvested restricted stock and performance bonus stock award activities for the year ending December 31, 2014 is presented below. The ending balance represents the maximum number of shares that could be earned or vested under the 2005 Plan:

Restricted Stock Awards

	Number of Shares	Weighted Average Grant Date Fair Value
Outstanding at December 31, 2013	19,217	7.33
Restricted stock awards granted	11,250	9.60
Restricted share awards vested	(30,167)	7.67
Outstanding at December 31, 2014	300	57.60

As of December 31, 2014, there was $0 of total unrecognized compensation cost related to restricted stock award arrangements granted under the Plan. Recipients of restricted stock do not pay cash consideration for the shares and have the right to vote all shares subject to the grant. Stock compensation expense for the awards has been recognized in the appropriate period. The total fair value of restricted stock awards vested during the years ended December 31,

2014 and 2013 was $247,000 and $246,000 respectively.

The Company retained purchase rights to 300 and 19,217 shares of unvested restricted stock awards issued pursuant to stock purchase agreements at no cost per share as of December 31, 2014 and 2013, respectively.

Restricted Stock Units

	Number of Shares	Weighted Average Grant Date Fair Value
Outstanding at December 31, 2013	10,306	5.34
Restricted stock units granted	0	0
Restricted share units vested	0	0
Outstanding at December 31, 2014	10,306	5.34

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As of December 31, 2014, there was zero of total unrecognized compensation cost related to restricted stock unit arrangements granted under the Plan. The total fair value of shares vested during the years ended December 31, 2014 and 2013 was $0 for both years.

Employee Stock Purchase Plan

Employees generally are eligible to participate in the ESPP if they have been continuously employed by the Company for at least 10 days prior to the first day of the offering period and are customarily employed at least 20 hours per week and at least five months per calendar year and are not a 5% or greater shareholder. Shares may be purchased under the ESPP at 85% of the lesser of the fair market value of the common stock on the grant date or purchase date. Employee contributions, through payroll deductions, are limited to the lesser of 15% of earnings or $25,000.

As of December 31, 2014, a total of 141,066 shares had been issued under the ESPP. In April 2008, the Company s Board of Directors amended, and in May 2008 the Company s shareholder approved, the amendment to the ESPP increasing the shares of common stock authorized by 25,000. In April 2009, the Company s Board of Directors amended, and in May 2009 the Company s shareholders approved, the amendment to the ESPP increasing the number of shares of common stock authorized by 62,500. In March 2013, the Company s Board of Directors amended, and in May 2013 the Company s shareholders approved, the amendment to the ESPP increasing the number of shares of common stock authorized by 62,500. As of December 31, 2014, there was a balance of 35,184 available authorized shares. Compensation expense was $67,000 and $106,000 for the years ended December 31, 2014 and 2013, respectively. The fair value of employee stock purchase rights under the ESPP is determined using the Black-Scholes option pricing model and the following weighted average assumptions:

	Years Ended December 31,	
	2014	**2013**
Employee Stock Purchase Plan		
Dividend yield	0.0%	0.0%
Volatility factor	65.1%	107.1%
Risk-free interest rate	0.07%	0.2%
Expected life (years)	0.50	2.00
Weighted-average fair value of purchase rights granted during the period	$ 3.20	$ 3.65

Stock-Based Compensation Expense

The Company recognizes stock-based compensation expense based on the fair value of that portion of stock options and restricted stock awards that are ultimately expected to vest during the period. Stock-based compensation expense recognized in the Consolidated Statement of Operations and Comprehensive Loss includes compensation expense for stock-based awards based on the estimated grant date fair value over the requisite service period.

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The following table shows stock-based compensation expense included in the consolidated statement of operations and comprehensive income (loss) for the years ended December 31, 2014 and 2013, (in thousands, except per share amounts):

	2014	2013
Costs and Expenses		
Research and development	$ 197	$ 138
General and administrative	419	283
Total employee stock-based compensation expense	$ 616	$ 421
Impact on basic and diluted net income (loss) per common share	$ 0.04	$ (0.05)

There was no capitalized stock-based compensation cost as of December 31, 2014. Since the Company has cumulative net losses through December 31, 2014, there was no tax benefit associated with stock-based compensation expense.

The total amount of unrecognized compensation cost related to unvested stock options and stock purchases net of forfeitures was $1,030,000 as of December 31, 2014. This amount will be recognized over a weighted average period of 2.93 years. As of December 31, 2014, there is no total unrecognized compensation costs, net of forfeitures, related to unvested awards that is expected to be recognized.

Valuation Assumptions

The fair value of options was estimated at the date of grant using the Black-Scholes option pricing model. Expected volatility is based on the historical volatility of the Company s common stock for similar terms. The expected term was estimated using a lattice model prior to 2010, and the simplified method was used starting in 2010 as permitted under SAB No. 110, since the Company s recent exercise and forfeiture history was not representative of the expected term of options granted during the year. The expected term represents the estimated period of time that stock options are expected to be outstanding, which is less than the contractual term which is generally ten years. The risk-free interest rate is based on the U.S. Treasury yield. The expected dividend yield is zero, as the Company does not anticipate paying dividends in the near future. The weighted average assumptions for employee options (which for purposes of this table includes members of the board of directors) are as follows:

	Years Ended December 31	
	2014	2013
Dividend yield	0.0%	0.0%
Volatility factor	110.0%	112.7%
Risk-free interest rate	1.8%	1.4%
Expected term (years)	6.0	5.7
Weighted-average fair value of options granted during the periods	$ 7.57	$ 5.28

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The weighted average assumptions for non-employee options, except for members of the board of directors which are reflected above, are as follows:

	Years Ended December 31	
	2014	2013
Dividend yield	N/A	0.0%
Volatility factor	N/A	116.0%
Risk-free interest rate	N/A	9.8%
Expected term (years)	N/A	9.84
Weighted-average fair value of options granted during the periods	N/A	$ 5.92

Except for grants to members of the board of directors no options were granted to non-employees in the year ended December 31, 2014.

Stock-Based Compensation for Non-Employees

The Company accounts for options issued to non-employees under ASC 505-50, *Equity Equity Based Payments to Non-Employees,* using the Black-Scholes option-pricing model. The value of such non-employee options are periodically re-measured over their vesting terms.

10. Employee Benefit Plans

The Company provides a 401(k) Plan for all full-time employees. Employees can contribute on a pretax basis up to the 2014 statutory limit of $17,500 (plus an additional $5,500 for employees that are 50 years and older). The Company matches employees contributions up to a maximum of three percent of an employee s annual salary based upon the employee s contribution and certain other limitations. The Company s employer matching contribution expense was $55,000 and $40,000 in 2014 and 2013, respectively.

11. Income Taxes

In 2014 and 2013, the Company recorded an income tax benefit of zero. Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting and the amounts used for tax purposes as well as net operating loss and tax credit carryforwards.

Significant components of the Company s deferred tax assets and liabilities were as follows (in thousands):

	December 31,	
	2014	2013
Net operating loss carryforwards	$ 14,955	$ 16,739
Research and development credits	6,509	6,509
Federal orphan drug credits	7,217	7,228
Other	1,152	1,210

Total deferred tax assets	29,833	31,686
Valuation allowance	(29,833)	(31,686)
Net deferred tax assets	$	$

The Company considers all available evidence, both positive and negative, including historical levels of taxable income, expectations and risks associated with estimates of future taxable income, and ongoing prudent and feasible tax planning strategies in assessing the need for a valuation allowance. At December 31, 2014 and 2013, based on the Company s analysis of all available evidence, both positive and negative, it was considered

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more likely than not that the Company s deferred tax assets would not be realized, and as a result, the Company recorded a valuation allowance for its deferred tax assets. The valuation allowance decreased by $1.9 million during the year ended December 31, 2014 and increased by $1.7 million during the year ended December 31, 2013. In accordance with ASC 718 *Compensation-Stock Compensation*, the Company has excluded from deferred tax assets those tax benefits attributable to employee stock option exercises.

The difference between the income tax benefit and the amount computed by applying the federal statutory income tax rate to loss before income taxes is as follows (in thousands):

	Year Ended December 31,	
	2014	2013
Income tax benefit at federal statutory rate	$ 1,657	$ (7,544)
State taxes (net of federal)	11	186
Credits		
Other	129	43
Collaboration arrangement acquisition cost		5,580
Change in valuation allowance	(1,797)	1,735
Total	$	$

As of December 31, 2014, the Company had federal net operating loss carryforwards of approximately $36.3 million and federal orphan drug credit carryforwards of approximately $7.2 million, which expire in the years 2019 through 2033. The Company also had California net operating loss carryforwards of approximately $39.1 million, which expire in the years 2015 through 2033, and California research and development tax credit carryforwards of approximately $9.9 million, which do not expire. None of the federal and state net operating loss carryforwards represent stock option deductions arising from activity under the Company s stock option plan.

The Company s federal and state net operating loss (NOL s) and tax credit carryforwards are subject to substantial annual limitations as a result of certain ownership changes that occurred in 2010 and prior years. Federal net operating loss (NOL) carryforwards totaling $36.3 million will begin to expire from 2019 to 2033, subject to the annual limitations. Federal tax credit carryforwards totaling $7.3 million will begin to expire from 2028 to 2032, subject to the annual limitations. State operating loss carryforwards totaling $39.1 million will begin to expire from 2015 to 2033, subject to annual limitations. State tax credit carryforwards may be subject to further annual limitations for ownership changes occurring after December 31, 2014.

During the twelve months ended December 31, 2014, the Company had pre-tax income of $4.7 million. The provision for Federal and state income taxes related to such pre-tax income has been offset by the utilization of available net operating loss carryovers. Utilization of the Company s NOL and credit carryforwards may be subject to additional annual limitations based on future stock issuances or ownership changes. Such future limitations could result in the expiration of the net operating loss and credit carryforwards before utilization. Based on the analyses performed on ownership changes that have occurred from inception through December 31, 2014, the Company expects to be able to use the NOL and tax credit carryforwards as noted above.

The Company files income tax returns in the U.S. federal jurisdiction and various state jurisdictions. The Company is subject to U.S. federal and state income tax examinations by tax authorities for tax years from 1998 due to net operating losses and tax credits that are being carried forward for tax purposes.

The Company does not have any unrecognized tax benefits, or interest and penalties accrued on unrecognized tax benefits, at December 31, 2014, or during the two years then ended. The Company s policy is to recognize interest and penalties accrued on any unrecognized tax benefits as a component of income tax expense.

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12. Quarterly Results of Operations (unaudited)

Following is a summary of the quarterly results of operations for the years ended December 31, 2014 and 2013 (in thousands, except per share amounts):

	March 31, 2014	June 30, 2014	September 30, 2014	December 31, 2014
Total revenue	$ 6,631	$ 12,245	$ 6,617	$ 8,068
Operating expenses:				
Research and development	5,796	11,656	6,047	7,673
General and administrative	1,651	1,931	1,443	1,201
Restructuring and asset impairment	6	5	4	4
Total expenses	7,453	13,592	7,494	8,878
Loss from operations	(822)	(1,347)	(877)	(810)
Interest income/(expense), net	(286)	1	5	9
Other expense	(1)	(12)	(42)	(30)
Gain on assignment of royalty interests	5,823			
Gain from extinguishment of debt	3,041			
Income (loss) before income taxes	7,755	(1,358)	(914)	(831)
Income tax provision				
Net income (loss) and comprehensive income (loss)	$ 7,755	$ (1,358)	$ (,914)	$ (831)
Basic net income (loss) per common share	$ 0.53	$ (0.09)	$ (0.06)	$ (0.06)
Diluted net income (loss) per common share	$ 0.53	$ (0.09)	$ (0.06)	$ (0.06)
Shares used in computing basic net income (loss) per common share	14,669	14,697	14,706	14,726
Shares used in computing diluted net income (loss) per common share	14,713	14,697	14,706	14,726

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	March 31, 2013	June 30, 2013	September 30, 2013	December 31, 2013
Total revenues	$ 279	$ 248	$ 4,552	$ 4,638
Operating expenses:				
Research and development	1,984	1,423	1,593	3,884
General and administrative	1,220	1,118	1,463	974
Collaboration arrangement acquisition cost			15,943	
Restructuring and asset impairment	7	7	7	6
Total expenses	3,211	2,548	19,006	4,864
Loss from operations	(2,932)	(2,300)	(14,454)	(226)
Interest expense, net	(392)	(406)	(420)	(425)
Other income (expense)	(1)	(4)		(4)
Loss before income taxes	(3,325)	(2,710)	(14,874)	(655)
Income tax provision				
Net loss	$ (3,325)	$ (2,710)	$ (14,874)	$ (655)
Basic and diluted net loss per common share	$ (0.53)	$ (0.43)	$ (1.59)	$ (0.04)
Shares used in computing basic and diluted net loss per common share	6,249	6,260	9,352	14,660

13. Subsequent Events

The Company has evaluated subsequent events that have occurred after December 31, 2014 and determined that there were no events or transactions occurring during this reporting period which require recognition or disclosure in the financial statements.

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

Based on their evaluation as of the end of the period covered by this report, our chief executive officer and chief financial officer have concluded that our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) were effective as of the end of the period covered by this report to ensure that information that we are required to disclose in reports that management files or submits under the Exchange Act is

recorded, processed, summarized and reported within the time periods specified in SEC rules and forms.

Our disclosure controls and procedures are designed to provide reasonable assurance of achieving their objectives, and our chief executive officer and chief financial officer have concluded that these controls and procedures are effective at the reasonable assurance level. We believe that a control system, no matter how well designed and operated, cannot provide absolute assurance that the objectives of the control system are met, and no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within a company have been detected.

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Management s Annual Report on Internal Control Over Financial Reporting

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

There are inherent limitations in the effectiveness of any system of internal control, including the possibility of human error and the circumvention or overriding of controls. Accordingly, even effective internal controls can provide only reasonable assurances with respect to financial statement preparation. Further, because of changes in conditions, the effectiveness of internal control may vary over time.

Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2014. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations (COSO) of the Treadway Commission in *Internal Control Integrated Framework*. Based on its assessment using the COSO criteria, management concluded that our internal control over financial reporting was effective as of December 31, 2014.

As a result of the enactment of the Dodd-Frank Wall Street reform and Consumer Protection Act, Exemption for Non-accelerated Filer, and in accordance with Section 989G of that act, we are not required to provide an attestation report of our independent registered public accounting firm regarding internal control over financial reporting for this fiscal year or thereafter, until such time as we are no longer eligible for the exemption set forth therein.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting that occurred during our most recent fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. ***Other Information***

None.

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PART III

Item 10. ***Directors, Executive Officers and Corporate Governance***

The information required by this Item concerning (i) identification and business experience of the Company s directors, as well as legal proceedings involving such directors and any family relationships between directors and executive officers of the Company, (ii) the identification of the members of the Company s audit committee, (iii) the identification of the Audit Committee Financial Expert and (iv) the Company s Code of Ethics is incorporated by reference from the section captioned Proposal 1: Election of Directors contained in the Company s Proxy Statement related to the 2015 Annual Meeting of Shareholders to be filed by the Company with the SEC (the 2015 Proxy Statement).

Identification of Executive Officers

The information required by this Item concerning our executive officers is set forth in Part I of this Annual Report on Form 10-K.

Section 16(a) Beneficial Ownership Reporting Compliance

The information regarding compliance with Section 16(a) of the Securities Exchange Act of 1934, as amended, required by this Item is incorporated by reference from the section captioned Section 16(a) Beneficial Ownership Reporting Compliance in the 2015 Proxy Statement.

Item 11. ***Executive Compensation***

The information required by this Item is incorporated by reference from the section captioned Compensation contained in the 2015 Proxy Statement.

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

The information required by this Item is incorporated by reference from the section captioned Security Ownership of Certain Beneficial Owners and Management and Equity Compensation Plan Information contained in the 2015 Proxy Statement.

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

The information required by this Item is incorporated by reference from the section captioned Certain Transactions contained in the 2015 Proxy Statement.

Item 14. ***Principal Accounting Fees and Services***

The information required by this item is incorporated by reference from the section captioned Proposal 3: Ratification of Selection of Independent Registered Public Accounting Firm contained in the 2015 Proxy Statement.

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PART IV

Item 15. *Exhibits and Financial Statement Schedules*

(a)(1) *Financial Statements.*

Included in Part II of this Annual Report on Form 10-K:

(2) *Financial Statement Schedules.*

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

(3) *Exhibits.*

Exhibit No.	Description
3.1(1)	Amended and Restated Articles of Incorporation of the Company.
3.2(2)	Amended and Restated Bylaws of the Company, as amended.
3.3(3)	Certificate of Determination of Series A Junior Participating Preferred Stock.
3.4(4)	Amended and Restated Certificate of Determination of Preferences of Series A Convertible Preferred Stock.
3.5(3)	Certificate of Amendment of Amended and Restated Articles of Incorporation of the Company.
3.6(3)	Certificate of Amendment of Certificate of Determination of Series A Junior Participating Preferred Stock.
3.7(5)	Certificate of Amendment of Amended and Restated Articles of Incorporation of the Company.
3.8(5)	Certificate of Amendment of Certificate of Determination of Series A Junior Participating Preferred Stock.

3.9(6)	Certificate of Amendment of Amended and Restated Articles of Incorporation of the Company.
3.10(14)	Certificate of Correction to Certificate of Amendment of Articles of Incorporation of the Company.
3.11(19)	Certificate of Amendment of Articles of Incorporation of the Company.
3.12(22)	Certificate of Amendment of Amended and Restated Articles of Incorporation of the Company.
4.1	Reference is made to Exhibits 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11 and 3.12.
4.2(1)	Specimen common stock certificate.
10.1(1)+	Form of Indemnity Agreement between the Company and each of its directors and officers.

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Exhibit

No.	Description
10.2(1)+	Form of the Company s Incentive Stock Option Agreement under the 2005 Equity Incentive Plan.
10.3(1)+	Form of the Company s Non-statutory Stock Option Agreement under the 2005 Equity Incentive Plan.
10.4(1)+	1996 Non-Employee Directors Stock Option Plan.
10.5(1)+	Form of the Company s Non-statutory Stock Option Agreement under the 1996 Non-Employee Directors Stock Option Plan.
10.6(1)+	Form of the Company s Employee Stock Purchase Plan Offering Document.
10.7(6)+	Form of the Company s Restricted Stock Bonus Agreement under the 2005 Equity Incentive Plan.
10.8(7)+	Employment Agreement, dated as of August 10, 2006, with Dr. Igor Gonda.
10.9(8)	Lease Agreement for the property located in Phase V of the Britannia Point Eden Business Park in Hayward, California, dated January 28, 1998, between the Company and Britannia Point Eden, LLC.
10.10(9)	Sublease between the Company and Mendel Biotechnology, Inc., dated July 11, 2007, under the Lease Agreement by and between the Company and Hayward Point Eden I Limited Partnership, a Delaware limited partnership, as successor-in-interest to Britannia Point Eden, LLC, as amended, for 3929 Point Eden Way, Hayward, California.
10.11(10)+	2005 Equity Incentive Plan, as amended.
10.12(11)+	Employee Stock Purchase Plan, as amended.
10.13(12)	Amended and Restated Rights Agreement, dated as of September 5, 2008 by and between the Company and ComputerShare Trust Company, N.A.
10.14(13)+	Amended and Restated Executive Officer Severance Benefit Plan.
10.15(15)	Amended and Restated Change of Control Agreement entered into between the Company and certain of the Company s senior officers.
10.16(15)	Amended and Restated Change of Control Agreement, dated as of April 5, 2011 by and between the Company and Igor Gonda.
10.17(15)	Amended and Restated Change of Control Agreement, dated as of April 5, 2011 by and between the Company and Nancy Pecota.
10.18(15)	Form of Indemnification Agreement.
10.19(16)	Securities Purchase Agreement, dated as of December 11, 2012, among the Company and the investors party thereto.
10.20(16)	Registration Rights Agreement, dated as of December 11, 2012 among the Company and the buyers party thereto.
10.21(17)	Form of License and Collaboration Agreement by and among the Company and Grifols, S.A.

10.22(17)	Form of Option Agreement by and among the Company and Grifols, S.A.
10.23(17)	Form of Governance Agreement by and among the Company and Grifols, S.A.
10.24(17)	Form of Registration Rights Agreement by and among the Company and Grifols, S.A.
10.25(17)	Form of Registration Rights Agreement by and among the Company and the buyers listed on the signature page thereto.

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No.	Description
10.26(18)	Clinical Supply and Commercial Manufacturing Services Agreement, dated as of August 27, 2013, by and between SIGMA-TAU Pharmasource Inc. and the Company.
10.27(20)	Change of Control Agreement, dated November 5, 2013, by and between the Company and Dr. Juergen Froehlich.
10.28(20)	Offer Letter, dated November 5, 2013, between the Company and Dr. Juergen Froehlich.
10.29(21)	Assignment, Assumption, Waiver and Consent, effective February 28, 2014, by and among the Aradigm Royalty Financing LLC, the Company, R&D Bauer Ventures, LP and SG-PBS LLC.
10.30(23)	Form of Non-statutory Stock Option Agreement, by and between the Company and Igor Gonda.
21.1	List of Subsidiaries of the Company.
23.1	Consent of OUM & Co. LLP, Independent Registered Public Accounting Firm.
24.1	Power of Attorney. Reference is made to the signature page.
31.1	Section 302 Certification of the Chief Executive Officer.
31.2	Section 302 Certification of the Chief Financial Officer
32.1	Section 906 Certification of the Chief Executive Officer and the Chief Financial Officer.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Document
101.PRE	XBRL Taxonomy Extension Presentation Document

+ Represents a management contract or compensatory plan or arrangement.
Portions of this exhibit have been omitted pursuant to a request for confidential treatment and the non-public information has been separately with the Securities and Exchange Commission.

(1) Incorporated by reference to the Company s Form S-1 (No. 333-4236) filed on April 30, 1996, as amended.
(2) Incorporated by reference to the Company s Form 10-Q filed on August 14, 1998.
(3) Incorporated by reference to the Company s Form 10-K filed on March 29, 2002.
(4) Incorporated by reference to the Company s Form S-3 (No. 333-76584) filed on January 11, 2002, as amended.
(5) Incorporated by reference to the Company s Form 10-Q filed on August 13, 2004.
(6) Incorporated by reference to the Company s Form 10-K filed on March 31, 2006.
(7) Incorporated by reference to the Company s Form S-1 (No. 333-138169) filed on October 24, 2006, as amended.
(8) Incorporated by reference to the Company s Form 10-K filed on March 24, 1998, as amended.

(9) Incorporated by reference to the Company s Form 8-K filed on July 24, 2007.
(10) Incorporated by reference to the Company s definitive proxy statement filed on April 7, 2008.
(11) Incorporated by reference to the Company s Form 8-K filed on May 21, 2009.
(12) Incorporated by reference to the Company s Form 10-Q filed on November 12, 2008.
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(16) Incorporated by reference to the Company s Form 8-K filed on December 13, 2012.
(17) Incorporated by reference to the Company s Form 8-K filed on May 24, 2013.
(18) Incorporated by reference to the Company s Form 10-Q filed on October 28, 2013.
(19) Incorporated by reference to the Company s Form 8-K filed on February 4, 2014.
(20) Incorporated by reference to the Company s Form S-1 (No. 333-193751) filed on February 4, 2014, as amended.
(21) Incorporated by reference to the Company s Form 8-K filed on February 4, 2014, as amended.
(22) Incorporated by reference to the Company s Form 10-Q filed on May 14, 2014.
(23) Incorporated by reference to the Company s Form 10-K filed on March 13, 2014.
(b) *Index to Exhibits.*

See Exhibits listed under Item 15(a) (3).

(c) *Financial Statement Schedules.*

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

Aradigm, Lipoquin, Pulmaquin, AERx, AERx Essence and AERx Strip are registered trademarks of the Company.

* Other names and brands may be claimed as the property of others.

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SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Hayward, State of California, on the 17th day of March 2015.

ARADIGM CORPORATION

By: /s/ Igor Gonda
Igor Gonda
President and Chief Executive Officer

KNOWN ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints, jointly and severally, Igor Gonda and Nancy E. Pecota, and each one of them, attorneys-in-fact for the undersigned, each with power of substitution, for the undersigned in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact, or their substitutes, may do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, each of the undersigned has executed this Power of Attorney as of the date indicated opposite his or her name.

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

Signature	Title	Date
/s/ Igor Gonda Igor Gonda	President, Chief Executive Officer and Director (Principal Executive Officer)	March 17, 2015
/s/ Nancy E. Pecota Nancy E. Pecota	Vice President, Finance and Chief Financial Officer (Principal Financial and Accounting Officer)	March 17, 2015
/s/ Virgil D. Thompson Virgil D. Thompson	Chairman of the Board and Director	March 17, 2015
/s/ David Bell David Bell	Director	March 17, 2015

/s/ Frederick Hudson Frederick Hudson	Director	March 17, 2015
/s/ Lafmin Morgan Lafmin Morgan	Director	March 17, 2015
/s/ John M. Siebert John M. Siebert	Director	March 17, 2015

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