ARADIGM CORP
Form 10-K
March 27, 2013
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington D.C. 20549

Form 10-K

(Mark One)

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

For the fiscal year ended December 31, 2012

or

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

For the transition period from _____ to _____,

Commission File Number: 000-28402

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: None

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

Common Stock, no par value

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

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 þ

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 þ 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 þ 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	þ

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

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, 2012 was: $23,976,316.

The number of shares of the registrant s common stock outstanding as of March 16, 2013 was: 251,346,385.

DOCUMENTS INCORPORATED BY REFERENCE

Parts of the Registrant s Proxy Statement for the 2013 Annual Meeting of Shareholders 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 2013 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, cash equivalents and short-term investments as of December 31, 2012 will be sufficient to fund our operations through 2013; (ii) our business strategies, including our intent to pursue selected opportunities for delivery via inhalation by seeking collaborations and government grants that will fund development and commercialization; (iii) our strategy to commercialize our 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; (v) our expectation that we will incur additional operating losses; (vi) our expectation that we will continue to receive royalty revenue from Zogenix and (vii) our focus on establishing funded partnering agreements and sale or out-licensing of non-strategic assets as the means to generate the capital resources needed to fund the further development of the bronchiectasis and cystic fibrosis indications for our inhaled ciprofloxacin program.

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: (i) our ability to enter into partnering agreements and (ii) our need and ability to raise additional capital, whether non-dilutive or otherwise,. 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 drugs delivered by inhalation 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 entering 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 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 possible sales, marketing 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, 2012, we had an accumulated deficit of $371.4 million. Historically, we have funded our operations primarily through public offerings and private placements of our capital stock, license fees and milestone payments from collaborators, proceeds from our 2005 restructuring transaction with Novo Nordisk, borrowings from Novo Nordisk, the milestone and royalty payments associated with the sale of Intraject-related assets to Zogenix, proceeds from our 2011 royalty financing transaction and interest earned on cash equivalents and short-term investments.

Over the last seven years, 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, or another significant territory such as the European Union (EU). 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 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 the 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 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. 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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Pulmonary delivery by inhalation is already a widely used and well accepted method of administration of a variety of drugs for the treatment of respiratory 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. We intend to pursue selected opportunities for systemic delivery via inhalation by seeking collaborations and government grants 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 pharmaceutical markets that would benefit from the efficient, non-invasive inhalation delivery of drugs.

Our Strategy

We are a specialty pharmaceutical company focused on the development and commercialization of a portfolio of drugs delivered by inhalation for the treatment and prevention of severe respiratory diseases. We have chosen to focus on 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 a proprietary portfolio of products for the treatment of respiratory diseases. We believe our expertise in the development 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.

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

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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 seven 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.

Develop our own sales and marketing capacity for products in niche markets. 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 we believe our proprietary delivery technologies will 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 intend to 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.

Proprietary Programs Under Development

Inhaled Ciprofloxacin

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 the 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

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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.

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 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 µg/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 presently have under development three 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

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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. We believe we have the preclinical development, clinical and regulatory expertise to advance this product through development. We intend, if feasible, to retain marketing or co-marketing rights for the inhaled liposomal ciprofloxacin formulations in the United States or another major market, such as the EU.

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 and 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 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. We plan, therefore, to take 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 obtain the 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 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 and asthma patients.

We are seeking partnerships for these programs in order to reduce the overall cost to us of development and to bring additional expertise for the global development and commercialization of inhaled ciprofloxacin for multiple indications.

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 currently 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 two inhaled antibiotics other than ciprofloxacin approved for the chronic management of this infection; one of them is given twice a day and the other one three times a day. Both of these antibiotics are administered by nebulization and 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, 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. We intend, if feasible, to retain marketing or co-marketing rights for the inhaled ciprofloxacin formulations in at least one of the major markets, such as the United States or the EU.

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

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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 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.

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.

ARD-1100 Liposomal Ciprofloxacin for the Treatment of Inhalation Anthrax and other biodefense purposes

Another of our inhaled ciprofloxacin programs is for the prevention and treatment of inhaled infections, such as inhalation anthrax, tularemia and pneumonic plague. 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. In the fall of 2001, when anthrax-contaminated mail was deliberately sent through the United States Postal Service to government officials and members of the media, five people died and many more became sick. These attacks highlighted the concern that inhalation anthrax and other types of inhaled bacterial (e.g. tularemia and plague) bioterror agents represent a real and current threat.

Ciprofloxacin has been approved by the FDA for use orally and via injection for the treatment of inhalation anthrax (post-exposure) since 2000. Our ARD-1100 research and development program received funding from the Defence Research and Development Canada (DRDC), a division of the Canadian Department of National Defence. We believe that our product candidate may be able to deliver a long-acting formulation of ciprofloxacin directly into the lungs and could potentially have fewer side effects and be more effective to prevent and treat inhalation anthrax and other inhaled bacterial bioterrorism agents than currently available therapies.

Development of Inhaled Ciprofloxacin for Biodefense Purposes

We began our research into liposomal ciprofloxacin for the treatment of inhalation anthrax under a technology demonstration program funded by the DRDC as part of their interest in developing products to counter bioterrorism. The DRDC had already demonstrated the feasibility of inhaled liposomal ciprofloxacin for post-exposure prophylaxis of *Francisella tularensis,* a potential bioterrorism agent similar to anthrax. 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

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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. The DRDC has provided funding for our development efforts to date and additional development of this program is dependent on negotiating for and obtaining additional funding from DRDC or other collaborators or sources of funding. 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 treating inhalation anthrax and possibly tularemia and 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* 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 man 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. The Dstl team had previously demonstrated that a single dose of our inhaled liposomal ciprofloxacin protects animals against lethal doses of inhaled tularemia infection another microbial threat.

In November 2012, scientists from the UK Defence Science and Technology Laboratory (Dstl) reported in a preliminary study that they have 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. The 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*.

If we can obtain sufficient additional funding, we would anticipate developing this drug for approval under FDA regulations relating to the approval of new drugs or biologics for potentially fatal diseases where human

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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 for 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.

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.

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

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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 Potential Applications

We are regularly examining our previously conducted preclinical and clinical programs (including our inhaled insulin program) to identify product candidates that may be suitable for further development consistent with our current business strategy. We previously demonstrated the feasibility of delivering a variety of small molecules, peptides, oligonucleotides, proteins and gene therapies via our proprietary AERx delivery system but we have not been able to continue their development due to a variety of reasons, most notably the lack of funding provided from collaborators. We seek to identify partners who may wish to license or buy these assets, in order to raise non-dilutive capital from these non-core assets.

Zogenix DosePro Technology

In August 2006, we sold all of our assets related to the Intraject needle-free injector technology platform and products, including 12 United States patents along with foreign counterparts, to Zogenix, Inc., a private company. Zogenix is responsible for further development and commercialization efforts of Intraject (now rebranded under the name DosePro*). In conjunction with the sale, we received a $4 million initial payment from Zogenix, with an additional milestone payment of $4 million and royalty payments payable upon any commercialization of products in the U.S. and other countries, including the European Union, developed and sold using the DosePro technology.

In July 2009, Zogenix was granted approval by the FDA of the SUMAVEL* DosePro (sumatriptan injection) needle-free delivery system for the treatment of acute migraine and cluster headache. On January 13, 2010, Zogenix announced the U.S. commercial launch of SUMAVEL DosePro. In February 2010, we received from Zogenix the $4 million milestone payable upon the initial commercialization of SUMAVEL DosePro and we are entitled to quarterly royalty payments of 3% of net sales on all SUMAVEL DosePro sales.

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

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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.

We have demonstrated in the laboratory and in many human clinical trials that our AERx delivery system enables pulmonary delivery of a wide range of pharmaceuticals in liquid formulations for local or systemic effects. Our proprietary technologies focus principally on delivering liquid medications through small particle aerosol generation and controlling patient inhalation technique for efficient and reproducible delivery of the aerosol drug to the deep lung. We have developed these proprietary technologies through an integrated approach that combines expertise in physics, engineering and pharmaceutical sciences.

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. 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.

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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, 2013, we had 74 issued United States patents, with 14 additional United States patent applications pending. In addition, we had 6 issued foreign patents and an additional 23 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 2013 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.

For certain of our technologies we have in-licensed some technology and will seek to supplement such intellectual property rights with complementary proprietary processes, methods and formulation technologies, including through patent applications and trade secret protection. For example, in December 2004, as part of our research and development efforts funded by the DRDC for the development of liposomal ciprofloxacin for the treatment of biological terrorism-related inhalation anthrax, we obtained worldwide exclusive rights to a patented liposomal formulation technology for the pulmonary delivery of ciprofloxacin from Tekmira Pharmaceuticals Corporation, formerly known as Inex Pharmaceuticals Corporation, and may have the ability to expand the exclusive license to other fields. We do not use Tekmira s liposomal formulation technology and developed our own proprietary technology for our liposomal ciprofloxacin program.

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 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

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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.

There is no product approved in the United States specifically for the treatment of bronchiectasis (BE). Bayer is developing a ciprofloxacin dry powder inhaler for the management of BE and Gilead Sciences is testing another inhaled antibiotic, Cayston*, in this patient population as well. Currently marketed nebulized antibiotics for the management of infections associated with cystic fibrosis (CF) are TOBI* (nebulizer and dry powder) marketed by Novartis 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 (recently acquired by Allergan), Mannkind or Alexza Pharmaceuticals, or other competitors with alternative drug delivery methods, may negatively impact our potential competitive position.

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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;
- 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

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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. 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 is required prior to beginning the Phase 3 clinical trials. The 9 month inhalation safety study in dogs is currently being conducted; the 2 year rat carcinogenicity study will be 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.

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

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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 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.

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.

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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 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. If the 505(b)(2) applicant certifies that the patent is invalid, unenforceable, or not infringed by the product that is the subject of the Section 505(b)(2), and the 505(b)(2) applicant is sued within 45 days of its notice to the entity that holds the approval for the listed drug and the patent holder, the FDA will not approve the Section 505(b)(2) application 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. 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

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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 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 Group 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 $3.8 million for the year ended December 31, 2012 and $5.0 million for the year ended December 31, 2011. 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

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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
Peter S. Creticos, M.D.	The Johns Hopkins University School of Medicine	Allergy/Immunology/Asthma
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)

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, 2012, we had eleven employees. Six employees are involved in research and development and product development and five employees are involved in finance and administration. Four 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.

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Executive Officers and Directors

Our directors and executive officers and their ages as of February 28, 2013 are as follows:

Name	Age	Position
Igor Gonda, Ph.D.	65	President, Chief Executive Officer and Director
Nancy E. Pecota	53	Vice President, Finance and Chief Financial Officer
Frank H. Barker(1)(2)(3)	82	Director
Tamar D. Howson (2)	64	Director
John M. Siebert, Ph.D.(1)(3)	72	Director
Virgil D. Thompson(1)(2)(3)	73	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.

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.

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.

Frank H. Barker has been a director since May 1999. From January 1980 to January 1994, Mr. Barker served as a company group chairman of Johnson & Johnson, Inc., a diversified health care company, and was Corporate Vice President from January 1989 to January 1996. Mr. Barker retired from Johnson & Johnson, Inc. in January 1996. Mr. Barker holds a B.A. in Business Administration from Rollins College, Winter Park, Florida.

Tamar D. Howson has been a director since November 2010. From 2001 to 2007, she served as Senior Vice President of Corporate and Business Development and was a member of the executive committee at Bristol-Myers Squibb Company (Bristol-Myers). During her tenure at Bristol-Myers, Ms. Howson was responsible for leading the company s efforts in external alliances, licensing and acquisitions. From 1991 to 2000, Ms. Howson served as Senior Vice President and Director of Business Development at SmithKline Beecham plc, a global pharmaceutical company. She also managed SR One Ltd., a venture capital fund of SmithKline Beecham, plc. From 1990 to 1991, Ms. Howson held the position of Vice President, Venture Investments at Johnston Associates, Inc., and from 1987 to 1990, she served as Director of Worldwide Business Development and Licensing for Squibb Corporation. She previously served as Executive Vice President of Corporate Development for Lexicon Pharmaceuticals, Inc. and on the boards of Ariad Pharmaceuticals, Inc., SkyePharma, plc, NPS Pharmaceuticals, Inc., Targacept, Inc., and the Healthcare Businesswomen s Association. Ms. Howson received her MBA in finance and international business from Columbia University. She holds an MS from the City

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College of New York and a BS from Technion in Israel. Tamar Howson was recently a partner with JSB-Partners, LP, a transaction advisory firm serving the life sciences industry. She serves on the boards of OXIGENE, Inc. and Idenix Pharmaceuticals, Inc.

John M. Siebert, Ph.D. has been a director since November 2006. He is Chief Operating Officer of New Rhein Healthcare Investors, LLC. 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 serves on two public company boards, Aradigm Corporation and Supernus Pharmaceuticals, Inc. Dr. Siebert is the Chairman of the Aradigm Audit Committee and the designated audit committee financial expert . He also serves on the Nominating and Governance Committee. Dr. Siebert serves on the Audit Committee and Nominating and Governance Committees at Supernus. Dr. Siebert is also a member of the Board of Directors of Accu-Break Pharmaceuticals.

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 and chairman of the board of Questcor Pharmaceuticals, Inc., a publicly traded pharmaceutical company, and a director of Savient Pharmaceuticals.

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 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

We are a development-stage company.

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

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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 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.

We will need to raise additional capital and we may not be able to raise additional capital on a timely basis, on reasonable terms or at all.

We believe our cash, cash equivalents and short-term investments as of December 31, 2012 will be sufficient to enable us to fund our operations through 2013. However, our current financial resources are inadequate to advance our product candidates through development. Although we are making efforts to form collaborative partnerships with other companies that would fully or partly fund the development of our product candidates, we cannot guarantee that we will be able to complete such transactions on time or at all, or that such transactions alone or combined with other financing arrangements will be adequate to finalize the development of any of our product candidates.

We will need to commit substantial funds to develop our product candidates, specifically to fund Phase 3 clinical trials for our inhaled ciprofloxacin program, and we may not be able to obtain sufficient funds on acceptable terms or at all, especially in light of the current difficult financing environment. If we are unable to obtain capital on acceptable terms, we may be required to defer our product development activities. Our operations to date have consumed substantial amounts of cash and have generated no significant direct product revenues. We expect negative operating cash flows to continue for at least the foreseeable future. Our future capital requirements will depend on many factors, including:

- the scope, rate of progress, results and costs of clinical trials of our product candidates and preclinical testing of those candidates and other potential candidates;
- our ability to establish collaborative arrangements with others and the terms of those arrangements;
- the time and costs associated with seeking and maintaining regulatory approvals;
- our progress in the application of our delivery and formulation technologies, which may require further refinement of these technologies;
- the number of product development programs we pursue and the pace of each program;
- our progress with formulation development;
- our ability to outsource the manufacture of our product candidates and the costs of doing so;
- the time and costs associated with establishing in-house resources to market and sell certain of our products;
- the costs of preparing, filing, prosecuting, maintaining and enforcing patent claims, and

our need to acquire licenses or other rights for our product candidates.

Since inception, we have financed our operations primarily through public offerings and private placements of our capital stock, license fees and milestone payments from collaborators, proceeds from our January 2005 restructuring transaction with Novo Nordisk, borrowings from Novo Nordisk, the milestone and royalty payments associated with the sale of Intraject-related assets to Zogenix, proceeds from our June 2011 royalty financing transaction and interest earned on cash equivalents and short-term investments. Our estimates of future

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capital use are uncertain and changing circumstances, including those related to implementation of, or further changes to, our development strategy, could cause us to consume capital significantly faster than currently expected, and our expected sources of funding may not be sufficient. If adequate funds are not available, we will be required to delay, reduce the scope of, or eliminate one or more of our product development programs or to obtain funds through arrangements with collaborators or other sources that may require us to relinquish rights to or sell certain of our technologies or products that we would not otherwise relinquish or sell. If we are able to obtain funds through the issuance of equity securities, our shareholders may suffer significant dilution and our stock price may drop.

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, 2012, we have an accumulated deficit of $371.4 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 shift in development strategy has resulted in reduced operating expenses and capital expenditures, we expect to continue to incur substantial 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, 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.

Our dependence on future collaborators may delay or 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 agreements with collaborators 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. Even if we are successful in entering into one or more collaboration agreements, 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 we may terminate the collaboration. Our collaborators could delay or terminate their agreements, and our products subject to collaborative arrangements may never be successfully commercialized.

Further, our 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 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.

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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 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

We are dependent upon Zogenix and its partners to successfully market and sell the SUMAVEL DosePro needle-free delivery system in order to realize value from this asset.

We have no control over decisions made by Zogenix and/or its partners and collaborators on the marketing, sale or continued development of the SUMAVEL DosePro product and any subsequent products utilizing the DosePro technology. For example, on March 31, 2012, Zogenix ended its co-promotion agreement for SUMAVEL DosePro with Astellas Pharma, Inc., and in June 2012 announced an exclusive co-promotion agreement in the U.S. with Mallinckdrodt LLC, the pharmaceuticals business of Covidien. We are uncertain of the impact this change in co-promotion partners will have on current and future sales of the SUMAVEL product. In addition, Zogenix is currently pursuing FDA approval of another drug product; this product is an oral, extended release formulation of hydrocodone for chronic pain. If approved by the FDA and commercialized, Aradigm will receive no royalties on the sales of this product. We are uncertain of the impact this potential approval will have on current and future sales of the SUMAVEL product.

Any delay in, or failure to receive royalties could adversely affect our wholly-owned subsidiary s ability to repay the term loan entered into in June 2011, as discussed in Management s Discussion and Analysis of Financial Condition and Results of Operations Overview. While the term loan is non-recourse to the assets of Aradigm Corporation, the term loan agreement contains a minimum royalty covenant. If the minimum royalty covenant is breached and the subsidiary does not cure the breach through a cash contribution to pay down the accrued principal and interest, then the lenders have 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 the twelve months ended December 31, 2012, the minimum royalty covenant was breached and we made a cash payment of approximately $167,000 to the lenders for accrued interest in order to cure the breach.

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

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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 non-cystic fibrosis bronchiectasis and our Phase 2a clinical trials showed promising results in both patients with cystic fibrosis and non-cystic fibrosis bronchiectasis, there is no guarantee that longer term studies 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.

We intend to use Pulmaquin in our future clinical trials in cystic fibrosis. We have not yet tested Pulmaquin in cystic fibrosis patients; all previous clinical trial work in cystic fibrosis patients was conducted using our Lipoquin formulation. Although Pulmaquin performed well in non-cystic fibrosis bronchiectasis patients in the Phase 2b study ORBIT-2 and the liposomal component of Pulmaquin (Lipoquin) performed well in a Phase 2a study in cystic fibrosis patients, there is no guarantee that Pulmaquin will prove safe and effective in cystic fibrosis 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. 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 and this study is currently underway. 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.

The results of animal toxicology (preclinical safety) studies of our product candidates required for clinical development and product approval may not be as favorable as the results from earlier experiments. Adverse toxicology findings may necessitate additional animal safety studies, or lead to more extensive requirements for safety information from human studies. These factors could result in additional costs and delays or prevent commercialization of our products.

Although we typically select drugs for development that already have a substantial amount of safety data associated with them, and we also conduct a variety of preclinical studies, including animal inhalation toxicology studies, to support our product development, longer term safety studies in animals may be required by regulatory authorities before clinical trials and product approval. Longer term animal safety studies may produce toxicity findings that were not found in shorter, earlier studies, which could prevent commercialization of our products 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 patient enrollment or other problems, we would incur additional costs and delay the potential receipt of revenues.

Before we or any 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

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safety and efficacy. Completing clinical trials in a timely manner depends on, among other factors, obtaining 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 currently preparing to begin a Phase 3 clinical trial of their inhaled ciprofloxacin dry powder formulation in non-cystic fibrosis bronchiectasis patients in several countries where we would conduct our Pulmaquin Phase 3 trials, which could make recruiting individuals for clinical trials more difficult. Delays in our future clinical trials because of delays in planned 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, 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. 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 affect 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

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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 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 and established requirements applicable to drug samples. We, our future 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 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 proprietary 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 U.S. for up to seven years or EU for up to ten years.

The FDA has granted orphan drug designation for our proprietary liposomal ciprofloxacin drug product candidate for the management of cystic fibrosis and bronchiectasis and to our ciprofloxacin for inhalation for the management of bronchiectasis. In June 2012, the FDA granted orphan drug designation to our proprietary drug product of liposomal ciprofloxacin for the management of cystic fibrosis. 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 cystic fibrosis or bronchiectasis 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 powder formulation of ciprofloxacin for the treatment of respiratory infections in cystic fibrosis and bronchiectasis. Bayer has obtained orphan drug status for their inhaled powder formulation of ciprofloxacin in the United States and European Union for the treatment of cystic fibrosis.

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 cystic fibrosis. 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 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.

We have limited capacity to manufacture our requirements for the development and commercialization of our product candidates. We intend to use contract manufacturers to produce our products. We may not be able to

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enter into or maintain satisfactory contract manufacturing arrangements. For example, our agreement with Sigma-Tau Group to manufacture inhaled ciprofloxacin may be terminated for unforeseen reasons, or we may not be able to reach mutually satisfactory agreements with Sigma-Tau Group to manufacture at a commercial scale. 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 future 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 future 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.

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.

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

If any products that we or our future 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 future 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 patient 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 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 future collaborators are able to commercialize do not gain significant market acceptance.

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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 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 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 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.

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

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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 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 preparing to begin a Phase 3 clinical trial 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 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, 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 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 future collaborators must obtain required regulatory approvals from

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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 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.

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

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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

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;

our available cash;

failure to establish or delays in establishing new collaborative relationships;

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

investor perception of the future royalty stream from Zogenix;

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;

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.

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Our common stock is quoted on the OTC Bulletin Board, which may provide less liquidity for our shareholders than the national exchanges.

Our common stock is currently quoted on the OTC Bulletin Board. As compared to being listed on a national exchange, being quoted on the OTC Bulletin Board may result in reduced liquidity for our shareholders, may cause investors not to trade in our stock and may result in a lower stock price. In addition, investors may find it more difficult to obtain accurate quotations of the share price of our common stock. Trading of our common stock through the OTC Bulletin Board is frequently thin and highly volatile, and there is no assurance that a sufficient market will develop in our common stock, in which case it could be difficult for our shareholders to sell their stock.

Our common stock may be considered penny stock and may be difficult to sell.

The SEC has adopted regulations which generally define penny stock to include an equity security that has a market price of less than $5.00 per share, subject to specific exemptions. The market price of our common stock is currently less than $5.00 per share and therefore may be designated as a penny stock according to SEC rules. This designation requires any broker or dealer selling these securities to disclose some information concerning the transaction, obtain a written agreement from the purchaser and determine that the purchaser is reasonably suitable to purchase the securities. These rules may restrict the ability of brokers or dealers to sell the common stock and may affect the ability of investors to sell their shares. These regulations may likely have the effect of limiting the trading activity of our common stock and reducing the liquidity of an investment in our common stock.

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

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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.

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 16, 2013, our two largest investors, 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, 2012, 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 December 21, 2006, our common stock has been quoted on the OTC Bulletin Board, an electronic quotation service for securities traded over-the-counter, under the symbol ARDM .

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

	High	Low
2011		
First Quarter	$ 0.25	$ 0.16
Second Quarter	0.22	0.15
Third Quarter	0.20	0.15
Fourth Quarter	0.16	0.11
2012		
First Quarter	$ 0.17	$ 0.09
Second Quarter	0.17	0.12
Third Quarter	0.14	0.10
Fourth Quarter	0.14	0.11

As of March 18, 2013, there were 173 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.

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, 2012 and 2011 from our consolidated financial statements and notes thereto included elsewhere in this Annual Report on Form 10-K. The selected financial data for the years ended and as of December 31, 2010, 2009 and 2008 has been derived from financial statements not included in this Annual Report on Form 10-K.

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	Years Ended December 31,				
	2012	2011	2010	2009	2008
	(In thousands, except per share data)				
Statements of operations data:					
Total revenues	$ 1,007	$ 791	$ 4,383	$ 4,883	$ 251
Total operating expenses	7,711	9,320	14,743	18,310	23,257
Loss from operations	(6,704)	(8,529)	(10,360)	(13,427)	(23,006)
Interest income (expense), net	(1,520)	(784)	(298)	(356)	373
Other income (expense), including extinguishment of debt	(2)	4	5,279	4	
Net loss	(8,226)	(9,309)	(5,379)	(13,772)	(22,608)
Basic and diluted net loss per share	(0.04)	(0.05)	(0.04)	(0.15)	(0.42)
Shares used in computing basic and diluted net loss per share	201,310	183,419	128,660	92,348	54,162

	As of December 31,				
	2012	2011	2010	2009	2008
	(In thousands)				
Balance sheet data:					
Cash, cash equivalents and short-term investments	$ 7,617	$ 8,664	$ 5,546	$ 9,131	$ 19,140
Working capital	6,479	8,017	3,780	7,411	17,313
Total assets	8,966	10,556	7,628	11,965	25,519
Note payable and accrued interest to former related party				8,896	8,472
Note payable and accrued interest net of discount	8,513	8,207			
Accumulated deficit	(371,360)	(363,134)	(353,825)	(348,446)	(334,674)
Total shareholders equity (deficit)	(1,441)	689	4,599	(173)	8,756

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 obtain additional financing, 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 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

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by proprietary rights of third parties or may not gain acceptance from health care professionals and patients. Further, even if our product candidates appear promising at various stages of development, our share price may decrease such that we are unable to raise additional capital without dilution that may be unacceptable to our shareholders.

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 drugs delivered by inhalation 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 entering 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 possible sales, marketing 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, 2012, we had an accumulated deficit of $371.4 million. Historically, we have funded our operations primarily through public offerings and private placements of our capital stock, license fees and milestone payments from collaborators, proceeds from our January 2005 restructuring transaction with Novo Nordisk, borrowings from Novo Nordisk, the milestone and royalty payments associated with the sale of Intraject-related assets to Zogenix, proceeds from our June 2011 royalty financing transaction and interest earned on cash equivalents and short-term investments.

Over the last seven years, 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, or another significant territory such as the European Union (EU). Our longer term strategy to commercialize our respiratory product candidates with our own focused marketing and sales force addressing pulmonary specialty doctors in the United States 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 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.

More recently, we have restarted work on development of our inhaled nicotine program for smoking cessation. 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 and such approval would also mitigate the risk that 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 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. 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. We have been issued three 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 reported the results of one successful Phase 2b trial with Lipoquin and one successful Phase 2b trial with Pulmaquin in BE. We have also conducted one successful Phase 2a trial with Lipoquin in CF and one successful Phase 2a trial with Lipoquin 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.

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

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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 and 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 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.

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

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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 µg/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 plan, therefore, to take 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 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 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 IND filings for Lipoquin for BE and CF have been inactivated.

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* 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

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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 have 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. The 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.

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

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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.

Inhaled Nicotine Program

According to the National Center for Health Statistics (NCHS), 21% 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 to 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.

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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 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., 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.

Zogenix DosePro Technology and Royalty Financing Agreement

In August 2006, we sold all of our assets related to the Intraject needle-free injector technology platform and products, including 12 U.S. patents along with foreign counterparts, to Zogenix, Inc., a private company. Zogenix is responsible for further development and commercialization efforts of Intraject (now rebranded under the name DosePro*). In conjunction with the sale, we received a $4 million initial payment from Zogenix, with an additional milestone payment of $4 million and royalty payments payable upon any commercialization of products in the U.S. and other countries, including the EU, developed and sold using the DosePro technology.

In July 2009, Zogenix was granted approval by the FDA of the SUMAVEL DosePro (sumatriptan injection) needle-free delivery system for the treatment of acute migraine and cluster headache. On January 13, 2010, Zogenix announced the U.S. commercial launch of SUMAVEL DosePro. In February 2010, we received from Zogenix the $4 million milestone payable upon the initial commercialization of SUMAVEL DosePro and we are entitled to quarterly royalty payments of 3% of net sales on all SUMAVEL DosePro sales.

On June 21, 2011, we entered into an $8.5 million royalty financing agreement (the Royalty Agreement) with a syndicate of lenders arranged by PBS Capital Management LLC (PBS Capital). The Royalty Agreement created a debt obligation (the Term Loan) that will be repaid through and secured by royalties we receive from net sales of the SUMAVEL DosePro (sumatriptan injection) needle-free delivery system payable to us under the Asset Purchase Agreement (APA) with Zogenix (the Transaction).

Under the terms of the Royalty Agreement, we received a loan of $8.5 million, less fees and expenses (approximately $473,000) and an additional $250,000 set aside for an Interest Reserve Account (as defined in the

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Royalty Agreement). The lenders are entitled to receive 100% of all royalties payable to us under the APA until the principal and accrued interest of the Term Loan are fully repaid, after which time the benefit of any further royalties made under the APA will accrue to Aradigm. The Term Loan will accrue interest at the rate equal to the greater of a) LIBOR or b) 1.50%, plus a margin of 14.5%. To the extent royalty payments are insufficient to pay accrued and unpaid interest under the financing, the shortfall will be funded from the Interest Reserve Account or, if the account is insufficient to pay all of the interest due, the shortfall will be capitalized and added to the principal balance of the Term Loan. During the three months ended March 31, 2012, the Interest Reserve Account was fully utilized and future shortfalls will be capitalized and added to the principal balance of the Term Loan. The lenders were granted a security interest in the assets of an Aradigm subsidiary that holds Aradigm s rights to receive royalty payments under the APA. The lenders have no recourse to other assets of Aradigm for repayment of the loan. Amortization of the Term Loan will occur to the extent that royalty payments received for any quarter exceed accrued interest due for that quarter.

While the term loan is non-recourse to the assets of Aradigm Corporation, the term loan agreement contains a minimum royalty covenant. If the minimum royalty covenant is breached and the subsidiary does not cure the breach through a cash contribution to pay down the accrued principal and interest, then the lenders have 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 the twelve months ended December 31, 2012, the minimum royalty covenant was breached and we made a cash payment of approximately $167,000 to the lenders for accrued interest in order to cure the breach.

We have the right to prepay the Term Loan after June 21, 2012, subject to the payment of the principal balance plus a prepayment fee of 8% of the outstanding balance if prepaid in months 13-24 following the Transaction closing date of June 21, 2011; 4% if prepaid in months 25-36; and 2% if prepaid in months 37-48. There will be no prepayment fee for prepaying the Term Loan after the 48 month anniversary of the closing date. In addition, we have the right to make partial prepayments in an amount no less than the greater of (i) 10% of the principal balance of the Term Loan outstanding as of the applicable prepayment date or (ii) $1,000,000. Under no circumstances will the receipt of royalty payments from Zogenix in excess of the accrued interest then due be considered prepayments under the Term Loan.

In connection with the Transaction, we issued warrants to the lender to purchase a total of 2,840,909 shares of our common stock at a strike price of $0.22 per share, representing a 20% premium above the average closing price of our common stock for the ten trading days immediately preceding the closing of the Transaction. The warrants expire on December 31, 2016.

July 2011 Private Placement

On July 5, 2011, we entered into a definitive agreement for the sale of common stock to three existing shareholders, including accounts managed by First Eagle Investment Management LLC and Tavistock Life Sciences, in a private placement for aggregate gross proceeds of $4.75 million (the Private Placement). The closing of the Private Placement occurred on July 7, 2011. Under the terms of the agreement, we agreed to sell an aggregate of 25,000,000 shares of common stock at a price of $0.19 per share. After deducting for fees and expenses, the net proceeds from the sale of the shares of common stock were approximately $4.4 million. We were required, among other things, to file a resale registration statement following the closing that covers the resale by the purchasers of the shares. The registration statement was filed with the Securities and Exchange Commission on August 18, 2011 and was declared effective on September 1, 2011.

December 2012 Private Placement

On December 11, 2012, we entered into a definitive agreement for the sale of common stock to two existing shareholders, including accounts managed by First Eagle Investment Management LLC, in a private placement for aggregate gross proceeds of $6.0 million (the Private Placement). The closing of the Private Placement occurred on December 13, 2012. Under the terms of the agreement, we agreed to sell an aggregate of 50,000,000

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shares of common stock at a price of $0.12 per share. After deducting for fees and expenses, the net proceeds from the sale of the shares of common stock were approximately $5.5 million. We are required, among other things, to file a resale registration statement following the closing that covers the resale by the purchasers of the shares.

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 have value to our collaborators on a stand-alone basis and whether objective reliable evidence of fair value of the undelivered items exist.

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. The appropriate revenue recognition criteria are identified and applied to each separate unit of accounting.

Royalty revenue will be earned under the terms of the asset sale agreement with Zogenix. We will recognize revenue when the amounts under this agreement can be determined and when collectability is probable. We have no performance obligations under this agreement. We anticipate recognizing revenue from quarterly royalty payments one quarter in arrears since we believe that we will not be able to determine quarterly royalty earnings until we receive our royalty statements from Zogenix.

Impairment of Long-Lived Assets

In accordance with ASC 360-10*, Property, Plant & Equipment Overall*, 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 statements of operations.

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Accounting for Costs Associated with Exit or Disposal Activities

In accordance with ASC 420, *Exit or Disposal Cost Obligations,* we recognize 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, except for a liability for one-time termination benefits that is incurred over time. According to ASC 420, 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 risk-free interest rate that was used to measure the liability initially. We recorded losses under this standard for the Mendel sublease in 2007 and for the sublease of additional space in 2009 since the sublease rate was less than the rental rate that we are paying.

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 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 financial statements. The aforementioned differences result in deferred tax assets and liabilities, which are included in our 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, 2012 and 2011, 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.

Stock-Based Compensation

We account for stock-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 stock-based payments including stock options, restricted stock awards and stock issued under the Employee Stock Purchase Plan (ESPP). These 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

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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, 2012 and 2011

Our net loss decreased by $1.1 million for the year ended December 31, 2012, as compared to the year ended December 31, 2011. The decrease in the net loss resulted from slightly higher royalty revenue from Zogenix in 2012, significantly lower operating expenses for the year ended December 31, 2012, offset by an increase in interest expense. Research and development costs were lower for our inhaled ciprofloxacin program as our two Phase 2b trials were completed in 2011.

Total revenue was $1.0 million for the year ended December 31, 2012 as compared to $0.8 million for the year ended December 31, 2011. For both years, the revenue generated was recurring royalty revenue related to sales of Zogenix s SUMAVEL DosePro product. Revenue was slightly higher in the year ended December 31, 2012 because of higher product sales and a lower allowance for returns in 2012 compared to 2011.

Operating expenses were $7.7 million for the year ended December 31, 2012, which represented a $1.6 million decrease as compared to the year ended December 31, 2011. The decrease in operating expenses was primarily due to lower research and development expenses resulting from slightly lower headcount, lower clinical trial costs offset by an increase in contract manufacturing and testing, as well as lower general and administrative costs. For the period ended December 31, 2012, lower clinical trials costs were mainly due to the completion of the inhaled ciprofloxacin clinical trials in late 2011. The increase in contract manufacturing and testing was due to the initiation of dog studies which began in late 2012. General and administrative costs were lower in the period ended December 31, 2012 because of the payment of an executive bonus related to the Royalty Agreement in 2011.

Interest expense increased by $0.7 million for the year ended December 31, 2012 as compared to the year ended December 31, 2011. This increase in interest expense is due to the Royalty Agreement in June 2011 and the 2012 expense represents a full year of interest.

Liquidity and Capital Resources

As of December 31, 2012, we had cash, cash equivalents and short-term investments of $7.6 million, total working capital of $6.5 million and shareholders deficit of $1.4 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 2013.

On December 11, 2012, we entered into a definitive agreement for the sale of 50 million shares of common stock to two existing shareholders in a private placement for aggregate gross proceeds of $6.0 million. After deducting for fees and expenses, the net proceeds from the sale of the common stock were approximately $5.5 million.

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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, the 2011 Royalty Agreement, proceeds from our January 2005 restructuring transaction with Novo Nordisk, borrowings from Novo Nordisk, the sale of Intraject-related assets, the milestone payment received from Zogenix in 2010 and interest earned on investments. We have incurred significant losses and negative cash flows from operations since our inception.

We are currently focusing primarily on establishing funded partnering agreements and sale or out-licensing of non-strategic assets as the means to generate the capital resources needed to fund the further development and commercialization of inhaled ciprofloxacin for the bronchiectasis and cystic fibrosis indications and for our inhaled nicotine program. If we are unable to obtain financing on acceptable terms, we may be required to further reduce or defer our activities or discontinue operations.

Year ended December 31, 2012

As of December 31, 2012, we had cash, cash equivalents and short-term investments of $7.6 million, down from $8.7 million at December 31, 2011. The decrease primarily resulted from the use of cash to fund our ongoing operations offset by the receipt of $6.0 million in gross proceeds from the sale of common stock in the December 2012 Private Placement.

Net cash used in operating activities for the year ended December 31, 2012 was $6.7 million primarily reflecting our net loss of $8.2 million. This use was partially offset by non-cash expenses for depreciation and stock-based compensation. Net cash provided by investing activities for the year ended December 31, 2012 was $6.3 million and resulted from the net purchases and maturities of short-term investments throughout the year. Net cash provided by financing activities for the year ended December 31, 2012 was $5.6 million from the sale of common stock in the December 2012 Private Placement and the proceeds from the purchase of stock through the ESPP.

Year ended December 31, 2011

As of December 31, 2011, we had cash, cash equivalents and short-term investments of $8.7 million, up from $5.5 million at December 31, 2010. The increase primarily resulted from the $8.5 million of gross proceeds received from the royalty financing agreement as well as the receipt of $4.5 million in gross proceeds from the sale of common stock, offset by the use of cash to fund our ongoing operations.

Net cash used in operating activities for the year ended December 31, 2011 was $9.8 million primarily reflecting our net loss of $9.3 million. This use was partially offset by non-cash expenses for depreciation and stock-based compensation. Net cash used in investing activities for the year ended December 31, 2011 was $6.3 million and resulted from the net purchases and maturities of short-term investments throughout the year. Net cash provided by financing activities for the year ended December 31, 2011 was $13.0 million. Gross proceeds from the June 2011 Private Placement and the proceeds from the purchase of stock through the ESPP were $4.5 million and the gross proceeds from the royalty financing agreement entered into in June 2011 were $8.5 million.

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 active, wholly-owned subsidiary incorporated in Delaware, Aradigm Royalty Financing LLC, and we have 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.

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

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, 2012 and 2011, and the related consolidated statements of operations and comprehensive loss, shareholders equity (deficit) 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 and 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 audited by us present fairly, in all material respects, the consolidated financial position of Aradigm Corporation at December 31, 2012 and 2011 and the consolidated results of its operations and its cash flows for the years then ended, in conformity with U.S. generally accepted accounting principles.

/s/ OUM & Co LLP

San Francisco, California

March 26, 2013

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ARADIGM CORPORATION

CONSOLIDATED BALANCE SHEETS

(In thousands, except share data)

	December 31, 2012	December 31, 2011
ASSETS		
Current assets:		
Cash and cash equivalents	$ 7,414	$ 2,148
Short-term investments	203	6,516
Receivables	41	36
Prepaid and other current assets	106	161
Total current assets	7,764	8,861
Property and equipment, net	727	1,113
Notes receivable		29
Other assets	475	553
Total assets	$ 8,966	$ 10,556
LIABILITIES AND SHAREHOLDERS EQUITY (DEFICIT)		
Current liabilities:		
Accounts payable	$ 330	$ 196
Accrued clinical and cost of other studies	500	247
Accrued compensation	184	195
Facility lease exit obligation	144	120
Other accrued liabilities	127	86
Total current liabilities	1,285	844
Deferred rent, non-current	144	132
Facility lease exit obligation, non-current	465	609
Other non-current liabilities		75
Note payable and accrued interest	8,513	8,207
Total liabilities	10,407	9,867
Commitments and contingencies (Note 8)		
Shareholders equity:		
Preferred stock, 5,000,000 shares authorized, none outstanding		
Common stock, no par value; authorized shares: 297,527,214 at December 31, 2012 and 213,527,214 at December 31, 2011; issued and outstanding shares: 251,346,385 at December 31, 2012; 198,831,216 at December 31, 2011	369,919	363,822
Accumulated other comprehensive income		1
Accumulated deficit	(371,360)	(363,134)
Total shareholders equity (deficit)	(1,441)	689
Total liabilities and shareholders equity (deficit)	$ 8,966	$ 10,556

See accompanying Notes to Consolidated Financial Statements.

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ARADIGM CORPORATION

CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS

(In thousands, except per share data)

	Years Ended December 31,	
	2012	**2011**
Revenue:		
Total revenue	$ 1,007	$ 791
Operating expenses:		
Research and development	3,781	5,007
General and administrative	3,896	4,274
Restructuring and asset impairment	34	39
Total operating expenses	7,711	9,320
Loss from operations	(6,704)	(8,529)
Interest income	10	14
Interest expense	(1,530)	(798)
Other income (expense), net	(2)	4
Net loss	(8,226)	(9,309)
Change in unrealized gains (losses) on available-for-sale securities	(1)	1
Comprehensive loss	$ (8,227)	$ (9,308)
Basic and diluted net loss per common share	$ (0.04)	$ (0.05)
Shares used in computing basic and diluted net loss per common share	201,310	183,419

See accompanying Notes to Consolidated Financial Statements.

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ARADIGM CORPORATION

CONSOLIDATED STATEMENTS OF SHAREHOLDERS EQUITY (DEFICIT)

(In thousands, except share data)

	Common Stock		Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Shareholders Equity (Deficit)
	Shares	Amount			
Balances at December 31, 2010	172,304,235	$ 358,424	$	$ (353,825)	$ 4,599
Issuance of common stock in a private offering, net of issuance costs	25,000,000	4,349			4,349
Issuance of common stock under the employee stock purchase plan	885,533	113			113
Issuance of warrants for common stock		403			403
Stock-based compensation		533			533
Issuance of restricted stock awards	1,091,448				
Reversal of restricted stock award due to cancellation and forfeiture	(450,000)				
Net loss				(9,309)	(9,309)
Unrealized gain on available-for-sale investments			1		1
Balances at December 31, 2011	198,831,216	363,822	1	(363,134)	689
Issuance of common stock in a private offering, net of issuance costs	50,000,000	5,547			5,547
Issuance of common stock under the employee stock purchase plan	630,752	77			77
Issuance of restricted stock awards	1,884,417				
Stock-based compensation		473			473
Net loss				(8,226)	(8,226)
Unrealized loss on available-for-sale investments			(1)		(1)
Balances at December 31, 2012	251,346,385	$ 369,919	$	$ (371,360)	$ (1,441)

See accompanying Notes to Consolidated Financial Statements.

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ARADIGM CORPORATION

CONSOLIDATED STATEMENTS OF CASH FLOWS

(In thousands)

	Years Ended December 31, 2012	2011
Cash flows from operating activities:		
Net loss	$ (8,226)	$ (9,309)
Adjustments to reconcile net loss to net cash used in operating activities:		
Amortization and accretion of investments	14	70
Depreciation and amortization	391	445
Stock-based compensation expense	473	533
Amortization of note discount	59	35
Changes in operating assets and liabilities:		
Receivables	(5)	144
Prepaid and other current assets	55	19
Other assets	107	(413)
Accounts payable	134	(61)
Accrued compensation	(11)	(132)
Accrued liabilities	466	(1,035)
Deferred rent	12	33
Facility lease exit obligation	(120)	(99)
Net cash used in operating activities	(6,651)	(9,770)
Cash flows from investing activities:		
Capital expenditures	(5)	(5)
Purchases of available-for-sale investments	(2,502)	(9,354)
Proceeds from maturities of available-for-sale investments	8,800	3,020
Net cash provided by (used in) investing activities	6,293	(6,339)
Cash flows from financing activities:		
Proceeds from private offering of common stock, net	5,547	4,349
Proceeds from issuance of common stock to Employee Stock Purchase Plan	77	113
Proceeds from issuance of note payable, gross		8,500
Net cash provided by financing activities	5,624	12,962
Net increase (decrease) in cash and cash equivalents	5,266	(3,147)
Cash and cash equivalents at beginning of year	2,148	5,295
Cash and cash equivalents at end of year	$ 7,414	$ 2,148
Supplemental disclosure of cash flow information:		
Cash paid for interest	$	$ 17

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, except for the royalty revenue from Zogenix. 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 subsidiary. 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, 2012, the Company had an accumulated deficit of $371.4 million, working capital of $6.5 million and shareholders deficit of $1.4 million. During 2012, the Company entered into a financing agreement which provided capital to fund operations. The agreement was for the sale of 50 million shares of common stock in a private placement for net proceeds of $5.5 million.

Management believes that the cash resources as of December 31, 2012 are sufficient to meet its obligations and fund operations through 2013 since the Company continues to defer certain discretionary activities. The Company will require additional capital to fund its drug development and operating activities and is currently seeking additional financing, which may include a collaborative arrangement, an equity offering, or sale or licensing of non-core assets, in order to continue such activities. If the Company is unable to complete such a transaction or is unable to obtain sufficient financing on acceptable terms or otherwise, the Company may be required to further reduce, defer or discontinue its activities or may not be able to continue as a going concern.

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.

Investments

Management determines the appropriate classification of the Company s marketable securities, which consist solely of debt securities, at the time of purchase. All marketable securities are classified as available-for-sale, carried at estimated fair value and reported in short-term investments. Unrealized gains and losses on

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available-for-sale securities are excluded from earnings and losses and are reported as a separate component in the statement of shareholders equity (deficit) until realized. Fair values of investments are based on quoted market prices where available. Investment income is recognized when earned and includes interest, dividends, amortization of purchase premiums and discounts and realized gains and losses on sales of securities. The cost of securities sold is based on the specific identification method. The Company regularly reviews all of its investments for other-than-temporary declines in fair value. When the Company determines that the decline in fair value of an investment below the Company s accounting basis is other-than-temporary, the Company reduces the carrying value of the securities held and records a loss in the amount of any such decline. No such reductions have been required during any of the periods presented.

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 not internally developed computer software. Leasehold improvements are depreciated over the shorter of the term of the lease or useful life of the improvement.

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

In accordance with Accounting Standards Codification (ASC) 360-10, *Property Plant and Equipment Overall*, 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 statements of operations.

Accounting for Costs Associated with Exit or Disposal Activities

In accordance with ASC 420, *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. The Company accounted for the partial sublease of its headquarters building as an exit activity and recorded the sublease loss in its statement of operations (see Note 5).

According to ASC 420, 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. The Company recognizes revenue under the provisions of the Securities and Exchange Commission issued Staff

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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.

In accordance with contract terms, milestone payments from collaborative research agreements are considered reimbursements for costs incurred under the agreements and, accordingly, are recognized as revenue either upon completion of the milestone effort, when payments are contingent upon completion of the effort, or are based on actual efforts expended over the remaining term of the agreement when payments precede the required efforts. Refundable development payments are deferred until specific performance criteria are achieved. Refundable development payments are generally not refundable once specific performance criteria are achieved and accepted.

Collaborative license and development agreements that require the Company to provide multiple deliverables, such as a license, research and product steering committee services and other performance obligations, are accounted for in accordance with ASC 605-25. Under ASC 605-25, delivered items are evaluated to determine whether such items have value to the Company s collaborators on a stand-alone basis and whether objective reliable evidence of fair value of the undelivered items exists. 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. The appropriate revenue recognition criteria are identified and applied to each separate unit of accounting.

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 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 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

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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, 2012 and 2011, 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.

Net Loss Per Common Share

Basic net loss per common share is computed using the weighted-average number of shares of common stock outstanding less the weighted-average number of shares subject to repurchase. Unvested restricted stock awards subject to repurchase totaled 1,453,000 shares and 939,000 shares for the years ended December 31, 2012 and 2011, respectively. Potentially dilutive securities were not included in the net loss per share calculation for the years ended December 31, 2012 and 2011 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,	
	2012	2011
Outstanding stock options	6,755	6,844
Unvested restricted stock awards	1,453	939
Outstanding warrants	2,841	3,591

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 loss.

Recently Issued Accounting Pronouncements

In June 2011, the Financial Accounting Standards Board (FASB) issued ASU 2011-05, Comprehensive Income (Topic 220): *Presentation of Comprehensive Income.* ASU 2011-05 eliminates the option to present components of other comprehensive income as part of the statement of changes in stockholder s equity and instead requires separate statements of comprehensive income. The amendment is effective for the fiscal years, and interim periods within those years, beginning after December 15, 2011. In December 2011, FASB issued ASU 2011-12, Comprehensive Income (Topic 220): *Deferral of the Effective Date for Amendments to the Presentation of Reclassification of Items Out of Accumulated Other Comprehensive Income in Accounting Standards Update No. 2011-05.* ASU 2011-12 defers the changes in ASU 2011-05 that pertain to how, when and where reclassification adjustments are presented. The adoption of ASU 2011-05 did not have material impact on the Company s consolidated financial position and results of operations.

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2. Cash and Cash Equivalents and Short-term Investments

A summary of cash and cash equivalents and short-term investments, classified as available-for-sale and carried at fair value is as follows (in thousands):

	Amortized Cost	Gross Unrealized Gain	Gross Unrealized (Loss)	Estimated Fair Value
December 31, 2012				
Cash and cash equivalents	$ 7,414	$	$	$ 7,414
Short-term investments:				
U.S. Treasury notes	$ 203	$	$	$ 203
Total	$ 7,617	$	$	$ 7,617
December 31, 2011				
Cash and cash equivalents	$ 2,148	$	$	$ 2,148
Short-term investments:				
Commercial paper	$ 799	$	$	$ 799
Certificates of deposit	730			730
U.S. Treasury notes	4,986	1		4,987
Total	$ 6,515	$ 1	$	$ 6,516

All short-term investments at December 31, 2012 and 2011 mature in less than one year. Unrealized holding gains and losses on securities classified as available-for-sale are recorded in accumulated other comprehensive income (loss).

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 following table presents the fair value level for the cash and cash equivalents and short-term investments which represents the assets that are measured at fair value on a recurring basis and are categorized using the fair value hierarchy. The Company does not have any liabilities that are measured at fair value.

Description	Balance December 31, 2012	Level 1	Level 2	Level 3
		(In thousands)		
Cash and cash equivalents	$ 7,414	$ 6,604	$ 810	$
Short-term investments	203		203	
Total	$ 7,617	$ 6,604	$ 1,013	$

The Company s cash and cash equivalents at December 31, 2012 consist of cash, commercial paper, U.S. Treasury notes and money market funds. Money market funds are valued using quoted market prices. The Company s short-term investments at December 31, 2012 consist of U.S. Treasury notes. The Company uses an independent third party pricing service to value these securities. The pricing service uses observable inputs such as new issue money market rates, adjustment spreads, corporate actions and other factors and applies a series of

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matrices pricing model. The Company performs a review of prices reported by the pricing service to determine if they are reasonable estimates of fair value. In addition, the Company performs a review of its securities to determine the proper classification in accordance with the fair value hierarchy.

4. Property and Equipment

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

	December 31,	
	2012	2011
Machinery and equipment	$ 4,385	$ 4,402
Furniture and fixtures	1,138	1,138
Lab equipment	2,138	2,138
Computer equipment and software	2,640	2,635
Leasehold improvements	1,839	1,839
Property and equipment	12,140	12,152
Less accumulated depreciation and amortization	(11,413)	(11,039)
Property and equipment, net	$ 727	$ 1,113

Depreciation expense was $391,000 and $445,000 for the years ended December 31, 2012 and 2011, 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 have been recorded as part of restructuring and asset impairment expense in the consolidated statement of operations. The lease exit liability activity for the years ended December 31, 2012 and 2011 are as follows (in thousands):

	Year Ended December 31,	
	2012	2011
Balance at beginning of year	$ 729	$ 828
Accretion expense	34	39
Lease payments	(154)	(138)
Balance at end of the year	$ 609	$ 729

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The Company classified $144,000 of the $609,000 lease exit liability in current liabilities and the remaining $465,000 in non-current liabilities in the accompanying consolidated balance sheet at December 31, 2012. At December 31, 2011, the Company classified $120,000 of the lease exit liability in current liabilities and $609,000 in non-current liabilities.

6. Other Liabilities

At December 31, 2012, other accrued liabilities consisted of accrued expenses for services of $103,000 and payroll withholding liabilities of $24,000. At December 31, 2011, other accrued liabilities consisted of accrued expenses for services of $53,000 and payroll withholding liabilities of $33,000.

7. Royalty Agreement, Note Payable, and Accrued Interest

Zogenix

In August 2006, the Company sold all of its assets related to the Intraject needle-free injector technology platform and products including 12 United States patents along with foreign counterparts, to Zogenix, Inc., for an initial payment of $4.0 million. Zogenix is responsible for further development and commercialization efforts of Intraject (now rebranded under the name DosePro). Under the terms of the asset sale agreement, the Company received a $4.0 million milestone payment in 2010 upon initial U.S. commercialization of the SUMAVEL DosePro needle-free delivery system. Under the terms of the asset sale agreement the Company is entitled to receive quarterly royalty payments from Zogenix in the amount of 3% of Net Sales of DosePro products. The Company recorded royalty revenue of approximately $1.0 million for the twelve months ended December 31, 2012.

Royalty Financing

In 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.

Under the terms of the royalty financing agreement, the Company received a loan of $8.5 million, less fees, transaction and legal expenses (approximately $473,000) and an additional $250,000 set aside for an Interest Reserve Account. The lenders are entitled to receive 100% of all royalties payable to the Company under the APA until the principal and accrued interest of the Term Loan are fully repaid, after which time the benefit of any further royalties made under the APA will accrue to Aradigm. The Term Loan will accrue interest at the rate equal to the greater of a) LIBOR or b) 1.50%, plus a margin of 14.5%. To the extent royalty payments are insufficient to pay accrued and unpaid interest under the financing, the shortfall will be funded from the Interest Reserve Account or, if the account is insufficient to pay all of the interest due, the shortfall will be capitalized and added to the principal balance of the Term Loan. During the three months ended March 31, 2012, the Interest Reserve Account was fully utilized and future shortfalls will be capitalized and added to the principal balance of the Term Loan. The lenders were granted a security interest in the assets of an Aradigm subsidiary, Aradigm Royalty Financing LLC, which holds Aradigm s rights to receive royalty payments under the APA. The lenders have no recourse to other assets of Aradigm for repayment of the loan. Amortization of the Term Loan will occur to the extent that royalties payments received for any quarter exceed accrued interest due for that quarter.

While the term loan is non-recourse to the assets of Aradigm Corporation, the term loan agreement contains a minimum royalty covenant. If the minimum royalty covenant is breached and the subsidiary does not cure the breach through a cash contribution to pay down the accrued principal and interest, then the lenders have 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 the twelve months ended December 31, 2012, the minimum royalty covenant was breached and the Company made a cash payment of approximately $167,000 to the lenders for accrued interest in order to cure the breach.

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The Company has the right to prepay the Term Loan, subject to the payment of the principal balance plus a prepayment fee of 8% of the outstanding balance if prepaid in months 13-24 following the transaction closing date of June 21, 2011; 4% if prepaid in months 25-36; and 2% if prepaid in months 37-48. There will be no prepayment fee for prepaying the Term Loan after the forty-eight (48) month anniversary of the closing date. In addition, the Company has the right to make partial prepayments in an amount no less than the greater of (i) 10% of the principal balance of the Term Loan outstanding as of the applicable prepayment date or (ii) $1,000,000. Under no circumstances will the receipt of royalty payments from Zogenix in excess of the accrued interest then due be considered prepayments under the Term Loan.

In accordance with Accounting Standards Topic 470 *Debt*, the Company capitalized the fees, transaction and legal expenses of approximately $473,000 and recorded this amount in other assets. The capitalized expenses will be amortized to interest expense using the effective interest method over a period of 48 months. The Interest Reserve account was recorded in prepaid and other current assets.

In connection with the transaction, the Company issued to the lenders warrants to purchase a total of 2,840,909 shares of the Company s common stock at a strike price of $0.22 per share, 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 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 is being amortized to interest expense using the effective interest method with an annual rate of 18.7% over a period of 48 months.

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, 2012 are as follows (in thousands):

	Operating Leases	Mendel Sub-Lease	Net Operating Lease Payments
Year ending December 31:			
2013	$ 1,774	$ (1,133)	$ 641
2014	1,844	(1,167)	677
2015	1,917	(1,201)	716
2016	1,020	(640)	380
Total minimum lease payments	$ 6,555	$ (4,141)	$ 2,414

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 amendment, Mendel will make monthly base rent payments until the end of the term totaling $4.8 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 has 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.

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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, 2012 and 2011, the Company had $144,000 and $132,000 of deferred rent, respectively.

For the years ended December 31, 2012 and 2011, building rent expense under operating leases totaled $600,000 and $675,000, 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, 2012 or 2011.

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 (Deficit)

On December 11, 2012, the Company entered into a definitive agreement for the sale of 50 million shares of common stock to two existing shareholders in a private placement for aggregate gross proceeds of $6.0 million (the December 2012 Private Placement). On December 13, 2012, the Company closed the December 2012 Private Placement. After deducting for fees and expenses, the net proceeds from the sale of the shares of common stock were approximately $5.5 million.

On July 5, 2011, the Company entered into a definitive agreement for the sale of 25 million shares of common stock to three existing shareholders in a private placement for aggregate gross proceeds of $4.75 million (the July 2011 Private Placement). On July 7, 2011, the Company closed the July 2011 Private Placement. After deducting for fees and expenses, the net proceeds from the sale of the shares of common stock were approximately $4.3 million.

Reserved Shares

At December 31, 2012, the Company had 6,755,200 shares reserved for future issuance upon exercise of options under all stock option plans and 2,954,024 shares of common stock reserved for future issuance of new option grants. The Company had 1,053,725 shares available for future issuances under the ESPP. Additionally, the Company had 2,840,909 shares reserved for outstanding warrants at December 31, 2012.

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

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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 960,000 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 400,000 shares to 2,000,000 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, 2012, the Company had 153,900 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 2,918,638 shares of common stock authorized for issuance. Options (net of canceled or expired options) covering an aggregate of 1,999,252 shares of the Company s common stock had been granted under the 1996 Plan, and 919,386 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 2,000,000. 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 1,600,000 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 2,700,000. In 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 4,000,000. 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 4,000,000. Shares available for future grants totaled 2,954,024 as of December 31, 2012 for the 2005 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

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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, 2012 and 2011, 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 560,000 shares and 743,000 shares during the years ended December 31, 2012 and 2011, respectively, under the 2005 Plan, which included option grants to the Company s non-employee directors in the amount of 560,000 shares and 400,000 shares during 2012 and 2011, respectively. The 2005 Plan had 6,601,300 option shares outstanding as of December 31, 2012.

The 1996 Non-Employee Directors Stock Option Plan (the Directors Plan) had 45,000 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, 2012, there were no outstanding options in this plan and there were no additional shares available for grant.

The following is a summary of activity under the 1996 Plan, the 2005 Plan and the Directors Plan as of December 31, 2012:

		Options Outstanding			
	Shares Available for Grant of Option or Award	Number of Shares	Price per Share		Weighted Average Exercise Price
Balance at December 31, 2010	1,959,278	6,354,758	$ 0.12	$ 64.69	$ 1.32
Options granted	(743,000)	743,000	$ 0.17	$ 0.19	$ 0.18
Restricted stock awards granted	(1,091,448)				
Restricted stock units granted	(78,947)				
Options cancelled	254,250	(254,250)	$ 0.25	$ 64.69	$ 5.19
Restricted share awards cancelled	450,000				
Balance at December 31, 2011	750,133	6,843,508	$ 0.12	$ 24.10	$ 1.05
Options granted	(560,000)	560,000	$ 0.15	$ 0.15	$ 0.15
Increase in authorized shares	4,000,000				
Options cancelled	648,308	(648,308)	$ 0.13	$ 24.10	$ 2.52
Restricted stock awards granted	(1,884,417)		$	$	$
Balance at December 31, 2012	2,954,024	6,755,200	$ 0.12	$ 12.00	$ 0.83

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The following table summarizes information about stock options outstanding and exercisable as of December 31, 2012:

	Options Outstanding			Options Exercisable	
Exercise Price Range	Number Of Shares	Weighted Average Remaining Contractual Life (In Years)	Weighted Average Exercise Price	Number of Shares	Weighted Average Exercise Price
$0.12 $0.15	916,000	8.64	$ 0.14	634,500	$ 0.14
$0.16 $0.17	743,000	6.82	0.16	689,375	0.16
$0.18 $0.18	1,344,000	7.72	0.18	1,344,000	0.18
$0.19 $0.23	450,000	8.13	0.19	450,000	0.19
$0.25 $0.25	721,500	6.06	0.25	677,654	0.25
$0.39 $1.37	734,300	4.88	0.98	734,300	0.98
$1.41 $1.70	966,500	4.38	1.63	966,500	1.63
$1.80 $3.77	711,900	3.58	2.03	711,900	2.03
$4.20 $10.80	146,000	1.38	5.93	146,000	5.93
$12.00 $12.00	22,000	1.16	12.00	22,000	12.00
	6,755,200	6.21	$ 0.83	6,376,229	$ 0.87

Aggregate intrinsic value is the sum of the amounts by which the quoted market price of the Company s stock exceeded the exercise price of the stock options at December 31, 2012 and 2011 for those stock options for which the quoted market price was in excess of the exercise price (in-the-money options). As of December 31, 2012 and 2011, the aggregate intrinsic value of options outstanding was $3,000 and zero, respectively. As of December 31, 2012, options to purchase 6,376,229 shares of common stock were exercisable and had an aggregate intrinsic value of $3,000. No stock options were exercised in 2012 or 2011.

A summary of the activity of the Company s unvested restricted stock and performance bonus stock award activities for the years ending December 31, 2012 and 2011 is presented below. The ending balances represent the maximum number of shares that could be earned or vested under the 2005 Plan:

	Number of Shares	Weighted Average Grant Date Fair Value
Balance at December 31, 2010	2,448,273	$ 0.44
Restricted stock awards granted	1,091,448	0.18
Restricted share awards vested	(2,150,745)	0.17
Restricted share awards cancelled	(450,000)	1.60
Balance at December 31, 2011	938,976	0.19
Restricted stock awards granted	1,884,417	0.14
Restricted share awards vested	(1,370,309)	0.16
Balance at December 31, 2012	1,453,084	0.14

For restricted stock awards, the Company recognizes compensation expense over the vesting period for the fair value of the stock award on the measurement date. The total fair value of restricted stock awards that did vest during the years ended December 31, 2012 and 2011 was $185,000 and $373,000, respectively. The Company retained purchase rights to 1,453,000 and 939,000 shares of unvested restricted stock awards issued pursuant to stock purchase agreements at no cost per share as of December 31, 2012 and 2011, respectively. Total employee stock-based compensation expense for restricted stock awards was $236,000 and $103,000 for the years ended December 31, 2012 and 2011, respectively.

During the year ended December 31, 2011, the Company issued 78,947 shares of restricted stock units with no exercise price to non-employee members of its Board of Directors. The units will vest on the earlier of either a

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change in control of the Company or upon the grantee s termination of service as a Board member. In both 2012 and 2011, the non-employee members of the Board of Directors elected to forego all or a portion of their cash compensation in exchange for the aforementioned restricted stock unit grants and restricted stock awards.

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, 2012, a total of 3,496,275 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 1,000,000. 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 2,500,000. As of December 31, 2012, there was a balance of 1,053,725 available authorized shares. Compensation expense was $57,000 and $98,000 for the years ended December 31, 2012 and 2011, 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,	
	2012	**2011**
Employee Stock Purchase Plan		
Dividend yield	0.0%	0.0%
Volatility factor	105.3%	105.3%
Risk-free interest rate	1.0%	1.0%
Expected life (years)	2.00	2.00
Weighted-average fair value of purchase rights granted during the period	$ 0.12	$ 0.12

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.

The following table shows stock-based compensation expense included in the consolidated statement of operations and comprehensive loss for the years ended December 31, 2012 and 2011, respectively (in thousands, except per share amounts):

	2012	**2011**
Costs and Expenses		
Research and development	$ 102	$ 160
General and administrative	371	373
Total stock-based employee compensation expense	$ 473	$ 533
Impact on basic and diluted net loss per common share	$ (0.00)	$ (0.00)

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There was no capitalized stock-based compensation cost as of December 31, 2012. Since the Company has cumulative net losses through December 31, 2012, there was no tax benefit associated with stock-based compensation expense.

The total amount of unrecognized compensation cost related to non-vested stock options and stock purchases net of forfeitures was $43,000 as of December 31, 2012. This amount will be recognized over a weighted average period of 0.45 years. As of December 31, 2012, $121,000 of total unrecognized compensation costs, net of forfeitures, related to non-vested awards is expected to be recognized over a weighted average period of 0.66 years.

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 and non-employee options are as follows:

	Years Ended December 31	
	2012	2011
Dividend yield	0.0%	0.0%
Volatility factor	172.0%	124.5%
Risk-free interest rate	0.8%	1.7%
Expected term (years)	5.3	5.5
Weighted-average fair value of options granted during the periods	$ 0.14	$ 0.15

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. Royalty Agreement

Zogenix

In August 2006, the Company sold all of its assets related to the Intraject needle-free injector technology platform and products, including 12 United States patents along with foreign counterparts, to Zogenix, Inc for an initial payment of $4.0 million. Zogenix is responsible for further development and commercialization efforts of Intraject (now rebranded under the name DosePro). Under the terms of the asset sale agreement, the Company received a $4.0 million milestone payment in 2010 upon initial U.S. commercialization of the SUMAVEL DosePro needle-free delivery system.

The Company received from Zogenix recurring quarterly royalty payments of approximately $1.0 million for the year ended December 31, 2012. The Company received recurring royalty payments totaling approximately $0.8 million during the year ended December 31, 2011.

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11. 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 2012 statutory limit of $16,500 (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 contribution. The Company s employer matching contribution expense was $10,000 and $30,000 in 2012 and 2011, respectively.

12. Income Taxes

In 2012 and 2011, 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,	
	2012	2011
Net operating loss carryforwards	$ 14,332	$ 11,280
Research and development credits	6,509	6,472
Federal orphan drug credits	7,228	5,666
Other	1,881	1,497
Total deferred tax assets	29,950	24,915
Valuation allowance	(29,950)	(24,915)
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, 2012 and 2011, based on the Company s analysis of all available evidence, both positive and negative, it was considered 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 increased by $5.0 million during the year ended December 31, 2012 and increased by $4.8 million during the year ended December 31, 2011. 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,	
	2012	2011
Income tax benefit at federal statutory rate	$ (2,878)	$ (3,259)
State taxes (net of federal)	(648)	(617)
Credits	(662)	(1,081)
Other	(842)	191
Change in valuation allowance	5,030	4,766
Total	$	$

As of December 31, 2012, the Company had federal net operating loss carryforwards of approximately $34.5 million and federal orphan drug credit carryforwards of approximately $7.3 million, which expire in the years 2013 through 2032. The Company also had California net operating loss carryforwards of approximately

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$39.2 million, which expire in the years 2013 through 2032, 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 $34.5 million will be available from 2013 to 2032, subject to the annual limitations. Federal tax credit carryforwards totaling $7.3 million will be available from 2028 to 2032, subject to the annual limitations. State operating loss carryforwards totaling $39.5 million will be available from 2013 to 2032, subject to annual limitations. State tax credit carryforwards totaling $9.9 million will be available commencing in 2033. The Company s use of its net operating loss and credit carryforwards may be subject to further annual limitations for ownership changes occurring after December 31, 2012. The annual limitations or any future limitations could result in the expiration of the net operating loss and credit carryforwards before utilization.

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 after 1999 due to net operating losses 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, 2012, 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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13. Quarterly Results of Operations (unaudited)

Following is a summary of the quarterly results of operations for the years ended December 31, 2012 and 2011 (in thousands, except per share amounts):

	March 31, 2012	June 30, 2012	September 30, 2012	December 31, 2012
Total revenue	$ 282	$ 240	$ 262	$ 223
Operating expenses:				
Research and development	786	700	818	1,477
General and administrative	1,083	913	1,013	887
Restructuring and asset impairment	9	9	8	8
Total expenses	1,878	1,622	1,839	2,372
Loss from operations	(1,596)	(1,382)	(1,577)	(2,149)
Interest expense, net	(366)	(379)	(381)	(394)
Other income (expense), including extinguishment of debt	2		(4)	
Loss before income taxes	(1,960)	(1,761)	(1,962)	(2,543)
Income tax provision	(1)			
Net loss	$ (1,960)	$ (1,761)	$ (1,962)	$ (2,543)
Basic and diluted net loss per common share	$ (0.01)	$ (0.01)	$ (0.01)	$ (0.01)
Shares used in computing basic and diluted net loss per common share	197,923	198,406	198,670	201,137

	March 31, 2011	June 30, 2011	September 30, 2011	December 31, 2011
Total revenues	$ 182	$ 184	$ 242	$ 183
Operating expenses:				
Research and development	1,480	1,584	1,292	651
General and administrative	1,135	1,440	1,020	679
Restructuring and asset impairment	10	10	10	9
Total expenses	2,625	3,034	2,322	1,339
Loss from operations	(2,443)	(2,850)	(2,080)	(1,156)
Interest expense, net	(5)	(45)	(369)	(365)
Other income	1	1		2
Loss before income taxes	(2,447)	(2,894)	(2 ,449)	(1,519)
Income tax benefit (provision)				
Net loss	$ (2,447)	$ (2,894)	$ (2,449)	$ (1,519)
Basic and diluted net loss per common share	$ (0.01)	$ (0.02)	$ (0.01)	$ (0.01)

Shares used in computing basic and diluted net loss per common share	170,135	170,731	194,549	197,833

14. Subsequent Events

The Company has evaluated subsequent events that have occurred after December 31, 2012 and determined that there were no events or transactions occurring during this reporting period which require recognition or disclosure in the financial statements.

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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.

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, 2012. 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, 2012.

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 2013 Annual Meeting of Shareholders to be filed by the Company with the SEC (the 2013 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 2013 Proxy Statement.

Item 11. ***Executive Compensation***

The information required by this Item is incorporated by reference from the section captioned Compensation contained in the 2013 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 2013 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 2013 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 2013 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(24)	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 and 3.10.
4.2(1)	Specimen common stock certificate.
10.1(1)+	Form of Indemnity Agreement between the Registrant and each of its directors and officers.
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.

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Exhibit No.	Description
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)	Promissory Note and Security Agreement, dated July 3, 2006, by and between the Company and Novo Nordisk A/S.
10.9(7)	Amended and Restated Stock Purchase Agreement, dated as of January 26, 2005, by and among the Company, Novo Nordisk A/S and Novo Nordisk Pharmaceuticals, Inc.
10.10(7)#	Asset Purchase Agreement, dated as of August 25, 2006, by and between the Company and Zogenix, Inc.
10.11(7)+	Employment Agreement, dated as of August 10, 2006, with Dr. Igor Gonda.
10.12(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.
10.13(9)#	Restructuring Agreement, dated as of September 28, 2004, by and among the Company, Novo Nordisk A/S and Novo Nordisk Delivery Technologies, Inc.
10.14(10)	Securities Purchase Agreement, dated as of December 17, 2004, by and among the Company and the purchasers named therein.
10.15(11)#	Second Amended and Restated License Agreement, dated as of July 3, 2006, by and between the Company and Novo Nordisk A/S.
10.16(12)	Consulting Agreement effective as of July 2, 2007 by and between the Company and Norman Halleen.
10.17(13)	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.
10.18(14)	Manufacturing Agreement between the Company and Enzon Pharmaceuticals, Inc. dated August 8, 2007.
10.19(15)#	Exclusive License, Development and Commercialization Agreement, dated as of August 30, 2007, by and between the Company and Lung Rx, Inc.
10.20(15)#	Collaboration Agreement, dated as of August 31, 2007, by and between the Company and CyDex, Inc.
10.21(16)+	2005 Equity Incentive Plan, as amended
10.22(17)+	Employee Stock Purchase Plan, as amended.
10.23(18)	Amended and Restated Rights Agreement, dated as of September 5, 2008 by and between the Company and ComputerShare Trust Company, N.A.
10.24(19)	Separation Agreement between the Company and Dr. Babatunde Otulana, dated as of December 12, 2008.
10.25(19)	Consulting Agreement for Independent Contractors between the Company and Dr. Babatunde Otulana, effective as of January 1, 2009.

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Exhibit No.	Description
10.26(19)	International Scientific Advisory Agreement between the Company and Dr. Babatunde Otulana, effective as of January 1, 2009.
10.27(20)+	Amended and Restated Executive Officer Severance Benefit Plan.
10.28(21)	Security Agreement, dated as of July 30, 2009 by and among Aradigm Corporation, Igor Gonda, Jeffery Grimes and Nancy Pecota.
10.29(22)	Securities Purchase Agreement, dated June 18, 2010, by and among Aradigm Corporation and investors listed on the Schedule of Buyers attached thereto.*
10.30(22)	Form of Registration Rights Agreement used in connection with the June 2010 private placement.
10.31(22)	Form of Warrant used in connection with the June 2010 private placement.
10.32(23)	Stock Purchase Agreement, dated as of July 30,02010, by and among Aradigm Corporation and Novo Nordisk A/S.*
10.33(23)	Registration Rights Agreement, dated as of July 20, 2010, by and among Aradigm Corporation and Novo Nordisk A/S.
10.34(23)	First Amendment to Securities Purchase Agreement and Registration Rights Agreement, dated as of July 20, 2010, by and among Aradigm Corporation and the investors party thereto.
10.35(25)	Amended and Restated form of Change of Control Agreement entered into between the Company and certain of the Company s senior officers.
10.36(25)	Amended and Restated form of Change of Control Agreement, dated as of April 15, 2011 by and between Aradigm Corporation and Igor Gonda.
10.37(25)	Amended and Restated form of Change of Control Agreement, dated as of April 15, 2011 by and between Aradigm Corporation and Nancy Pecota.
10.38(25)	Form of Indemnification Agreement.
10.39(26)	Securities Purchase Agreement, dated as of July 5, 2011, among the Company and the investors party thereto.
10.40(26)	Registration Rights Agreement, dated as of July 5, 2011, among the Company and the buyers party thereto.
10.41(27)	Securities Purchase Agreement, dated as of December 11, 2012, among the Company and the investors party thereto.
10.41(27)	Registration Rights Agreement, dated as of December 11, 2012, among the Company and the buyers party thereto.
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.
101.1(28)	The following materials from the Registrant s Annual Report on Form 10-K for the year ended December 31, 2012 are formatted in XBRL (eXtensible Business Reporting Language): (i) the Consolidated Balance Sheets, (ii) the Consolidated Statement of Operations, (iii) Consolidated Statements of Shareholders Equity (Deficit), (iv) the Consolidated Statements of Cash Flows, and (v) Notes to Consolidated Financial Statements.

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+ Represents a management contract or compensatory plan or arrangement.
# The Commission has granted the Company s request for confidential treatment with respect to portions of this exhibit.
(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 December 23, 2004.
(10) Incorporated by reference to the Company s Form 10-Q filed on August 14, 2006.
(11) Incorporated by reference to the Company s Form 8-K filed on October 13, 2005.
(12) Incorporated by reference to the Company s Form 8-K filed on July 11, 2007.
(13) Incorporated by reference to the Company s Form 8-K filed on July 24, 2007.
(14) Incorporated by reference to the Company s Form 8-K filed on August 14, 2007.
(15) Incorporated by reference to the Company s Form 10-Q filed on November 14, 2007.
(16) Incorporated by reference to the Company s definitive proxy statement filed on April 7, 2008.
(17) Incorporated by reference to the Company s Form 8-K filed on May 21, 2009.
(18) Incorporated by reference to the Company s Form 10-Q filed on November 12, 2008.
(19) Incorporated by reference to the Company s Form 8-K filed on December 19, 2008.
(20) Incorporated by reference to the Company s Form 8-K filed on January 8, 2009.
(21) Incorporated by reference to the Company s Form 10-Q filed on November 6, 2009.
(22) Incorporated by reference to the Company s Form 8-K filed on June 21, 2010.
(23) Incorporated by reference to the Company s Form 8-K filed on August 2, 2010.
(24) Incorporated by reference to the Company s Form 8-K filed on September 20, 2010.
(25) Incorporated by reference to the Company s Form 8-K filed on April 18, 2011.
(26) Incorporated by reference to the Company s Form 8-K filed on July 6, 2011.
(27) Incorporated by reference to the Company s Form 8-K filed on December 13, 2012.
(28) Pursuant to Rule 406Tof Regulation S-T, the XBRL files on Exhibit 101 hereto are deemed not filed or part of a registration statement or prospectus for purposes of Sections 11 or 12 of the Securities Act of 1933, as amended, are deemed not filed for purposes of Section 18 of the Securities and Exchange Act of 1934, as amended, and otherwise are not subject to liability under those sections.

(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 Aradigm Corporation.

* 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 26th day of March 2013.

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 26, 2013
/s/ Nancy E. Pecota Nancy E. Pecota	Vice President, Finance and Chief Financial Officer (Principal Financial and Accounting Officer)	March 26, 2013
/s/ Virgil D. Thompson Virgil D. Thompson	Chairman of the Board and Director	March 26, 2013
/s/ Frank H. Barker Frank H. Barker	Director	March 26, 2013
/s/ Tamar D. Howson Tamar D. Howson	Director	March 26, 2013
/s/ John M. Siebert John M. Siebert	Director	March 26, 2013

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EXHIBIT INDEX

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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(24)	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 and 3.10.
4.2(1)	Specimen common stock certificate.
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10.2(1)+	Form of the Company s Incentive Stock Option Agreement under the 2005 Equity Incentive Plan.
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10.8(7)	Promissory Note and Security Agreement, dated July 3, 2006, by and between the Company and Novo Nordisk AS
10.9(7)	Amended and Restated Stock Purchase Agreement, dated as of January 26, 2005, by and among the Company, Novo Nordisk A/S and Novo Nordisk Pharmaceuticals, Inc.
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10.13(9)#	Restructuring Agreement, dated as of September 28, 2004, by and among the Company, Novo Nordisk A/S and Novo Nordisk Delivery Technologies, Inc.

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Exhibit No.	Description
10.14(10)	Securities Purchase Agreement, dated as of December 17, 2004, by and among the Company and the purchasers named therein.
10.15(11)#	Second Amended and Restated License Agreement, dated as of July 3, 2006, by and between the Company and Novo Nordisk A/S.
10.16(12)	Consulting Agreement effective as of July 2, 2007 by and between the Company and Norman Halleen.
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10.20(15)#	Collaboration Agreement, dated as of August 31, 2007, by and between the Company and CyDex, Inc.
10.21(16)+	2005 Equity Incentive Plan, as amended
10.22(17)+	Employee Stock Purchase Plan, as amended.
10.23(18)	Amended and Restated Rights Agreement, dated as of September 5, 2008 by and between the Company and ComputerShare Trust Company, N.A.
10.24(19)	Separation Agreement between the Company and Dr. Babatunde Otulana, dated as of December 12, 2008.
10.25(19)	Consulting Agreement for Independent Contractors between the Company and Dr. Babatunde Otulana, effective as of January 1, 2009.
10.26(19)	International Scientific Advisory Agreement between the Company and Dr. Babatunde Otulana, effective as of January 1, 2009.
10.27(20)+	Amended and Restated Executive Officer Severance Benefit Plan.
10.28(21)	Security Agreement, dated as of July 30, 2009 by and among Aradigm Corporation, Igor Gonda, Jeffery Grimes and Nancy Pecota.
10.29(22)	Securities Purchase Agreement, dated June 18, 2010, by and among Aradigm Corporation and investors listed on the Schedule of Buyers attached thereto.*
10.30(22)	Form of Registration Rights Agreement used in connection with the June 2010 private placement.
10.31(22)	Form of Warrant used in connection with the June 2010 private placement.
10.32(23)	Stock Purchase Agreement, dated as of July 30,02010, by and among Aradigm Corporation and Novo Nordisk A/S.*
10.33(23)	Registration Rights Agreement, dated as of July 20, 2010, by and among Aradigm Corporation and Novo Nordisk A/S.
10.34(23)	First Amendment to Securities Purchase Agreement and Registration Rights Agreement, dated as of July 20, 2010, by and among Aradigm Corporation and the investors party thereto.
10.35(25)	Amended and Restated form of Change of Control Agreement entered into between the Company and certain of the Company s senior officers.

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Exhibit No.	Description
10.36(25)	Amended and Restated Change of Control Agreement, dated as of April 5, 2011 by and between Aradigm Corporation and Igor Gonda.
10.37(25)	Amended and Restated Change of Control Agreement, dated as of April 5, 2011 by and between Aradigm Corporation and Nancy Pecota.
10.38(25)	Form of Indemnification Agreement.
10.39(26)	Securities Purchase Agreement, dated as of July 5, 2011, among the Company and the investor party thereto.
10.40(26)	Registration Rights Agreement, dated as of July 5, 2011 among the Company and the buyers party thereto.
10.41(27)	Securities Purchase Agreement, dated as of December 11, 2012, among the Company and the investors party thereto.
10.42(27)	Registration Rights Agreement, dated as of December 11, 2012 among the Company and the buyers party thereto.
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.
101.1(28)	The following materials from the Registrant s Annual Report on Form 10-K for the year ended December 31, 2012 are formatted in XBRL (eXtensible Business Reporting Language): (i) the Consolidated Balance Sheets, (ii) the Consolidated Statement of Operations, (iii) Consolidated Statements of Shareholders Equity (Deficit), (iv) the Consolidated Statements of Cash Flows, and (v) Notes to Consolidated Financial Statements.

\+ Represents a management contract or compensatory plan or arrangement.
\# The Commission has granted the Company s request for confidential treatment with respect to portions of this exhibit.
(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 December 23, 2004.
(10) Incorporated by reference to the Company s Form 10-Q filed on August 14, 2006.
(11) Incorporated by reference to the Company s Form 8-K filed on October 13, 2005.
(12) Incorporated by reference to the Company s Form 8-K filed on July 11, 2007.
(13) Incorporated by reference to the Company s Form 8-K filed on July 24, 2007.
(14) Incorporated by reference to the Company s Form 8-K filed on August 14, 2007.
(15) Incorporated by reference to the Company s Form 10-Q filed on November 14, 2007.

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(16) Incorporated by reference to the Company s definitive proxy statement filed on April 7, 2008.
(17) Incorporated by reference to the Company s Form 8-K filed on May 21, 2009.
(18) Incorporated by reference to the Company s Form 10-Q filed on November 12, 2008.
(19) Incorporated by reference to the Company s Form 8-K filed on December 19, 2008.
(20) Incorporated by reference to the Company s Form 8-K filed on January 8, 2009.
(21) Incorporated by reference to the Company s Form 10-Q filed on November 6, 2009.
(22) Incorporated by reference to the Company s Form 8-K filed on June 21, 2010.
(23) Incorporated by reference to the Company s Form 8-K filed on August 2, 2010.
(24) Incorporated by reference to the Company s Form 8-K filed on September 20, 2010.
(25) Incorporated by reference to the Company s Form 8-K filed on April 18, 2011.
(26) Incorporated by reference to the Company s Form 8-K filed on July 6, 2011.
(27) Incorporated by reference to the Company s Form 8-K filed on December 13, 2012.
(28) Pursuant to Rule 406Tof Regulation S-T, the XBRL files on Exhibit 101 hereto are deemed not filed or part of a registration statement or prospectus for purposes of Sections 11 or 12 of the Securities Act of 1933, as amended, are deemed not filed for purposes of Section 18 of the Securities and Exchange Act of 1934, as amended, and otherwise are not subject to liability under those sections.