MANNKIND CORP
Form 10-K
February 27, 2009

Table of Contents

UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
Form 10-K

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

For the fiscal year ended December 31, 2008

or

o **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: 000-50865.

MannKind Corporation

(Exact name of registrant as specified in its charter)

Delaware	**13-3607736**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*
28903 North Avenue Paine Valencia, California	**91355**
(Address of principal executive offices)	*(Zip Code)*

Registrant s telephone number, including area code
(661) 775-5300

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

Title of Class	**Name of Each Exchange on Which Registered**
Common Stock, par value $0.01 per share	The Nasdaq Stock Market

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

None

(Title of class)

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes o 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 o 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 o

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. o

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. (Check one):

Large accelerated filer o	Accelerated filer þ	Non-accelerated filer o	Smaller reporting o

(Do not check if a smaller reporting company) company

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

As of June 30, 2008, the aggregate market value of the voting stock held by non-affiliates of the registrant, computed by reference to the last sale price of such stock as of such date on the Nasdaq Global Market, was approximately $73,076,346.

As of February 13, 2009, there were 102,019,206 shares of the registrant s Common Stock outstanding.

MANNKIND CORPORATION
Annual Report on Form 10-K
For the Fiscal Year Ended December 31, 2008
TABLE OF CONTENTS

		Page
	PART I	
Item 1.	Business	3
Item 1A.	Risk Factors	20
Item 1B.	Unresolved Staff Comments	37
Item 2.	Properties	37
Item 3.	Legal Proceedings	37
Item 4.	Submission of Matters to a Vote of Security Holders	37
	PART II	
Item 5.	Market for the Registrant_s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	37
Item 6.	Selected Financial Data	39
Item 7.	Management's Discussion and Analysis of Financial Condition and Results of Operations	39
Item 7A.	Quantitative and Qualitative Disclosures About Market Risk	48
Item 8.	Financial Statements and Supplementary Data	48
	REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM	50
	BALANCE SHEETS	
	STATEMENTS OF OPERATIONS	
	STATEMENTS OF STOCKHOLDERS EQUITY (DEFICIT)	
	STATEMENTS OF CASH FLOWS	
	NOTES TO FINANCIAL STATEMENTS	
Item 9.	Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	48
Item 9A.	Controls and Procedures	48
Item 9B.	Other Information	51
	PART III	
Item 10.	Directors, Executive Officers and Corporate Governance	51
Item 11.	Executive Compensation	59
Item 12.	Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	68
Item 13.	Certain Relationships and Related Transactions, and Director Independence	71
Item 14.	Principal Accounting Fees and Services	72
	PART IV	
Item 15.	Exhibits and Financial Statement Schedules	74
Signatures.		77
EX-10.1		
EX-23.1		
EX-31.1		
EX-31.2		
EX-32		

Table of Contents

Forward-Looking Statements

Statements in this report that are not strictly historical in nature are forward-looking statements. These statements include, but are not limited to, statements about: the progress or success of our research, development and clinical programs, including the our plans and timing for the submission of a new drug application, and the timing or success of the commercialization of AFRESA®, or any other products or therapies that we may develop; our ability to market, commercialize and achieve market acceptance for AFRESA, or any other products or therapies that we may develop; our ability to protect our intellectual property and operate our business without infringing upon the intellectual property rights of others; our estimates for future performance; our estimates regarding anticipated operating losses, future revenues, capital requirements and our needs for additional financing; and scientific studies and the conclusions we draw from them. In some cases, you can identify forward-looking statements by terms such as anticipates, believes, could, estimates, expects, goal, intends, may, plans, potential, predicts, projects, sho similar expressions intended to identify forward-looking statements. These statements are only predictions or conclusions based on current information and expectations and involve a number of risks and uncertainties. The underlying information and expectations are likely to change over time. Actual events or results may differ materially from those projected in the forward-looking statements due to various factors, including, but not limited to, those set forth under the caption Risks and Uncertainties That May Affect Results and elsewhere in this report. Except as required by law, we undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

AFRESA® is our registered trademark in the United States. We have also applied for or registered company trademarks in other jurisdictions, including Europe and Japan. This document also contains trademarks and service marks of other companies that are the property of their respective owners.

PART I

Item 1. ***Business***

Unless the context requires otherwise, the words MannKind, we, company, us and our refer to MannKind Corporation. Unless explicitly stated otherwise, AFRESA refers to the combination of AFRESA inhalation powder and the AFRESA inhaler.

OVERVIEW

MannKind Corporation is a biopharmaceutical company focused on the discovery, development and commercialization of therapeutic products for diseases such as diabetes and cancer. Our lead product candidate, AFRESA, is an ultra rapid-acting insulin that has completed Phase 3 clinical trials evaluating its safety and efficacy in the treatment of diabetes. We believe that the performance characteristics, unique kinetics, convenience and ease of use of AFRESA has the potential to change the way diabetes is treated.

We believe that a distinguishing characteristic of AFRESA is that it produces a profile of insulin levels in the bloodstream that approximates the insulin profile normally seen in healthy individuals immediately following the beginning of a meal, but which is absent in patients with diabetes. Specifically, AFRESA is rapidly absorbed into the bloodstream following inhalation, reaching peak levels within 12 to 14 minutes. As a result of this rapid absorption, most of the glucose-lowering activity of AFRESA occurs within the first three hours of administration which is generally when glucose becomes available from a meal instead of the much longer duration of action observed when insulin is injected subcutaneously. We believe that the relatively short duration of action of AFRESA reduces the need for patients to snack between meals in order to manage ongoing blood glucose excursions. In our clinical trials, we have observed that patients using AFRESA have achieved significant reductions in post-meal glucose excursions and significant improvements in overall glucose control, as measured by decreases in glycosylated hemoglobin, or A1C, levels, without the weight gain typically associated with insulin therapy.

We have conducted an extensive clinical program, involving more than 40 different studies of AFRESA. Approximately 5,300 subjects participated in our clinical studies, of which more than 2,900 subjects were administered AFRESA. These studies were conducted in healthy volunteers, patients with type 1 and type 2 diabetes as well as diabetic patients with renal dysfunction, liver dysfunction, chronic obstructive pulmonary disease, asthma and upper respiratory tract infections. In addition, we have completed construction and achieved operational readiness of our state-of-the-art production facility in Danbury, Connecticut. We believe that our facility will satisfy the initial

commercial demand for AFRESA, although the facility includes expansion space that will allow production capacity to be increased based on anticipated needs during the initial years of commercialization. We are preparing for pre-approval inspection of the facility by the United States Food and Drug Administration, or FDA.

We are in the final stages of preparing a new drug application, or NDA, for AFRESA to be submitted to the FDA shortly after the date of this annual report. The dossier is now drafted; we are currently performing the final hyperlinking and quality-checking activities, with the aim of providing the FDA with a high quality submission that can be efficiently reviewed. We will only be able to market AFRESA once, and if, the FDA approves our application.

Table of Contents

AFRESA utilizes our proprietary Technosphere formulation technology, which is based on a class of organic molecules that are designed to self-assemble into small particles onto which drug molecules can be loaded. Technosphere technology is not limited to insulin delivery. We believe it represents a versatile drug delivery platform that may allow pulmonary administration of certain drugs that currently require administration by injection. Beyond convenience, we believe the key advantage of drugs inhaled as Technosphere formulations is that they have been shown to be absorbed very rapidly into the arterial circulation, essentially mimicking intra-arterial administration.

We have prepared Technosphere formulations of a diverse assortment of drugs that represent a broad range of physicochemical characteristics, including anionic and cationic drugs, hydrophobic and hydrophilic drugs, and molecules ranging from 500 to 140,000 Daltons. In addition to insulin, we have generated clinical data from Technosphere formulations of parathyroid hormone, calcitonin and glucagon-like peptide-1, or GLP-1. Resource constraints currently limit our ability to continue the clinical development of any Technosphere-based products other than AFRESA.

In addition to our Technosphere platform, we are developing therapies for the treatment of different types of cancer. We are currently completing two clinical trials of our therapeutic cancer vaccines.

We were incorporated in the State of Delaware in 1991. Our principal executive offices are located at 28903 North Avenue Paine, Valencia, California 91355, and our telephone number at that address is (661) 775-5300. Our website address is http://www.mannkindcorp.com. Our filings with the Securities and Exchange Commission, or SEC, including our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to those reports are available free of charge through our website as soon as reasonably practicable after being electronically filed with or furnished to the SEC.

DIABETES

Diabetes is a major disease characterized by the body s inability to properly regulate levels of blood glucose, or blood sugar. The cells of the body use glucose as fuel, which is consumed 24 hours a day. Between meals, when glucose is not being supplied from food, the liver releases glucose into the blood to sustain adequate levels. Insulin is a hormone produced by the pancreas that regulates the body s blood glucose levels. Patients with diabetes develop abnormally high levels of glucose, a state known as hyperglycemia, either because they produce insufficient levels of insulin or because they fail to respond adequately to insulin produced by the body. Over time, poorly controlled levels of blood glucose can lead to major complications, including high blood pressure, blindness, amputations, kidney failure, heart attack, stroke and death.

According to the United States Centers for Disease Control, or CDC, approximately 20.8 million people in the United States, or 7% of the population, suffered from diabetes as of 2005. The CDC estimated that 14.6 million cases of diabetes were diagnosed and under treatment and that 1.5 million new cases would be diagnosed in 2005. More troubling is the fact that the incidence of diabetes is increasing. A study published by *Diabetes Care* in 2006 projected that in 2050 there would be 48.3 million people with diagnosed diabetes in the United States. Diabetes extracts a heavy toll from those who suffer from it. The CDC reported that diabetes was the sixth leading cause of death listed on death certificates in 2002, but that diabetes was likely to be underreported as a cause of death. Overall, the CDC found that the risk of death among people with diabetes is about twice that of people without diabetes of similar age. The economic costs of diabetes are high as well. The American Diabetes Association estimated that, in 2007, the total cost of diabetes in the United States was $174 billion, an increase of 32% since 2002. This amount includes $28 billion of direct costs for drug treatment for glucose control, of which approximately $6 billion were for insulin and delivery supplies and approximately $9 billion were for non-insulin oral medications.

There are two major forms of diabetes, type 1 and type 2. Type 1 diabetes is an autoimmune disease characterized by a complete lack of insulin secretion by the pancreas, so insulin must be supplied from outside the body in order to sustain life. In type 2 diabetes, the pancreas continues to produce insulin; however, insulin-dependent cells become resistant to the insulin effect. Over time, the pancreas becomes increasingly unable to secrete adequate amounts of insulin to support metabolism. According to the CDC, type 2 diabetes is the more prevalent form of the disease, affecting approximately 90% to 95% of people diagnosed with diabetes.

Challenges of treating diabetes

Since patients with type 1 diabetes produce no insulin of their own, the primary treatment for type 1 diabetes is daily intensive insulin therapy. Such patients usually require a daily injection of long-acting, or basal, insulin along with an injection of rapid- or fast-acting

Table of Contents

insulin at mealtimes.

When patients with type 2 diabetes are first diagnosed, the initial therapy is typically lifestyle intervention (diet and exercise) in order to try to normalize their blood glucose levels. As the disease progresses, treatment moves to various non-insulin oral medications. Often, the first drug introduced is metformin, which acts to reduce the glucose output of the liver. When this drug fails to reduce blood glucose levels, other drugs are added. Some of these additional medications act to increase the amount of insulin produced by the pancreas; others increase the sensitivity of muscle, fat and liver cells to the effects of insulin. Generally, these oral medications are limited in their ability to manage the disease effectively and tend to have significant side effects, such as weight gain and hypertension. Ultimately, many patients with type 2 diabetes will require insulin therapy in order to maintain appropriate levels of blood glucose.

Recently, the American Diabetes Association and the European Association for the Study of Diabetes published consensus treatment guidelines that advocated the initiation of insulin therapy after the failure of metformin. These groups emphasized that the early addition and intensification of insulin therapy was an important part of the treatment plan for patients with type 2 diabetes.

Although insulin therapy is accepted as an effective means to control glucose levels, the available insulin products have limitations, including:

- the risk of severe hypoglycemia, which is abnormally low levels of blood glucose that result from excessive insulin administration. Hypoglycemia can result in loss of mental acuity, confusion, increased heart rate, hunger, sweating and faintness and, at very low glucose levels, loss of consciousness, seizures, coma and death;
- the likelihood of weight gain;
- inadequate post-meal glucose control;
- the need for complex titration of insulin doses in connection with meals; and
- the need for injections.

Because of these limitations, patients tend not to comply with the prescribed treatment regimens and are often under-treated. Moreover, even when properly administered, subcutaneous injections of insulin do not replicate the natural time-action profile of insulin. In a person without diabetes, blood insulin levels rise within several minutes of the entry into the bloodstream of glucose from a meal. By contrast, injected insulin enters the bloodstream slowly, resulting in peak insulin levels in about 120 to 180 minutes for regular human insulin or 30-90 minutes for so-called rapid-acting insulin analogs. The consequence of these slower acting insulins is that patients do not have adequate levels of insulin present at the initiation of a meal and tend to be over-insulinized between meals. This lag in insulin delivery results in hyperglycemia early after meal onset, followed by a tendency for hypoglycemia to develop during the period between meals. Physicians who treat patients with diabetes are concerned about the risks of hypoglycemia and, as a result, tend to undertreat the chronic hyperglycemia that is associated with the disease. However, the resultant extensive hyperglycemia significantly contributes to many of the long-term cardiovascular and other serious complications of diabetes.

The Mannkind Solution Mimic Natural Insulin Release

In our clinical trials to date, we have consistently observed that AFRESA is rapidly absorbed into the bloodstream following inhalation, reaching peak levels within 12 to 14 minutes. In this manner, AFRESA produces a profile of insulin levels in the bloodstream that closely approximates the early insulin secretion normally seen in healthy individuals immediately following the beginning of a meal, but which is absent in patients with diabetes.

The pharmacokinetic profile distinguishes AFRESA from other insulin therapies. A 2004 review article in the *British Journal of Diabetes and Vascular Diseases* reviewed different studies of pulmonary insulin products in development and compared their glucose-lowering activity to that of injectable rapid-acting insulin analogs. The graph below from this article shows that most pulmonary insulin formulations have comparable time-action profiles to injectable rapid-acting insulin. The one exception was AFRESA, which was observed to have a much more rapid onset of action than the other insulin therapies reviewed.

Table of Contents

We believe the rapid action of AFRESA may be related to the unique aspects of both the carrier molecule as well as the way insulin is stabilized in our formulation. Our formulation technology is centered on a class of pH-sensitive organic molecules that self-assemble into small particles under mildly acidic conditions. We refer to these particles as Technosphere particles. Certain drugs, such as insulin, can be loaded onto these particles by combining a mildly acidic solution of the drug with a suspension of Technosphere material, which is then dried to a powder. This powder is then filled into plastic cartridges and packaged. To administer AFRESA, a patient loads a cartridge into our palm-sized inhaler. By inhaling through the inhaler, air is pulled through the cartridge, which aerosolizes the powder and pulls the particles into the air current and out through the mouthpiece. The individual particles within this aerosol are small and have aerodynamic properties that enable them to fly deep into the lungs. When the particles contact the moist lung surface with its neutral pH, the Technosphere particles dissolve immediately, releasing the insulin molecules to diffuse across a thin layer of cells into the bloodstream. We believe that the insulin absorption step is a passive process that occurs without any active assistance or enhancement and without disruption of either cell membranes or the tight junctions between cells.

Significantly, when the Technosphere particles dissociate, we believe that the insulin that is released is in a form that can be readily used by the body. In most pharmaceutical dosage forms, regular human insulin exists as a hexamer, a complex of six associated insulin molecules. In order to exert a pharmacological effect, the hexamer must first dissociate into three dimers complexes of two insulin molecules which then further dissociate into individual insulin molecules, or monomers. Only monomeric insulin can attach to the insulin receptor and exert a physiological effect. Rapid-acting insulin analogs are designed to be fragile hexamers that dissociate more quickly, thereby reducing the time required to achieve an effect but this is still far slower than insulin that is released from a healthy pancreas. However, the insulin released from Technosphere particles is already largely in monomeric form. During the manufacture of AFRESA, we cause hexameric insulin to dissociate into monomeric insulin before being loaded onto Technosphere particles. When AFRESA particles dissolve in the deep lung, the insulin that is released diffuses across a thin layer of cells to reach the bloodstream. Little change is required before the insulin can start exerting its glucose-lowering effect in the body.

More natural insulin profile translates into clinical benefits

In our clinical studies involving patients with diabetes, we observed that AFRESA produces the following clinical benefits:

Consistent decreases in A1C levels, comparable to current insulin therapies. We have evaluated A1C levels in a number of clinical studies involving patients with type 1 and type 2 diabetes. A consistent finding was that AFRESA produced decreases in A1C levels that were comparable to the decreases observed in the control arm of these studies, including studies that compared AFRESA to rapid-acting insulin analogs, to pre-mixed insulin analogs and to metformin in combination with a sulfonylurea.

Table of Contents

Superior post-meal glucose control. AFRESA has a shorter duration of action than other insulin therapies, so its glucose-lowering effect better meets a patient s needs following a meal. Specifically, AFRESA produces lower blood glucose values than comparators in the first three hours following meal ingestion but does not remain active for an extended period of time, thereby reducing the risk of hypoglycemia between meals.

Improved fasting glucose control. In clinical trials of both type 1 and type 2 diabetes, AFRESA has consistently provided better fasting blood glucose control than comparator insulin therapies.

Less hypoglycemia due to better synchronization with glucose absorption from meals. In type 2 diabetes, AFRESA together with a basal insulin were compared to pre-mixed insulin analog. In clinical trials we observed that the overall risk of hypoglycemia was reduced and, in particular, there was a reduction in the risk of hypoglycemia in the late post-meal period, consistent with the novel action profile of AFRESA. In addition, there was a reduced risk of severe nocturnal hypoglycemia, a condition much feared by patients with diabetes. In clinical trials we observed similar results in patients with type 1 diabetes when comparing AFRESA to a rapid-acting insulin analog, both in combination with basal insulin, although the differences were less pronounced.

Little or no weight gain. In our clinical trials, patients receiving AFRESA experienced weight reduction or significantly less weight gain compared to other insulin therapies.

Favorable safety profile in clinical trials

To date, our clinical trials indicate that our AFRESA has a favorable safety profile. The most common adverse event reported with AFRESA therapy was a transient, mild and non-productive cough. The occurrence of mild cough is well recognized with inhaled medications. In our studies, the incidence of cough leading to the discontinuation of AFRESA was low.

After a two-year Phase 3 clinical trial of AFRESA, we determined that the use of AFRESA in patients with diabetes was non-inferior to usual diabetes care with respect to a decline in FEV1, a measure of lung function that assesses the volume of air that can be forcibly expired within one second. Similar results were obtained for other measures of lung function.

Our clinical trials for AFRESA have not demonstrated an increased risk of pulmonary cancer. In addition, we conducted comprehensive nonclinical studies of AFRESA and unloaded Technosphere particles, including a two-year rat carcinogenicity study and a six-month transgenic mice study. These studies indicated that there was no increased risk of cancer, or any other clinical pathological effects.

We will establish a program of safety surveillance and adverse event reporting for the purpose of evaluating the ongoing safety data related to the use of AFRESA if it is approved by regulatory authorities.

Convenient and easy to use

To facilitate the delivery of Technosphere-formulated drugs to the deep lung, we developed an inhaler that utilizes single-use, disposable, plastic cartridges containing drug-loaded powder. The AFRESA inhaler is light and easy to use, and fits in the palm of the patient s hand, which we believe facilitates patient compliance. To administer a dose, the patient opens the device, inserts a cartridge of AFRESA inhalation powder into the inhaler, inserts the mouthpiece into the mouth and takes a deep breath, thereby drawing the aerosolized particles deep into the lungs. The inhaler incorporates an airflow regulator that is designed to ensure a sufficient airflow from use to use, even in patients with restricted airflow capacity. In addition, the inhaler is breath actuated, which means that the patient does not need to coordinate a breath with any manipulation of the device, such as priming or pumping. In our clinical trials of AFRESA, patients have reported a high level of satisfaction with the inhaler.

We believe the ease of use of the inhaler complements the time-action profile of the AFRESA powder to produce a highly convenient system. Because insulin is transferred to the bloodstream rapidly with our therapy, we believe that the optimal and most convenient time for patients to take a dose of AFRESA is right at the start of a meal. In contrast, with subcutaneous regular insulin it is recommended that the user try to time an injection 15 to 45 minutes before the expected mealtime, raising issues such as miscalculation of time or unanticipated change in meal availability, which

could result in adverse events.

Table of Contents

CANCER

Cancer is the unregulated proliferation of cells that have the capacity to spread to other sites in the body. A neoplasm is an uncontrolled growth of abnormal cells. A neoplasm is considered benign if it does not spread; if it invades other tissues, however, it is considered malignant. The term cancer refers to a malignant neoplasm.

The first goal of cancer treatment is to eradicate the cancer. Typically, this goal is pursued using treatment methods surgery, radiation and chemotherapy that can be highly toxic and may offer little clinical benefit. In the past decade or so, newer treatment methods have begun to emerge, including immunotherapy approaches that attempt to induce the immune system to kill tumor cells instead of tolerating them.

Cancer immunotherapy

Our cancer immunotherapy program utilizes the body s immune system to help eradicate tumor cells. The immune system is a network of cells and organs that defends the body against infection and abnormal cells, such as tumor cells. A key element of the immune system is its ability to distinguish between healthy cells and foreign or diseased cells that do not belong in the body. The immune system accomplishes this task by recognizing distinctive molecules called epitopes on the surface of each cell as either normal or abnormal, and responding to them appropriately. Any substance capable of being recognized by the immune system is known as an antigen. An antigen can be all or part of a pathogenic organism or it can be a by-product of diseased cells. Certain specialized cells of the immune system (antigen-presenting cells or APC) sample antigens found in the body and present the epitopes associated with foreign antigens to other cells of the immune system, known as T-cells, whose function is to destroy any cell that expresses the same epitope; this process is known as cell-mediated immunity. In this way, the immune system can launch a very specific response to infection or disease.

Our approach uses DNA- and peptide-based compounds that correspond to tumor-associated antigens that are expressed in a range of tumors. We select as target antigens molecules that either play a role in disease progression or that are very selectively expressed by tumor cells. A patient s immune system is first primed by DNA-based compounds, or plasmids, that are injected directly into the patient s lymph nodes. This is designed to sensitize the immune system to the tumor-associated antigens encoded by the plasmids. After a period of time, the patient s lymph nodes are then injected with synthetic peptides that are designed to boost or greatly amplify the immune response to the target antigens. The immune response is maintained by repeated immunization cycles. This prime-boost regimen is designed to provoke a potent cell-mediated immune response that destroys cancer cells along with the underlying blood supply to tumors.

Our lead product candidate in this program, MKC1106-PP, is intended for the treatment of several solid-tumor cancers, including ovarian, colorectal, pancreatic, renal, breast, non-small cell lung and prostate carcinomas, glioblastoma and melanoma. In 2007, we commenced an open label Phase 1 clinical trial that is designed to evaluate the safety, tolerability and pharmacological response of MKC1106-PP in cancer patients with a variety of tumor types. This study is expected to be completed by the middle of 2009.

MKC1106-PP consists of three components: a plasmid that encodes pharmacological active elements from two tumor-associated antigens, known as PRAME and PSMA, and two synthetic peptides, one an analog of a PRAME epitope and one an analog of a PSMA epitope. In addition to melanoma, PRAME is expressed in carcinomas such as lung, breast, ovarian, renal, pancreatic and colorectal. PSMA was originally isolated from prostate carcinoma cells and later shown to be expressed in the blood vessels that supply several types of carcinoma, including breast, lung, ovarian, pancreatic, renal and colorectal carcinoma and melanoma.

In 2008, we also initiated an open-label Phase1/2 clinical trial of our second immunotherapy product candidate, MKC1106-MT. This trial is evaluating the tolerability and clinical responses to the therapy in patients with advanced melanoma. MKC1106-MT consists of a plasmid that encodes portions of two antigens known as Melan-A and tyrosinase, and two synthetic peptides, one an analog of a Melan-A epitope and one an analog of a tyrosinase epitope. Melan-A and tyrosinase are antigens commonly expressed by melanoma tumor cells.

The key features of our cancer immunotherapy program include the following:

It is a targeted therapeutic approach that aims to redirect patients immune response to the tumor targets expressed by their cancer. The patients with a highest likelihood to benefit from this treatment can be identified by histological analysis of their tumors.

It involves an innovative and potent vaccination approach comprising direct intra-lymphatic administration of the immunizing components using a prime-boost sequence that is designed to achieve optimal response.

Table of Contents

The selected target antigens are molecules that play a key role in tumor progression and migration and that display increased expression, or selective expression, in tumor cells. Moreover, they are expressed in a range of cancers.

The immunizing components are off the shelf formulations of DNA and peptides containing excipients that are well recognized and generally regarded as safe. There is no need to harvest any material from patients tumors or cells in order to make our vaccine.

OUR STRATEGY

Our objective is to develop products primarily in the major therapeutic areas of diabetes and cancer. Our strategy is to achieve this objective by doing the following:

Establish AFRESA as the preferred mealtime therapy within the broad population of people with diabetes. We believe the advantages in terms of safety, efficacy and convenience of AFRESA, as compared to subcutaneous insulin products, will enable us to capture a significant portion of the existing insulin-using diabetes market. Our target markets also include patients with type 2 diabetes who are currently using conventional therapies other than insulin, including:

patients currently using diet and exercise therapy but who are having difficulty achieving proper blood glucose control and who otherwise would have started non-insulin oral medications; and

patients currently using non-insulin medications.

Expand our proprietary Technosphere formulation technology for the delivery of other peptide hormones. On the basis of some initial clinical studies, we believe that additional Technosphere formulations of peptide hormones have the potential to demonstrate clinical advantages over existing therapeutic options in diabetes, endocrine disorders and obesity.

Commercialize our Technosphere portfolio with a partner who shares our commitment to improving the lives of patients with diabetes. We are evaluating potential collaboration opportunities with large pharmaceutical companies in the United States, Europe and Japan to provide marketing, sales and financial resources to commercialize and sell AFRESA. We have not licensed or transferred any of our rights to this product or to our platform technology.

Develop novel approaches to treating cancer using our immunotherapy and drug discovery platforms. We are currently conducting a Phase 1 and a Phase 1/2 clinical trial of our investigational cancer immunotherapy product candidates. Our goal is to evaluate the safety and efficacy of this approach while also continuing to conduct research aimed at identifying novel drug therapies for cancer indications.

SALES AND MARKETING

Our efforts to date have primarily been directed at developing products for a number of different markets. We currently have no sales or distribution capabilities and have no experience as a company in marketing or selling pharmaceutical products. However, we have built a small marketing team and are actively engaged in the commercial activities that would normally be undertaken in preparation for launch of a pharmaceutical product.

In order to commercially market any of our products, we need either to develop an internal sales team, continue to expand our marketing infrastructure or collaborate with third parties who have greater sales and marketing capabilities and have access to potentially large markets. Although we believe that establishing our own sales and marketing organizations in North America would have substantial advantages, we recognize that this may not be practical for some of our products and that collaborating with companies with established sales and marketing capabilities in a particular market or markets may be a more effective alternative for some products. To date, we have retained worldwide commercialization rights for all of our products, including AFRESA. We believe that this will give us flexibility if we enter into collaborations to provide the necessary sales and marketing support.

We are evaluating potential collaboration opportunities to assist us in the commercialization of AFRESA in the United States and other major markets, and we may also create parallel in-house sales and marketing operations in certain key markets, particularly in the United States.

MANUFACTURING AND SUPPLY

In November 2007, we entered into a long-term supply agreement with N. V. Organon, or Organon, (now owned by Schering-Plough Corporation) pursuant to which Organon will manufacture and supply specified quantities of recombinant human insulin to us. The

Table of Contents

initial term of this supply agreement will end on December 31, 2012 and will be automatically extended for consecutive two-year periods unless (i) we fail to provide a forecast of our insulin requirements for the two-year extension period to Organon at least 24 months before any automatic extension or (ii) either party provides 23-months advance written notice to the other party of its desire to terminate the agreement. We and Organon each have normal and customary termination rights, including (a) for material breach of the agreement by the other party, (b) due to the liquidation or bankruptcy of the other party or (c) upon 90-days advance written notice if the parties are unable to agree after mediation on the consequences of any changes to the product specifications required by any controlling regulatory authority. We may terminate the supply agreement upon 30-days advance written notice to Organon if certain regulatory authorities fail to approve or withdraw approval of AFRESA. If we terminate the supply agreement following failure to obtain or maintain regulatory approval of AFRESA or either party terminates the agreement following the parties inability to agree after any regulatory authority-mandated changes to product specifications that relate specifically to the use of insulin in AFRESA, we will be required to pay Organon a specified termination fee if Organon is unable to sell certain quantities of insulin to other parties. We believe that Organon has sufficient capacity to provide us with sufficient quantities of insulin to support our needs through the initial stages of commercialization. We must rely on our insulin supplier to maintain compliance with relevant regulatory requirements including current Good Manufacturing Practices, or cGMP.

We have a long-term supply agreement with Vaupell, Inc. for the manufacture and supply of our inhaler and the cartridges that are inserted into it. We have qualified a second manufacturer to supply us with commercial quantities of these components. We rely on our manufacturers to comply with relevant regulatory requirements, including compliance with Quality System Regulations, or QSRs. We believe our manufacturers have the capacity to meet our clinical trial and commercial requirements.

Currently, we purchase the raw material from which we produce Technosphere particles from a major chemical manufacturer with facilities in Europe and North America. We also have the capability of manufacturing this chemical ourselves in our Danbury, Connecticut facility, which is now treated as a back-up facility. Like us, our third-party manufacturers are subject to extensive governmental regulation.

We formulate and fill the AFRESA inhalation powder into plastic cartridges and blister package the cartridges in a manufacturing suite in our Danbury facility. With the recent completion of a major expansion project, we believe that our Danbury facility has adequate capacity to meet our anticipated needs for the initial years of commercialization. We are currently completing equipment installation and validation in order to ensure compliance with cGMP and to prepare for pre-approval inspection by the FDA. In addition, our quality management systems were certified to be in conformance with the ISO 13485 and ISO 9001 standards.

INTELLECTUAL PROPERTY AND PROPRIETARY TECHNOLOGY

Our success will depend in large measure on our ability to obtain and enforce our intellectual property rights, effectively maintain our trade secrets and avoid infringing the proprietary rights of third parties. Our policy is to file patent applications on what we deem to be important technological developments that might relate to our product candidates or methods of using our product candidates and to seek intellectual property protection in the United States, Europe, Japan and selected other jurisdictions for all significant inventions. We have obtained, are seeking, and will continue to seek patent protection on the compositions of matter, methods and devices flowing from our research and development efforts. We have also in-licensed certain technology.

Our Technosphere drug delivery platform, including AFRESA, enjoys patent protection relating to the particles, their manufacture, and their use for pulmonary delivery of drugs. We have additional patent coverage relating to the treatment of diabetes using AFRESA. We have been granted patent coverage for our inhaler cartridges in the form in which our insulin product will be sold to the consumer. We have additional pending patent applications, and expect to file further applications, relating to the drug delivery platform, methods of manufacture, the AFRESA product and its use, and other Technosphere-based products, inhalers and inhaler cartridges. Overall, we own 35 issued patents and over 200 pending applications in the United States and select jurisdictions around the world related to our Technosphere platform. These include composition and method of treatment patents providing protection for AFRESA that will remain in force into 2020, and patents on our inhaler and inhaler cartridges that that will remain in force into 2023.

In addition, we own or have in-licensed intellectual property relating to several drug targets of interest in the treatment of cancer and other fields. Patents and patent applications in this area are drawn to drug screening methods, methods of treatment, and chemical structures of inhibitors of these targets. Our cancer immunotherapy program is built on proprietary methods for the selection, design and administration of epitopes, as well as the plasmids and peptides that are the active ingredients of our products. Overall we own 16 issued patents and over 180 pending applications in the United States and select jurisdictions around the world related to our immunotherapy program.

Table of Contents

The fields of pulmonary drug delivery and cancer therapies are crowded and a substantial number of patents have been issued in these fields. In addition, 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 issued patents cannot be confidently predicted. Further, there can be substantial delays in commercializing pharmaceutical products, which can partially consume the statutory period of exclusivity through patents.

In addition, the coverage claimed in a patent application can be significantly reduced before a patent is issued, either in the United States or abroad. Statutory differences in patentable subject matter may limit the protection we can obtain on some of our inventions outside of the United States. For example, methods of treating humans are not patentable in many countries outside of the United States. These and other issues may limit the patent protection we will be able to secure internationally. Consequently, we do not know whether any of our pending or future patent applications will result in the issuance of patents or, to the extent patents have been issued or will be issued, whether these patents will be subjected to further proceedings limiting their scope, will provide significant proprietary protection or competitive advantage, or will be circumvented or invalidated. Furthermore, patents already issued to us or our pending applications may become subject to disputes that could be resolved against us. In addition, patent applications in the United States filed before November 29, 2000 are currently maintained in secrecy until the patent issues, although in certain countries, including the United States, for applications filed on or after November 29, 2000, applications are generally published 18 months after the application s priority date. In any event, because publication of discoveries in scientific or patent literature often trails behind actual discoveries, we cannot be certain that we were the first inventor of the subject matter covered by our pending patent applications or that we were the first to file patent applications on such inventions.

Although we own a number of domestic and foreign patents and patent applications relating to our Technosphere-based investigational products and our cancer products under development, we have identified certain third-party patents having claims relating to pulmonary insulin delivery that may trigger an allegation of infringement upon the commercial manufacture and sale of AFRESA. We have also identified third-party patents disclosing methods and compositions of matter related to DNA-based vaccines that also may trigger an allegation of infringement upon the commercial manufacture and sale of our cancer immunotherapy. We believe that we are not infringing any valid claims of any patent owned by a third party. However, if a court were to determine that our inhaled insulin product or cancer immunotherapies were infringing any of these patent rights, we would have to establish with the court that these patents were invalid in order to avoid legal liability for infringement of these patents. Proving patent invalidity can be difficult because issued patents are presumed valid. Therefore, in the event that we are unable to prevail in an infringement or invalidity action we will either have to acquire the third-party patents outright or seek a royalty-bearing license. Royalty-bearing licenses effectively increase costs and therefore may materially affect product profitability. Furthermore, if the patent holder refuses to either assign or license us the infringed patents, it may be necessary to cease manufacturing the product entirely and/or design around the patents. In either event, our business would be harmed and our profitability could be materially adversely impacted. If third parties file patent applications, or are issued patents claiming technology also claimed by us in pending applications, we may be required to participate in interference proceedings in the United States Patent and Trademark Office, or USPTO, to determine priority of invention. We may be required to participate in interference proceedings involving our issued patents and pending applications.

We also rely on trade secrets and know-how, which are not protected by patents, to maintain our competitive position. We require our officers, employees, consultants and advisors to execute proprietary information and invention and 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 our relationship must be kept confidential, except in specified circumstances. These agreements also provide that all inventions developed by the individual on behalf of us must be assigned to us and that the individual will cooperate with us in connection with securing patent protection on the invention if we wish to pursue such protection. There can be no assurance, however, that these agreements will 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. However, disputes may arise as to the ownership of proprietary rights to the extent that outside collaborators apply technological information to our projects that are developed independently by them or others, or apply our technology to outside projects, and there can be no assurance that any such disputes would be resolved in our favor. In addition, any of these parties may breach the agreements and disclose our confidential information or our competitors might learn of the information in some other way. If any trade secret, know-how or other technology not protected by a patent were to be disclosed to or independently developed by a competitor, our business, results of operations and financial condition could be adversely affected.

COMPETITION

The pharmaceutical and biotechnology industries are highly competitive and characterized by rapidly evolving technology and intense

Table of Contents

research and development efforts. We expect to compete with companies, including the major international pharmaceutical companies, and other institutions that have substantially greater financial, research and development, marketing and sales capabilities and have substantially greater experience in undertaking preclinical and clinical testing of products, obtaining regulatory approvals and marketing and selling biopharmaceutical products. We will face competition based on, among other things, product efficacy and safety, the timing and scope of regulatory approvals, product ease of use and price.

Diabetes treatments

We believe that AFRESA has important competitive advantages in the delivery of insulin when compared with currently known alternatives. However, new drugs or further developments in alternative drug delivery methods may provide greater therapeutic benefits, or comparable benefits at lower cost, than AFRESA. There can be no assurance that existing or new competitors will not introduce products or processes competitive with or superior to our product candidates.

We have set forth below more detailed information about certain of our competitors. The following is based on information currently available to us.

Inhaled and oral insulin delivery systems

Currently, we are not aware of any other inhaled insulin products on the market or in development.

In January 2006, Exubera®, developed by Pfizer, Inc. in collaboration with Nektar Therapeutics, was approved for the treatment of adults with type 1 and type 2 diabetes. Exubera® was slow to gain market acceptance and, in October 2007, Pfizer announced that it was discontinuing the product. In September 2008, we announced a collaboration agreement with Pfizer pursuant to which certain patients with a continuing medical need for inhaled insulin were transitioned to AFRESA on a compassionate use basis. Pfizer subsequently withdrew the NDA for Exubera from the FDA.

In January 2008, Novo Nordisk A/S announced that it was halting development of its inhaled insulin product, having reached the conclusion that the product did not have adequate commercial potential. Notwithstanding the termination of this program, Novo Nordisk stated that it intended to increase research and development activities targeted at inhalation systems for long-acting formulations of insulin and GLP-1.

In March 2008, Eli Lilly and Company, or Eli Lilly, announced that it too was terminating the development of its AIR® inhaled insulin system. Lilly stated that this decision resulted from increasing uncertainties in the regulatory environment and after a thorough evaluation of the evolving commercial and clinical potential of its product compared to existing medical therapies.

There are several companies that are pursuing development of products involving the oral delivery of insulin. Biocon Limited is currently in Phase 2 clinical trials of IN-105, a tablet for the oral delivery of insulin. Emisphere Technologies, Inc. has also developed an oral formulation of insulin. A Phase 2 clinical trial of the Emisphere investigational product was completed in the fall of 2006. Other companies are evaluating alternative means of delivering insulin orally. Generex Biotechnology Corporation is currently conducting Phase 3 clinical trials in North America of its liquid formulation of insulin that is sprayed onto the buccal mucosa. This product, Oral-lyn , is currently available for sale in certain countries, including Ecuador and India. Biodel Inc. is currently conducting Phase 1 clinical trials of an oral formulation of insulin (VIAtab) designed to be administered sublingually. We are not aware that the timelines to commercialization for any of these investigational products have been made available publicly.

Non-insulin medications

We expect that AFRESA will compete with currently available non-insulin medications for type 2 diabetes. These products include the following:

Sulfonylureas, also called oral hypoglycemic agents, prompt the pancreas to secrete insulin. This class of drugs is most effective in individuals whose pancreas still have some working pancreas cells.

Meglitinides are taken with meals and reduce the elevation in blood glucose that generally follows eating. If these drugs are not taken with meals, blood glucose will drop dramatically and inappropriately.

Biguanides lower blood glucose by improving the sensitivity of cells to insulin (i.e., by diminishing insulin resistance).

Table of Contents

Thiazolidinedione improve the uptake of glucose by cells in the body.

Alpha-glucosidase inhibitors lower the amount of glucose absorbed from the intestines, thereby reducing the rise in blood glucose that occurs after a meal.

Inhibitors of dipeptidyl peptidase IV are a class of drugs that work by blocking the degradation of GLP-1, which is a naturally occurring incretin.

Incretin mimetics work by several mechanisms including stimulating the pancreas to secrete insulin when blood glucose levels are high.

Injected insulin

In the subcutaneous insulin market, our competitors have made considerable efforts in promoting rapid acting injectable insulin formulations. Humalog®, which was developed by Eli Lilly, and NovoLog®, which was developed by Novo Nordisk A/S, are the two principal injectable insulin formulations with which we expect to compete.

Cancer treatments

For many types of cancer, chemotherapy remains a significant component of the treatment regimen. Increasingly, however, drugs and antibodies that specifically target the abnormal mechanisms of proliferation, differentiation and invasion of malignant cells are being used to treat cancer. One such cancer therapy is Rituxan® (rituximab), an antibody marketed in the United States by Biogen IDEC and Genentech and by Roche in the rest of the world. Genentech, Inc. and Roche have also partnered to market two other successful antibodies: Avastin® (bevacizumab) and Herceptin® (trastuzumab). Erbitux® (cetuximab) is another antibody approved for use in metastatic colon cancer and squamous cell carcinoma of the head and neck. This antibody is marketed domestically by ImClone and Bristol-Myers Squibb and elsewhere by Merck KGaA.

The armamentarium of cancer treatments has been strengthened in recent years by several drugs that target specific molecular aberrations in tumor cells. One such drug is Gleevec®, developed and marketed by Novartis AG, which was initially approved for use in chronic myeloid leukemia. The drug has subsequently been approved for use in additional types of cancer. Velcade®, developed by Millenium Pharmaceuticals and Ortho Biotech, acts by inhibiting protein degradation, thereby inducing apoptosis. It was initially approved for use in multiple myeloma; its label now includes an indication for mantle cell lymphoma.

Our cancer products may face competition from the products described above as well as from other brands. In addition, our cancer immunotherapy products may face direct competition from one or more therapeutic cancer vaccines that may be approved in the coming years. Although there have been a number of notable failures recently among immunotherapy products in development, a few approaches continue to show potential:

Provenge® (Dendreon Corporation) is a vaccine composed of autologous APC that are loaded with an antigen (Prostate Acid Phosphatase) from prostate tumor cells then re-injected into patients. In May 2007, despite a positive vote from the Advisory Committee, Dendreon received a Complete Response letter from the FDA with respect to its application for the approval of Provenge® for the treatment of prostate cancer. Specifically, the FDA has requested that Dendreon provide additional survival data in order to support its claims that Provenge® is effective. Dendreon continues to generate survival data from their Phase 3 clinical trial and is planning to submit these data in 2009.

MAGE-A3 is a tumor-specific antigen that is expressed in a large variety of cancers, including melanoma, non-small cell lung cancer, head and neck cancer, bladder cancer, with no expression in normal cells. GlaxoSmithKline is evaluating a cancer vaccine that combines MAGE-A3, delivered as a purified recombinant protein, with certain immunostimulating compounds that are intended to increase the anti-tumor immune response. This investigational product is being evaluated in a Phase 3 clinical trials for the treatment of non-small cell lung cancer and melanoma.

CDX-110 is an immunotherapy being developed by Celldex, Inc. in collaboration with Pfizer. CDX-110 targets a mutated form of epidermal growth factor receptor that is present in multiple cancer types and is currently being evaluated for the treatment of glioblastoma multiforme in a Phase 2/3 clinical trial.

GOVERNMENT REGULATION AND PRODUCT APPROVAL

Table of Contents

The FDA and comparable regulatory agencies in state, local and foreign jurisdictions impose substantial requirements upon the clinical development, manufacture and marketing of medical devices and new drug products. These agencies, through regulations that implement the Federal Food, Drug, and Cosmetic Act, as amended, or FDCA, and other regulations, regulate research and development activities and the development, testing, manufacture, labeling, storage, shipping, approval, advertising, promotion, sale and distribution of such products. In addition, if our products are marketed abroad, they also are subject to export requirements and to regulation by foreign governments. The regulatory clearance process is generally lengthy, expensive and uncertain. Failure to comply with applicable FDA and other regulatory requirements can result in sanctions being imposed on us or the manufacturers of our products, including hold letters on clinical research, civil or criminal fines or other penalties, product recalls, or seizures, or total or partial suspension of production or injunctions, refusals to permit products to be imported into or exported out of the United States, refusals of the FDA to grant approval of drugs or to allow us to enter into government supply contracts, withdrawals of previously approved marketing applications and criminal prosecutions.

The steps typically required before an unapproved new drug product for use in humans may be marketed in the United States include:

Preclinical studies that include laboratory evaluation of product chemistry and formulation, as well as animal studies to assess the potential safety and efficacy of the product. Certain preclinical tests must be conducted in compliance with good laboratory practice regulations. Violations of these regulations can, in some cases, lead to invalidation of the studies, or requiring such studies to be repeated. In some cases, long-term preclinical studies are conducted while clinical studies are ongoing.

Submission to the FDA of an investigational new drug application, or IND, which must become effective before human clinical trials may commence. The results of the preclinical studies are submitted to the FDA as part of the IND. Unless the FDA objects, the IND becomes effective 30 days following receipt by the FDA.

Approval of clinical protocols by independent institutional review boards, or IRBs, at each of the participating clinical centers conducting a study. The IRBs consider, among other things, ethical factors, the potential risks to individuals participating in the trials and the potential liability of the institution. The IRB also approves the consent form signed by the trial participants.

Adequate and well-controlled human clinical trials to establish the safety and efficacy of the product. Clinical trials involve the administration of the drug to healthy volunteers or to patients under the supervision of a qualified medical investigator according to an approved protocol. The clinical trials are conducted in accordance with protocols that detail the objectives of the study, the parameters to be used to monitor participant safety and efficacy or other criteria to be evaluated. Each protocol is submitted to the FDA as part of the IND. Human clinical trials are typically conducted in the following four sequential phases that may overlap or be combined:

In Phase 1, the drug is initially introduced into a small number of individuals and tested for safety, dosage tolerance, absorption, metabolism, distribution and excretion. Phase 1 clinical trials are often conducted in healthy human volunteers and such cases do not provide evidence of efficacy. In the case of severe or life-threatening diseases, the initial human testing is often conducted in patients rather than healthy volunteers. Because these patients already have the target disease, these studies may provide initial evidence of efficacy that would traditionally be obtained in Phase 2 clinical trials. Consequently, these types of trials are frequently referred to as Phase 1/2 clinical trials. The FDA receives reports on the progress of each phase of clinical testing and it may require the modification, suspension or termination of clinical trials if it concludes that an unwarranted risk is presented to patients or healthy volunteers.

Phase 2 involves clinical trials in a limited patient population to further identify any possible adverse effects and safety risks, to determine the efficacy of the product for specific targeted diseases and to determine dosage tolerance and optimal dosage.

Phase 3 clinical trials are undertaken to further evaluate dosage, clinical efficacy and to further test for safety in an expanded patient population at geographically dispersed clinical study sites. Phase 3 clinical trials usually include a broader patient population so that safety and efficacy can be substantially established. Phase 3 clinical trials cannot begin until Phase 2 evaluation demonstrates that a dosage range of the product may be effective and has an acceptable safety profile.

Phase 4 clinical trials are performed if the FDA requires, or a company pursues, additional clinical trials after a product is approved. These clinical trials may be made a condition to be satisfied after a drug receives approval. The results of Phase 4 clinical trials can confirm the effectiveness of a product candidate and can provide important safety information to augment the FDA s voluntary adverse drug reaction reporting system.

Table of Contents

Concurrent with clinical trials and preclinical studies, companies also must develop information about the chemistry and physical characteristics of the drug and finalize a process for manufacturing the product in accordance with drug cGMP requirements. The manufacturing process must be capable of consistently producing quality batches of the product and the manufacturer must develop methods for testing the quality, purity, and potency of the final products. Additionally, appropriate packaging must be selected and tested and chemistry stability studies must be conducted to demonstrate that the product does not undergo unacceptable deterioration over its shelf-life.

Submission to the FDA of an NDA based on the clinical trials. The results of pharmaceutical development, preclinical studies, and clinical trials are submitted to the FDA in the form of an NDA for approval of the marketing and commercial shipment of the product. Under the Pediatric Research Equity Act of 2003, or PREA, NDAs are required to include an assessment, generally based on clinical study data, of the safety and efficacy of drugs for all relevant pediatric populations. The statute provides for waivers or deferrals in certain situations but we can make no assurances that such situations will apply to us or our product candidates.

Medical products containing a combination of new drugs, biological products, or medical devices are regulated as combination products in the United States. A combination product generally is defined as a product comprised of components from two or more regulatory categories (*e.g.*, drug/device, device/biologic, drug/biologic). Each component of a combination product is subject to the requirements established by the FDA for that type of component, whether a new drug, biologic, or device. In order to facilitate pre-market review of combination products, the FDA designates one of its centers to have primary jurisdiction for the pre-market review and regulation of the overall product. The determination whether a product is a combination product or two separate products is made by the FDA on a case-by-case basis. We have had discussions with the FDA about the status of AFRESA as a combination product and we have been told that the FDA considers our product a combination drug/device. There have been some indications from the FDA that the review of any marketing applications for AFRESA will involve reviews within the Division of Metabolism and Endocrinology Products and the Division of Pulmonary and Allergy Products, both within the Center for Drug Evaluation and Research, as well as review within the Center for Devices and Radiological Health, the Center within the FDA that reviews Medical Devices. Although the FDA has not made a final decision in this regard, we currently understand that the Division of Metabolic and Endocrine Products will be the lead group and obtain consulting reviews from the other two FDA groups if we submit an NDA.

The testing and approval process requires substantial time, effort and financial resources. We cannot be certain that any approval of our products will be granted on a timely basis, if at all. If any of our products are approved for marketing by the FDA, we will be subject to continuing regulation by the FDA, including record-keeping requirements, reporting of adverse experiences with the product, submitting other periodic reports, drug sampling and distribution requirements, notifying the FDA and gaining its approval of certain manufacturing or labeling changes, and complying with certain electronic records and signature requirements. Prior to and following approval, if granted, all manufacturing sites are subject to inspection by the FDA and other national regulatory bodies and must comply with cGMP, QSR and other requirements enforced by the FDA and other national regulatory bodies through their facilities inspection program. Foreign manufacturing establishments must comply with similar regulations. In addition, our drug-manufacturing facilities located in Danbury and the facilities of our insulin supplier, the supplier(s) of our Technosphere material and the supplier(s) of our inhaler and cartridges are subject to federal registration and listing requirements and, if applicable, to state licensing requirements. Failure, including those of our suppliers, to obtain and maintain applicable federal registrations or state licenses, or to meet the inspection criteria of the FDA or the other national regulatory bodies, would disrupt our manufacturing processes and would harm our business. In complying with standards set forth in these regulations, manufacturers must continue to expend time, money and effort in the area of production and quality control to ensure full compliance. Currently, we believe we are operating under all of the necessary guidelines and permits.

We currently expect that our inhaler will be approved as part of the NDA for AFRESA. No assurances exist that we will not be required to obtain separate device clearances or approval for use of our inhaler with AFRESA. This may result in our being subject to medical device review user fees and to other device requirements to market our

inhaler and may result in significant delays in commercialization. Even if the device component is approved as part of our NDA for AFRESA, numerous device regulatory requirements still apply to the device part of the drug-device combination. These include:

product labeling regulations;

general prohibition against promoting products for unapproved or off-label uses;

corrections and removals (e.g., recalls);

establishment registration and device listing;

general prohibitions against the manufacture and distribution of adulterated and misbranded devices; and

Table of Contents

the Medical Device Reporting regulation, which requires that manufacturers report to the FDA if their device may have caused or contributed to a death or serious injury or malfunctioned in a way that would likely cause or contribute to a death or serious injury if it were to recur.

Further, the company we have contracted to manufacture our inhaler and cartridges will be subject to the QSR, which requires manufacturers to follow elaborate design, testing, control, documentation and other quality assurance procedures during the manufacturing process of medical devices, among other requirements.

Failure to adhere to regulatory requirements at any stage of development, including the preclinical and clinical testing process, the review process, or at any time afterward, including after approval, may result in various adverse consequences. These consequences include action by the FDA or another national regulatory body that has the effect of delaying approval or refusing to approve a product; suspending or withdrawing an approved product from the market; seizing or recalling a product; or imposing criminal penalties against the manufacturer. In addition, later discovery of previously unknown problems may result in restrictions on a product, its manufacturer, or the NDA holder, or market restrictions through labeling changes or product withdrawal. Also, new government requirements may be established or they may change at any time that could delay or prevent regulatory approval of our products under development. For example, in response to recent events regarding questions about the safety of certain approved prescription products, including the lack of adequate warnings, the FDA and Congress are currently considering new regulatory and legislative approaches to advertising, monitoring and assessing the safety of marketed drugs, including legislation providing the FDA with authority to mandate labeling changes for approved pharmaceutical products, particularly those related to safety. We also cannot be sure that the current Congressional and FDA initiatives pertaining to ensuring the safety of marketed drugs or other developments pertaining to the pharmaceutical industry will not adversely affect our operations. We cannot predict the likelihood, nature or extent of adverse governmental regulation that might arise from future legislative or administrative action, either in the United States or abroad.

In addition, the FDA imposes a number of complex regulations on entities that advertise and promote drugs, which include, among other requirements, standards for and regulations of direct-to-consumer advertising, off-label promotion, industry sponsored scientific and educational activities, and promotional activities involving the Internet. Such advertising and promotional activities are also being scrutinized by the FDA and Congress as a result of recent concerns that have been raised about the safety of marketed drugs. The FDA has very broad enforcement authority under the FDCA, and failure to comply with these regulations can result in penalties, including the issuance of a warning letter directing us to correct deviations from FDA standards, a requirement that future advertising and promotional materials be pre-cleared by the FDA, and state and federal civil and criminal investigations and prosecutions.

Products manufactured in the United States and marketed outside the United States are subject to certain FDA regulations, as well as regulation by the country in which the products are to be sold. We also would be subject to foreign regulatory requirements governing clinical trials and drug product sales if products are marketed abroad. Whether or not FDA approval has been obtained, approval of a product by the comparable regulatory authorities of foreign countries usually must be obtained prior to the marketing of the product in those countries. The approval process varies from jurisdiction to jurisdiction and the time required may be longer or shorter than that required for FDA approval.

Product development and approval within this regulatory framework take a number of years, involve the expenditure of substantial resources and are uncertain. Many drug products ultimately do not reach the market because they are not found to be safe or effective or cannot meet the FDA s other regulatory requirements. In addition, there can be no assurance that the current regulatory framework will not change or that additional regulation will not arise at any stage of our product development that may affect approval, delay the submission or review of an application or require additional expenditures by us. There can be no assurance that we will be able to obtain necessary regulatory clearances or approvals on a timely basis, if at all, for any of our product candidates under development, and delays in receipt or failure to receive such clearances or approvals, the loss of previously received clearances or approvals, or failure to comply with existing or future regulatory requirements could have a material adverse effect on our business and results of operations.

Under European Union regulatory systems, marketing authorizations may be submitted either under a centralized or decentralized procedure. The centralized procedure provides for the grant of a single marketing authorization that is valid for all European Union member states. The decentralized procedure provides for mutual recognition of national approval decisions. Under this latter procedure, the holder of a national marketing authorization may submit an application to the remaining member states. Within 90 days of receiving the application and assessment report, each member state must decide whether to recognize approval. We plan to choose the appropriate route of European regulatory filing in an attempt to accomplish the most rapid regulatory approvals. However, the chosen regulatory strategy may not secure regulatory approvals or approvals of the chosen product indications. In addition, these approvals, if obtained, may take longer than anticipated.

We cannot provide assurance that any of our product candidates will prove to be safe or effective, will receive regulatory approvals, or will be successfully commercialized.

Table of Contents

In addition to the foregoing, we are subject to numerous federal, state and local laws relating to such matters as laboratory practices, the experimental use of animals, the use and disposal of hazardous or potentially hazardous substances, controlled drug substances, safe working conditions, manufacturing practices, environmental protection and fire hazard control. We may incur significant costs to comply with those laws and regulations now or in the future.

Patent restoration and marketing exclusivity

The Drug Price Competition and Patent Term Restoration Act of 1984, known as the Hatch-Waxman Amendments to the Federal Food, Drug, and Cosmetic Act, permits the FDA to approve abbreviated NDAs, or ANDAs, for generic versions of innovator drugs and also provides certain patent restoration and market exclusivity protections to innovator drug manufacturers. The ANDA process permits competitor companies to obtain marketing approval for a new drug with the same active ingredient for the same uses, dosage form and strength as an innovator drug but does not require the conduct and submission of preclinical or clinical studies demonstrating safety and efficacy for that product. Instead of providing completely new safety and efficacy data, the ANDA applicant only needs to submit manufacturing information and clinical data demonstrating that the copy is bioequivalent to the innovator s product in order to gain marketing approval from the FDA.

Another type of marketing application allowed by the Hatch-Waxman Amendments, a Section 505(b)(2) application, may be permitted where a company does not own or have a right to reference all the data required for approval. Section 505(b)(2) NDAs are often submitted for drug products that contain the same active ingredient as those in first approved drug products and where additional studies are required for approval, such as for changes in routes of administration or dosage forms.

Once an NDA is approved, the product covered thereby becomes a listed drug which can, in turn, be cited by potential competitors in support of approval of an ANDA or a 505(b)(2) application.

The Hatch-Waxman Amendments provide for a period of three years exclusivity following approval of a listed drug that contains previously approved active ingredients but is approved in a new dosage, dosage form, route of administration or combination, or for a new use, the approval of which was required to be supported by new clinical trials conducted by or for the sponsor. During this period of exclusivity, FDA cannot grant effective approval of an ANDA or a 505(b)(2) application based on that listed drug.

The Hatch-Waxman Amendments also provide a period of five years exclusivity following approval of a drug containing no previously approved active ingredients. During this period of exclusivity, ANDAs or 505(b)(2) applications based upon those drugs cannot be submitted unless the submission accompanies a challenge to a listed patent, in which case the submission may be made four years following the original product approval.

Additionally, in the event that the sponsor of the listed drug has informed FDA of patents covering its listed drug and FDA lists those patents in the Orange Book, applicants submitting an ANDA or a 505(b)(2) application referencing that drug are required to certify whether they intend to market their generic products prior to expiration of those patents. If an ANDA applicant certifies that it believes one or more listed patents is invalid or not infringed, it is required to provide notice of its filing to the NDA sponsor and the patent holder. If either party then initiates a suit for patent infringement against the ANDA sponsor within 45 days of receipt of the notice, FDA cannot grant effective approval of the ANDA until either 30 months has passed or there has been a court decision holding that the patent in question is invalid or not infringed. If the ANDA applicant certifies that it does not intend to market its generic product before some or all listed patents on the listed drug expire, then FDA cannot grant effective approval of the ANDA until those patents expire. The first ANDA applicant submitting substantially complete applications certifying that listed patents for a particular product are invalid or not infringed may qualify for a period of 180 days after a court decision of invalidity or non-infringement or after it begins marketing its product, whichever occurs first. During this 180 day period, subsequently submitted ANDAs cannot be granted effective approval.

The FDA Modernization Act of 1997 included a pediatric exclusivity provision that was extended by the Best Pharmaceuticals for Children Act of 2002. Pediatric exclusivity is designed to provide an incentive to manufacturers for conducting research about the safety and efficacy of their products in children. Pediatric exclusivity, if granted, provides an additional six months of market exclusivity in the United States for new or currently marketed drugs if certain pediatric studies requested by the FDA are completed by the applicant and the applicant has other existing

patent or exclusivity protection for the drug. To obtain this additional six months of exclusivity, it would be necessary for us to first receive a written request from the FDA to conduct pediatric studies and then to conduct the requested studies according to a previously agreed timeframe and submit the report of the study. There can be no assurances that we would receive a written request from the FDA and if so that we would complete the studies in accordance with the requirements for this six-month exclusivity. The current pediatric exclusivity provision is scheduled to end on October 1, 2012, and there can be no assurances that it will be reauthorized.

Table of Contents

EMPLOYEES

As of December 31, 2008, we had 580 full-time employees. 91 of these employees were engaged in research and development, 202 in manufacturing, 178 in clinical, regulatory affairs and quality assurance and 109 in administration, finance, management, information systems, marketing, corporate development and human resources. 63 of these employees have a Ph.D. degree and/or M.D. degree and are engaged in activities relating to research and development, manufacturing, quality assurance and business development. None of our employees is subject to a collective bargaining agreement. We believe relations with our employees are good.

SCIENTIFIC ADVISORS

We seek advice from a number of leading scientists and physicians on scientific, technical and medical matters. These advisors are leading scientists in the areas of pharmacology, chemistry, immunology and biology. Our scientific advisors are consulted regularly to assess, among other things:

our research and development programs;

the design and implementation of our clinical programs;

our patent and publication strategies;

market opportunities from a clinical perspective;

new technologies relevant to our research and development programs; and

specific scientific and technical issues relevant to our business.

Our diabetes program is supported by the following scientific advisors (and their primary affiliations):

Name	Primary Affiliation
Stephanie Amiel, MD, FRCP	King s College London School of Medicine
Richard Bergenstal, MD	International Diabetes Center, Park Nicollet Institute
Geremia Bolli	University of Perugia
Alan D. Cherrington, PhD	Vanderbilt University Medical Center
David D Alessio, MD	University of Cincinnati
Steven Edelman, MD	University of California, San Diego
Alexander Fleming, MD	Kinexum Box LLC
Brian Frier, MD, FECP, BS	Edinburgh Royal Infirmary
Irl B. Hirsch, MD	University of Washington Medical Center
Lois Jovanovic, MD	Sansum Medical Research Institute
Steven Kahn, MB, ChB	University of Washington
David Klonoff, MD	Dorothy L. & James E. Frank Diabetes Research Institute
Harold E Lebovitz, MD, FACE	State University of New York, Brooklyn
Daniel Lorber, MD	Diabetes Care & Information Center of New York
Sten Madsbad	Hvidovre University Hospital, Copenhagen
Chantal Mathieu, MD, PhD	Laboratorium voor Experimentele Geneeskunde en Endocrinologie
Mark Peyrot, MD	Loyola College Center
Daniel Porte, MD	University of California, San Diego
Philip Raskin, MD, FACE, FACP	University of Texas
Julio Rosenstock, MD	Dallas Diabetes and Endocrinology Center
Jesse Roth, MD, FACP	North Shore-Long Island Jewish Health System
Richard Rubin, PhD, CDE	Johns Hopkins University School of Medicine
Robert Sherwin, MD	Yale University School of Medicine

Jay Skyler, MD, MACP University of Miami, Diabetes Research Institute

Table of Contents

Our cancer program is supported by the following scientific advisors (and their primary affiliations):

Name	Primary Affiliation
Kenneth Anderson, M.D.	Dana Farber Cancer Institute, Boston
Philippe Bey, Ph.D.	Pharmaceutical consultant
Jeffrey Bluestone, Ph.D.	University of California, San Francisco
W. Martin Kast, Ph.D.	University of Southern California
Antoni Ribas, M.D.	University of California, Los Angeles
Owen Witte, M.D.	University of California, Los Angeles

EXECUTIVE OFFICERS

The following table sets forth our current executive officers and their ages as of December 31, 2008:

Name	Age	Position(s)
Alfred E. Mann	83	Chairman of the Board of Directors and Chief Executive Officer
Hakan S. Edstrom	58	President, Chief Operating Officer and Director
Matthew J. Pfeffer	51	Corporate Vice President and Chief Financial Officer
Juergen A. Martens, Ph.D.	53	Corporate Vice President, Technical Operations and Chief Technical Officer
Diane M. Palumbo	55	Corporate Vice President, Human Resources
Dr. Peter C. Richardson	49	Corporate Vice President and Chief Scientific Officer
David Thomson, Ph.D., J.D.	42	Corporate Vice President, General Counsel and Secretary

Alfred E. Mann has been one of our directors since April 1999, our Chairman of the Board since December 2001 and our Chief Executive Officer since October 2003. He founded and formerly served as Chairman and Chief Executive Officer of MiniMed, Inc., a publicly traded company focused on diabetes therapy and microinfusion drug delivery that was acquired by Medtronic, Inc. in August 2001. Mr. Mann also founded and, from 1972 through 1992, served as Chief Executive Officer of Pacesetter Systems, Inc. and its successor, Siemens Pacesetter, Inc., a manufacturer of cardiac pacemakers, now the Cardiac Rhythm Management Division of St. Jude Medical Corporation. Mr. Mann founded and since 1993, has served as Chairman and until January 2008, as Co-Chief Executive Officer of Advanced Bionics Corporation, a medical device manufacturer focused on neurostimulation to restore hearing to the deaf and to treat chronic pain and other neural deficits, that was acquired by Boston Scientific Corporation in June 2004. In January 2008, the former stockholders of Advanced Bionics Corporation repurchased certain segments from Boston Scientific Corporation and formed Advanced Bionics LLC for cochlear implants and Infusion Systems LLC for infusion pumps. Mr. Mann is non-executive Chairman of both entities. Mr. Mann has also founded and is non-executive Chairman of Second Sight, which is developing a visual prosthesis for the blind and Quallion, which produces batteries for medical products and for the military and aerospace industries; and Stellar Microelectronics Inc., a supplier of electronic assemblies to the medical, military and aerospace industries. Mr. Mann is also non-executive Chairman of the Alfred Mann Foundation and Alfred Mann Institute at the University of Southern California, AMI Purdue and AMI Technion, and the Alfred Mann Foundation for Biomedical Engineering, which is establishing additional institutes at other research universities. Mr. Mann is also non-executive Chairman of the Southern California Biomedical Council, and a Director of the Nevada Cancer Institute and United Cerebral Palsy Foundation. Mr. Mann holds a bachelor s and master s degree in Physics from the University of California at Los Angeles, honorary doctorates from Johns Hopkins University, the University of Southern California, Western University and the Technion-Israel Institute of Technology and is a member of the National Academy of Engineering.

Hakan S. Edstrom has been our President and Chief Operating Officer since April 2001 and has served as one of our directors since December 2001. Mr. Edstrom was with Bausch & Lomb, Inc., a health care product company, from January 1998 to April 2001, advancing to the position of Senior Corporate Vice President and President of Bausch & Lomb, Inc. Americas Region. From 1981 to 1997, Mr. Edstrom was with Pharmacia Corporation, where he held various executive positions, including President and Chief Executive Officer of Pharmacia Ophthalmics Inc.

Mr. Edstrom is currently a director of Q-Med AB, a biotechnology and medical device company. Mr. Edstrom was educated in Sweden and holds a master s degree in Business Administration from the Stockholm School of Economics.

Matthew J. Pfeffer has been our Corporate Vice President and Chief Financial Officer since April 2008. Previously, Mr. Pfeffer served as Chief Financial Officer and Senior Vice President of Finance and Administration of VaxGen, Inc. from March 2006 until April 2008, with responsibility for finance, tax, treasury, human resources, IT, purchasing and facilities functions. Prior to VaxGen,

Table of Contents

Mr. Pfeffer served as CFO of Cell Genesys, Inc. During his nine year tenure at Cell Genesys, Mr. Pfeffer served as Director of Finance before being named CFO in 1998. Prior to that, Mr. Pfeffer served in a variety of financial management positions at other companies, including roles as Corporate Controller, Manager of Internal Audit and Manager of Financial Reporting. Mr. Pfeffer began his career at Price Waterhouse. Mr. Pfeffer serves on boards and advisory committees of the Biotechnology Industry Organization and the American Institute of Certified Public Accountants. Mr. Pfeffer has a bachelor s degree in Accounting from the University of California, Berkeley and is a Certified Public Accountant.

Juergen A. Martens, Ph.D. has been our Corporate Vice President of Operations and Chief Technology Officer since September 2005. From 2000 to August 2005, he was employed by Nektar Therapeutics, Inc., most recently as Vice President of Pharmaceutical Technology Development. Previously, he held technical management positions at Aerojet Fine Chemicals from 1998 to 2000 and at FMC Corporation from 1996 to 1998. From 1987 to 1996, Dr. Martens held a variety of management positions with increased responsibility in R&D, plant management, and business process development at Lonza, in Switzerland and in the United States. Dr. Martens holds a bachelor s degree in chemical engineering from the Technical College Mannheim/Germany, a bachelor s and master s degree in Chemistry and a doctorate in Physical Chemistry from the University of Marburg/Germany.

Diane M. Palumbo has been our Corporate Vice President of Human Resources since November 2004. From July 2003 to November 2004, she was President of her own human resources consulting company. From June 1991 to July 2003, Ms. Palumbo held various positions with Amgen, Inc., a California-based biopharmaceutical company, including Senior Director, Human Resources. In addition, Ms. Palumbo has held Human Resources positions with Unisys and Mitsui Bank Ltd. of Tokyo. She holds a master s degree in Business Administration from St. John s University, New York and a bachelor s degree, magna cum laude, also from St. John s University.

Dr. Peter C. Richardson has been our Corporate Vice President and Chief Scientific Officer since October 2005. From 1991 to October 2005, he was employed by Novartis Pharmaceuticals Corporation, which is the U.S. affiliate of Novartis AG, a world leader in healthcare, most recently as Senior Vice President, Global Head of Development Alliances. From 2003 until 2005, he was Senior Vice President and Head of Development of Novartis Pharmaceuticals KK Japan. He earlier practiced as an endocrinologist. Dr. Richardson holds a B.Med.Sci (Hons.) and a BM.BS (Hons.) from University of Nottingham Medical School; a MRCP (UK) from the Royal College of Physicians, UK; a Certificate in Pharmaceutical Medicine from Universities of Freibourg, Strasbourg and Basle; and a Diploma in Pharmaceutical Medicine from the Royal College of Physicians Faculty of Pharmaceutical Medicine.

David Thomson, Ph.D., J.D. has been our Corporate Vice President, General Counsel and Corporate Secretary since January 2002. Prior to joining us, he practiced corporate/commercial and securities law at the Toronto law firm of Davies Ward Phillips & Vineberg LLP from May 1999 through December 2001, except for a period from May to December 2000, when he served as Vice President, Business Development for CTL ImmunoTherapies Corp. From March 1994 to August 1996, Dr. Thomson held a post-doctoral position at the Rockefeller University, where he conducted medical research in the Laboratory of Neurophysiology. Dr. Thomson obtained his bachelor s degree, master s degree and Ph.D. degree from Queens University and obtained his J.D. degree from the University of Toronto.

Executive officers serve at the discretion of our Board of Directors. There are no family relationships between any of our directors and executive officers.

Item 1A. ***Risk Factors***

You should consider carefully the following information about the risks described below, together with the other information contained in this report before you decide to buy or maintain an investment in our common stock. We believe the risks described below are the risks that are material to us as of the date of this Annual Report. Additional risks and uncertainties that we are unaware of may also become important factors that affect us. If any of the following risks actually occur, our business, financial condition, results of operations and future growth prospects would likely be materially and adversely affected. In these circumstances, the market price of our common stock could decline, and you may lose all or part of the money you paid to buy our common stock.

RISKS RELATED TO OUR BUSINESS

We have a history of operating losses, we expect to continue to incur losses and we may never become profitable.

We are a development stage company with no commercial products. All of our product candidates are still being developed, and all but AFRESA are still in the early stages of development. Our product candidates will require significant additional development,

Table of Contents

clinical trials, regulatory clearances and additional investment before they can be commercialized. We anticipate that AFRESA will not be commercially available for at least one year, if at all.

We have never been profitable and, as of December 31, 2008, we had an accumulated deficit of $1.4 billion. The accumulated deficit has resulted principally from costs incurred in our research and development programs, the write-off of goodwill and general operating expenses. We expect to make substantial expenditures and to incur increasing operating losses in the future in order to further develop and commercialize our product candidates, including costs and expenses to complete clinical trials, seek regulatory approvals and market our product candidates, including AFRESA. This accumulated deficit may increase significantly as we expand development and clinical trial efforts.

Our losses have had, and are expected to continue to have, an adverse impact on our working capital, total assets and stockholders equity. Our ability to achieve and sustain profitability depends upon obtaining regulatory approvals for and successfully commercializing AFRESA, either alone or with third parties. We do not currently have the required approvals to market any of our product candidates, and we may not receive them. We may not be profitable even if we succeed in commercializing any of our product candidates. As a result, we cannot be sure when we will become profitable, if at all.

If we fail to raise additional capital, our financial condition and business would suffer.

It is costly to develop therapeutic product candidates and conduct clinical trials for these product candidates. Although we are currently focusing on AFRESA as our lead product candidate, we have begun to conduct clinical trials for additional product candidates. Although development of AFRESA has been completed, our existing capital resources will not be sufficient to support the expense of fully commercializing AFRESA or development of any of our other product candidates.

Based upon our current expectations, we believe that our existing capital resources, including the loan arrangement with an entity controlled by our principal stockholder, will enable us to continue planned operations through the first quarter of 2010. However, we cannot assure you that our plans will not change or that changed circumstances will not result in the depletion of our capital resources more rapidly than we currently anticipate. Accordingly, we plan to raise additional capital, either through the sale of equity and/or debt securities, a strategic business collaboration or the establishment of other funding facilities, in order to continue the development and commercialization of AFRESA and other product candidates and to support our other ongoing activities. However, due to current turbulence in the U.S. and global financial markets, it may be difficult for us to raise additional capital through the sale of equity and/or debt securities. The amount of additional funds we need will depend on a number of factors, including:

- the rate of progress and costs of our clinical trials and research and development activities, including costs of procuring clinical materials and expanding our own manufacturing facilities;
- our success in establishing strategic business collaborations and the timing and amount of any payments we might receive from any collaboration we are able to establish;
- actions taken by the FDA and other regulatory authorities affecting our products and competitive products;
- our degree of success in commercializing AFRESA;
- the emergence of competing technologies and products and other adverse market developments;
- the timing and amount of payments we might receive from potential licensees;
- the costs of preparing, filing, prosecuting, maintaining and enforcing patent claims and other intellectual property rights or defending against claims of infringement by others;
- the costs of discontinuing projects and technologies or decommissioning existing facilities, if we undertake those activities; and

the costs of performing additional clinical trials to demonstrate safety and efficacy if our current trials do not deliver results sufficient for FDA approval and commercialization.

Table of Contents

We have raised capital in the past primarily through the sale of equity securities and most currently through the sale of equity and debt securities. We may in the future pursue the sale of additional equity and/or debt securities, or the establishment of other funding facilities. Issuances of additional debt or equity securities or the conversion of any of our currently outstanding convertible debt securities into shares of our common stock could impact your rights as a holder of our common stock and may dilute your ownership percentage. Moreover, the establishment of other funding facilities may impose restrictions on our operations. These restrictions could include limitations on additional borrowing and specific restrictions on the use of our assets, as well as prohibitions on our ability to create liens, pay dividends, redeem our stock or make investments.

We also may seek to raise additional capital by pursuing opportunities for the licensing or sale of certain intellectual property and other assets, including our Technosphere technology platform. We cannot offer assurances, however, that any strategic collaborations, sales of securities or sales or licenses of assets will be available to us on a timely basis or on acceptable terms, if at all. We may be required to enter into relationships with third parties to develop or commercialize products or technologies that we otherwise would have sought to develop independently, and any such relationships may not be on terms as commercially favorable to us as might otherwise be the case.

In the event that sufficient additional funds are not obtained through strategic collaboration opportunities, sales of securities, licensing arrangements and/or asset sales on a timely basis, we may be required to reduce expenses through the delay, reduction or curtailment of our projects, including AFRESA commercialization, or further reduction of costs for facilities and administration. Moreover, if we do not obtain such additional funds, there will be substantial doubt about our ability to continue as a going concern.

The current financial crisis and deteriorating economic conditions may have an adverse impact on the loan facility with an entity controlled by our principal stockholder, which we currently cannot predict.

As widely reported, economic conditions in the United States and globally have been deteriorating. Financial markets in the United States, Europe and Asia have been experiencing a period of unprecedented turmoil and upheaval characterized by extreme volatility and declines in security prices, severely diminished liquidity and credit availability, inability to access capital markets, the bankruptcy, failure, collapse or sale of various financial institutions and an unprecedented level of intervention from the United States federal government and other governments. We cannot predict the impact of these events on the loan facility with an entity controlled by our principal stockholder. If we are unable to draw on this financial resource, our business and financial condition will be adversely affected.

We depend heavily on the successful development and commercialization of our lead product candidate, AFRESA, which has completed clinical development, and our other product candidates, which are in early clinical or preclinical development.

To date, we have not completed the development of any product candidates through to commercialization. AFRESA has completed pivotal Phase 3 clinical trials, while our other product candidates are generally in early clinical or preclinical development. We anticipate that in the near term, our ability to generate revenues will depend solely on the successful development and commercialization of AFRESA.

We have expended significant time, money and effort in the development of our lead product candidate, AFRESA, which has not yet received regulatory approval and which may never be commercialized. Before we can market and sell AFRESA, we must receive the necessary approvals from the FDA and similar foreign regulatory agencies before AFRESA can be marketed in the United States or elsewhere. Even if we were to receive regulatory approval, we ultimately may be unable to gain market acceptance of AFRESA for a variety of reasons, including the treatment and dosage regimen, potential adverse effects, the availability of alternative treatments and cost effectiveness. If we fail to commercialize AFRESA, our business, financial condition and results of operations will be materially and adversely affected.

We are seeking to develop and expand our portfolio of product candidates through our internal research programs and through licensing or otherwise acquiring the rights to therapeutics in the areas of cancer and other indications. All of these product candidates will require additional research and development and significant preclinical, clinical and other testing prior to seeking regulatory approval to market them. Accordingly, these product candidates will not be commercially available for a number of years, if at all.

A significant portion of the research that we are conducting involves new and unproven compounds and technologies, including AFRESA, Technosphere platform technology and immunotherapy product candidates.

Research programs to identify new product candidates require substantial technical, financial and human resources. Even if our research programs identify candidates that initially show promise, these candidates may fail to progress to clinical development for any number of reasons, including discovery upon further research that these candidates have adverse effects or other characteristics that indicate they are unlikely to be effective. In

Table of Contents

addition, the clinical results we obtain at one stage are not necessarily indicative of future testing results. If we fail to successfully complete the development and commercialization of AFRESA or develop or expand our other product candidates, or are significantly delayed in doing so, our business and results of operations will be harmed and the value of our stock could decline.

If we do not achieve our projected development and commercialization goals in the timeframes we announce and expect, our business would be harmed and the market price of our common stock could decline.

For planning purposes, we estimate the timing of the accomplishment of various scientific, clinical, regulatory and other product development goals, which we sometimes refer to as milestones. These milestones may include the commencement or completion of scientific studies and clinical trials and the submission of regulatory filings. From time to time, we publicly announce the expected timing of some of these milestones. All of these milestones are based on a variety of assumptions. The actual timing of the achievement of these milestones can vary dramatically from our estimates, in many cases for reasons beyond our control, depending on numerous factors, including:

- the rate of progress, costs and results of our clinical trial and research and development activities, which will be impacted by the level of proficiency and experience of our clinical staff;
- our ability to identify and enroll patients who meet clinical trial eligibility criteria;
- our ability to access sufficient, reliable and affordable supplies of components used in the manufacture of our product candidates, including insulin and other materials for AFRESA;
- the costs of expanding and maintaining manufacturing operations, as necessary;
- the extent of scheduling conflicts with participating clinicians and clinical institutions;
- the receipt of approvals by our competitors and by us from the FDA and other regulatory agencies; and
- other actions by regulators.

In addition, if we do not obtain sufficient additional funds through sales of securities, strategic collaborations or the license or sale of certain of our assets on a timely basis, we may be required to reduce expenses by delaying, reducing or curtailing our development of AFRESA or other product development activities, which would impact our ability to meet milestones. If we fail to commence or complete, or experience delays in or are forced to curtail, our proposed clinical programs or otherwise fail to adhere to our projected development goals in the timeframes we announce and expect, our business and results of operations will be harmed and the market price of our common stock may decline.

We face substantial competition in the development of our product candidates and may not be able to compete successfully, and our product candidates may be rendered obsolete by rapid technological change.

A number of established pharmaceutical companies have or are developing technologies for the treatment of diabetes. We also face substantial competition for the development of our other product candidates.

Many of our existing or potential competitors have, or have access to, substantially greater financial, research and development, production, and sales and marketing resources than we do and have a greater depth and number of experienced managers. As a result, our competitors may be better equipped than we are to develop, manufacture, market and sell competing products. In addition, gaining favorable reimbursement is critical to the success of AFRESA. Many of our competitors have existing infrastructure and relationships with managed care organizations and reimbursement authorities which can be used to their advantage.

The rapid rate of scientific discoveries and technological changes could result in one or more of our product candidates becoming obsolete or noncompetitive. Our competitors may develop or introduce new products that render our technology and AFRESA less competitive, uneconomical or obsolete. Our future success will depend not only on our ability to develop our product candidates but to improve them and keep pace with emerging industry developments. We cannot assure you that we will be able to do so.

We also expect to face increasing competition from universities and other non-profit research organizations. These institutions carry out a significant amount of research and development in the areas of diabetes and cancer. These institutions are becoming increasingly

Table of Contents

aware of the commercial value of their findings and are more active in seeking patent and other proprietary rights as well as licensing revenues.

If we fail to enter into a strategic collaboration with respect to AFRESA, we may not be able to execute on our business model.

We have held extensive discussions with a number of pharmaceutical companies concerning a potential strategic business collaboration for AFRESA. To date, we have not reached agreement with any of these companies on a collaboration. On April 10, 2008, we announced our decision to suspend partnership discussions as we believed that, given the existing market conditions, we would have been unable to achieve an appropriate valuation for AFRESA until Phase 3 data were available. With our pivotal Phase 3 clinical trials now complete, we have restarted partnership discussions. In such discussions, we believe that we will have to expend significant additional time and effort before we could reach an agreement, and we cannot predict when, if ever, we could conclude such an agreement with a partner. There can be no assurance that any such collaboration will be available to us on a timely basis or on acceptable terms, if at all. If we are not able to enter into a collaboration on terms that are favorable to us, we may be unable to undertake and fund product development, clinical trials, manufacturing and marketing activities at our own expense. Accordingly, we may have to substantially reduce our development efforts, which would delay or otherwise impede the commercialization of AFRESA.

We will face similar challenges as we seek to develop our other product candidates. Our current strategy for developing, manufacturing and commercializing our other product candidates includes evaluating the potential for collaborating with pharmaceutical and biotechnology companies at some point in the drug development process and for these collaborators to undertake the advanced clinical development and commercialization of our product candidates. It may be difficult for us to find third parties that are willing to enter into collaborations on economic terms that are favorable to us, or at all. Failure to enter into a collaboration with respect to any other product candidate could substantially increase our requirements for capital and force us to substantially reduce our development effort.

If we enter into collaborative agreements with respect to AFRESA and if our third-party collaborators do not perform satisfactorily or if our collaborations fail, development or commercialization of AFRESA may be delayed and our business could be harmed.

We currently rely on clinical research organizations and hospitals to conduct, supervise or monitor some or all aspects of clinical trials involving AFRESA. Further, we may also enter into license agreements, partnerships or other collaborative arrangements to support the financing, development and marketing of AFRESA. We may also license technology from others to enhance or supplement our technologies. These various collaborators may enter into arrangements that would make them potential competitors. These various collaborators also may breach their agreements with us and delay our progress or fail to perform under their agreements, which could harm our business.

If we enter into collaborative arrangements, we will have less control over the timing, planning and other aspects of our clinical trials, and the sale and marketing of AFRESA and our other product candidates. We cannot offer assurances that we will be able to enter into satisfactory arrangements with third parties as contemplated or that any of our existing or future collaborations will be successful.

Continued testing of AFRESA or another product candidate may not yield successful results, and even if it does, we may still be unable to commercialize that product candidate.

Our research and development programs are designed to test the safety and efficacy of AFRESA and our other product candidates through extensive nonclinical and clinical testing. We may experience numerous unforeseen events during, or as a result of, the testing process that could delay or prevent commercialization of AFRESA or any of our other product candidates, including the following:

- safety and efficacy results obtained in our nonclinical and initial clinical testing may be inconclusive or may not be predictive of results obtained in later-stage clinical trials or following long-term use, and we may as a result be forced to stop developing product candidates that we currently believe are important to our future;

- the data collected from clinical trials of our product candidates may not be sufficient to support FDA or other regulatory approval;

after reviewing test results, we or any potential collaborators may abandon projects that we previously believed were promising; and

Table of Contents

our product candidates may not produce the desired effects or may result in adverse health effects or other characteristics that preclude regulatory approval or limit their commercial use if approved.

We have completed a pivotal Phase 3 safety study of AFRESA to evaluate pulmonary function over a period of two years, but AFRESA is intended for multiple uses per day. Due to the size and timeframe over which existing and planned clinical trials are conducted, the results of clinical trials, including our existing Phase 3 clinical trials, may not be indicative of the effects of the use of AFRESA over longer terms. If use of AFRESA results in adverse health effects or reduced efficacy or both, the FDA or other regulatory agencies may terminate our ability to market and sell AFRESA, may narrow the approved indications for use or otherwise require restrictive product labeling or marketing, or may require further clinical trials, which may be time-consuming and expensive and may not produce favorable results.

As a result of any of these events, we, any collaborator, the FDA, or any other regulatory authorities, may suspend or terminate clinical trials or marketing of AFRESA at any time. Any suspension or termination of our clinical trials or marketing activities may harm our business and results of operations and the market price of our common stock may decline.

If we are unable to transition successfully from an early-stage development company to a company that commercializes therapeutics, our operations would suffer.

We are at a critical juncture in our development, as we prepare to submit our first NDA. We require a well-structured plan to make this transition. We have a number of executive personnel, particularly in clinical development, regulatory and manufacturing production, including personnel with significant Phase 3-to-commercialization experience. We have aligned our management structure to accommodate the increasing complexity of our operations, and we have implemented the following measures, among others, to accommodate our transition, complete development of AFRESA and successfully implement our commercialization strategy for AFRESA:

expand our manufacturing capabilities;

develop comprehensive and detailed commercialization, clinical development and regulatory plans; and

implement standard operating procedures, including those for protocol development.

If we are unable to accomplish these measures in a timely manner, we would be at considerable risk of failing to:

develop manufacturing capabilities to be ready for FDA inspection and commercial operations; and

develop the key clinical data needed to obtain regulatory approval and compete successfully in the marketplace.

If our suppliers fail to deliver materials and services needed for the production of AFRESA in a timely and sufficient manner, or they fail to comply with applicable regulations, our business and results of operations would be harmed and the market price of our common stock could decline.

For AFRESA to be commercially viable, we need access to sufficient, reliable and affordable supplies of insulin, our AFRESA inhaler, the related cartridges and other materials. In November 2007, we entered into a long-term supply agreement with N.V. Organon, which is currently our sole supplier for insulin. We are aware of several other suppliers of bulk insulin, but to date we have not entered into a commercial relationship with any of them. We have obtained our AFRESA precursor raw material from two sources: Evonik Industries and Lonza, Ltd., both are major chemical manufacturers with facilities in Europe and North America. We also utilize our in-house chemical manufacturing plant as a back up facility. We believe both manufacturers have the capacity to supply our current clinical and future commercial requirements. We have obtained our AFRESA inhaler and cartridges from both Vaupell, Inc., and Rexam PLC. We must rely on our suppliers to comply with relevant regulatory and other legal requirements, including the production of insulin in accordance with cGMP and the production of AFRESA inhaler and related cartridges in accordance with device QSR. The supply of all of these materials may be limited or the manufacturer may not meet relevant regulatory requirements, and if we are unable to obtain these materials in sufficient amounts, in a timely manner and at reasonable prices, or if we should encounter delays or difficulties in our relationships with manufacturers or suppliers, the development or manufacturing of AFRESA may be delayed. Any

such events would delay the submission of AFRESA for regulatory approval or

Table of Contents

market introduction and subsequent sales and, if so, our business and results of operations will be harmed and the market price of our common stock may decline.

We have never manufactured AFRESA or any other product candidate in commercial quantities, and if we fail to develop an effective manufacturing capability for our product candidates or to engage third-party manufacturers with this capability, we may be unable to commercialize these products.

We have obtained our AFRESA precursor raw material from two sources, Evonik Industries and Lonza Ltd. We use our Danbury, Connecticut facility to formulate AFRESA, fill plastic cartridges with AFRESA and blister package the cartridges for our clinical trials. We are presently increasing our formulation, fill and finishing capabilities at Danbury in order to accommodate our activities through initial commercialization. This expansion will involve a number of third-party suppliers of equipment and materials as well as engineering and construction services. Our suppliers may not deliver all of the required equipment, materials and services in a timely manner or at reasonable prices. If we encounter difficulties in our relationships with these suppliers, or if a supplier becomes unable to provide us with goods or services at the agreed-upon terms or schedule, our facilities expansion could be delayed or its costs increased.

We have never manufactured AFRESA or any other product candidate in commercial quantities. As our product candidates move through the regulatory process, we will need to either develop the capability of manufacturing on a commercial scale or engage third-party manufacturers with this capability, and we cannot offer assurances that we will be able to do either successfully. The manufacture of pharmaceutical products requires significant expertise and capital investment, including the development of advanced manufacturing techniques and process controls. Manufacturers of pharmaceutical products often encounter difficulties in production, especially in scaling up initial production. These problems include difficulties with production costs and yields, quality control and assurance and shortages of qualified personnel, as well as compliance with strictly enforced federal, state and foreign regulations. In addition, before we would be able to produce commercial quantities of AFRESA at our Danbury facility, it would have to undergo a pre-approval inspection by the FDA. If we use a third-party supplier to formulate AFRESA or produce raw material, the transition could also require significant start-up time to qualify and implement the manufacturing process. If we engage a third-party manufacturer, our third-party manufacturer may not perform as agreed or may terminate its agreement with us.

Additionally, if we manufacture commercial material at a different facility than the site of manufacture of clinical trial materials or if we manufacture commercial material on a significantly larger production scale than the production scale for clinical trial materials, we may be required by the FDA to establish that the results obtained from the clinical trials may reasonably be extrapolated to such commercial material.

Any of these factors could cause us to delay or suspend clinical trials, regulatory submissions, required approvals or commercialization of our product candidates, entail higher costs and result in our being unable to effectively commercialize our products. Furthermore, if we or a third-party manufacturer fail to deliver the required commercial quantities of any product on a timely basis, and at commercially reasonable prices and acceptable quality, and we were unable to promptly find one or more replacement manufacturers capable of production at a substantially equivalent cost, in substantially equivalent volume and quality on a timely basis, we would likely be unable to meet demand for such products and we would lose potential revenues..

We deal with hazardous materials and must comply with environmental laws and regulations, which can be expensive and restrict how we do business.

Our research and development work involves the controlled storage and use of hazardous materials, including chemical, radioactive and biological materials. In addition, our manufacturing operations involve the use of CBZ-lysine, which is stable and non-hazardous under normal storage conditions, but may form an explosive mixture under certain conditions. Our operations also produce hazardous waste products. We are subject to federal, state and local laws and regulations governing how we use, manufacture, store, handle and dispose of these materials. Moreover, the risk of accidental contamination or injury from hazardous materials cannot be completely eliminated, and in the event of an accident, we could be held liable for any damages that may result, and any liability could fall outside the coverage or exceed the limits of our insurance. Currently, our general liability policy provides coverage up to $1 million per occurrence and $2 million in the aggregate and is supplemented by an umbrella policy that provides

a further $4 million of coverage; however, our insurance policy excludes pollution coverage and we do not carry a separate hazardous materials policy. In addition, we could be required to incur significant costs to comply with environmental laws and regulations in the future. Finally, current or future environmental laws and regulations may impair our research, development or production efforts.

Table of Contents

When we purchased the facilities located in Danbury, Connecticut in 2001, there was a soil cleanup plan in process. As part of the purchase, we obtained an indemnification from the seller related to the remediation of the soil for all known environmental conditions that existed at the time the seller acquired the property. The seller is, in turn, indemnified for these known environmental conditions by the previous owner. We completed the final stages of the soil cleanup plan in the third quarter of 2008 which cost approximately $2.25 million. We have also received an indemnification from the seller for environmental conditions created during its ownership of the property and for environmental problems unknown at the time that the seller acquired the property. These additional indemnities are limited to the purchase price that we paid for the Danbury facilities. We are currently pursuing collection of the clean-up costs and expenses from the seller or the party responsible for the contamination. If we are unable to collect the full amount of these costs and expenses, our business and results of operations may be harmed.

If we fail to enter into collaborations with third parties, we would be required to establish our own sales, marketing and distribution capabilities, which could impact the commercialization of our products and harm our business.

Our products will be used by a large number of healthcare professionals who require substantial education and support. For example, a broad base of physicians, including primary care physicians and endocrinologists, treat patients with diabetes. A large sales force will be required in order to educate these physicians about the benefits and advantages of AFRESA and to provide adequate support for them. Therefore, we plan to enter into collaborations with one or more pharmaceutical companies to market, distribute and sell AFRESA, if it is approved. If we fail to enter into collaborations, we would be required to establish our own direct sales, marketing and distribution capabilities. Establishing these capabilities can be time-consuming and expensive. Because we lack experience in selling pharmaceutical products to the diabetes market, we would be at a disadvantage compared to our potential competitors, all of whom have substantially more resources and experience than we do. For example, several other companies selling products to treat diabetes have existing sales forces in excess of 1,500 sales representatives. We, acting alone, would not initially be able to field a sales force as large as our competitors or provide the same degree of market research or marketing support. Also, we would not be able to match our competitor s spending levels for pre-launch marketing preparation, including medical education. We cannot assure you that we will succeed in entering into acceptable collaborations, that any such collaboration will be successful or, if not, that we will successfully develop our own sales, marketing and distribution capabilities.

If any product that we may develop does not become widely accepted by physicians, patients, third-party payers and the healthcare community, we may be unable to generate significant revenue, if any.

AFRESA and our other product candidates are new and unproven. Even if any of our product candidates obtains regulatory approvals, it may not gain market acceptance among physicians, patients, third-party payers and the healthcare community. Failure to achieve market acceptance would limit our ability to generate revenue and would adversely affect our results of operations.

The degree of market acceptance of AFRESA and our other product candidates will depend on many factors, including the:

- claims for which FDA approval can be obtained, including superiority claims;
- perceived advantages and disadvantages of competitive products;
- willingness and ability of patients and the healthcare community to adopt new technologies;
- ability to manufacture the product in sufficient quantities with acceptable quality and at an acceptable cost;
- perception of patients and the healthcare community, including third-party payers, regarding the safety, efficacy and benefits of the product compared to those of competing products or therapies;
- convenience and ease of administration of the product relative to existing treatment methods;
- pricing and reimbursement of the product relative to existing treatment therapeutics and methods; and

marketing and distribution support for the product.

Physicians will not recommend a product until clinical data or other factors demonstrate the safety and efficacy of the product as compared to other treatments. Even if the clinical safety and efficacy of our product candidates is established, physicians may elect not to recommend these product candidates for a variety of factors, including the reimbursement policies of government and third-party

Table of Contents

payers and the effectiveness of our competitors in marketing their therapies. Because of these and other factors, any product that we may develop may not gain market acceptance, which would materially harm our business, financial condition and results of operations.

If third-party payers do not reimburse customers for our products, our products might not be used or purchased, which would adversely affect our revenues.

Our future revenues and potential for profitability may be affected by the continuing efforts of governments and third-party payers to contain or reduce the costs of healthcare through various means. For example, in certain foreign markets the pricing of prescription pharmaceuticals is subject to governmental control. In the United States, there has been, and we expect that there will continue to be, a number of federal and state proposals to implement similar governmental controls. We cannot be certain what legislative proposals will be adopted or what actions federal, state or private payers for healthcare goods and services may take in response to any healthcare reform proposals or legislation. Such reforms may make it difficult to complete the development and testing of AFRESA and our other product candidates, and therefore may limit our ability to generate revenues from sales of our product candidates and achieve profitability. Further, to the extent that such reforms have a material adverse effect on the business, financial condition and profitability of other companies that are prospective collaborators for some of our product candidates, our ability to commercialize our product candidates under development may be adversely affected.

In the United States and elsewhere, sales of prescription pharmaceuticals still depend in large part on the availability of reimbursement to the consumer from third-party payers, such as governmental and private insurance plans. Third-party payers are increasingly challenging the prices charged for medical products and services. In addition, because each third-party payer individually approves reimbursement, obtaining these approvals is a time-consuming and costly process. We would be required to provide scientific and clinical support for the use of any product to each third-party payer separately with no assurance that approval would be obtained. This process could delay the market acceptance of any product and could have a negative effect on our future revenues and operating results. Even if we succeed in bringing one or more products to market, we cannot be certain that any such products would be considered cost-effective or that reimbursement to the consumer would be available, in which case our business and results of operations would be harmed and the market price of our common stock could decline.

If product liability claims are brought against us, we may incur significant liabilities and suffer damage to our reputation.

The testing, manufacturing, marketing and sale of AFRESA and our other product candidates expose us to potential product liability claims. A product liability claim may result in substantial judgments as well as consume significant financial and management resources and result in adverse publicity, decreased demand for a product, injury to our reputation, withdrawal of clinical trial volunteers and loss of revenues. We currently carry worldwide liability insurance in the amount of $10 million. We believe these limits are reasonable to cover us from potential damages arising from current and previous clinical trials of AFRESA. In addition, we carry local policies per trial in each country in which we conduct clinical trials that require us to carry coverage based on local statutory requirements. We intend to obtain product liability coverage for commercial sales in the future if AFRESA is approved. However, we may not be able to obtain insurance coverage that will be adequate to satisfy any liability that may arise, and because insurance coverage in our industry can be very expensive and difficult to obtain, we cannot assure you that we will be able to obtain sufficient coverage at an acceptable cost, if at all. If losses from such claims exceed our liability insurance coverage, we may ourselves incur substantial liabilities. If we are required to pay a product liability claim our business and results of operations would be harmed and the market price of our common stock may decline.

If we lose any key employees or scientific advisors, our operations and our ability to execute our business strategy could be materially harmed.

In order to commercialize our product candidates successfully, we will be required to expand our work force, particularly in the areas of manufacturing, clinical trials management, regulatory affairs, business development, and sales and marketing. These activities will require the addition of new personnel, including management, and the development of additional expertise by existing personnel. We face intense competition for qualified employees among companies in the biotechnology and biopharmaceutical industries. Our success depends upon our ability to attract, retain and motivate highly skilled employees. We may be unable to attract and retain these individuals on

acceptable terms, if at all.

The loss of the services of any principal member of our management and scientific staff could significantly delay or prevent the achievement of our scientific and business objectives. All of our employees are at will and we currently do not have employment agreements with any of the principal members of our management or scientific staff, and we do not have key person life insurance to

Table of Contents

cover the loss of any of these individuals. Replacing key employees may be difficult and time-consuming because of the limited number of individuals in our industry with the skills and experience required to develop, gain regulatory approval of and commercialize our product candidates successfully.

We have relationships with scientific advisors at academic and other institutions to conduct research or assist us in formulating our research, development or clinical strategy. These scientific advisors are not our employees and may have commitments to, and other obligations with, other entities that may limit their availability to us. We have limited control over the activities of these scientific advisors and can generally expect these individuals to devote only limited time to our activities. Failure of any of these persons to devote sufficient time and resources to our programs could harm our business. In addition, these advisors are not prohibited from, and may have arrangements with, other companies to assist those companies in developing technologies that may compete with our product candidates.

If our Chief Executive Officer is unable to devote sufficient time and attention to our business, our operations and our ability to execute our business strategy could be materially harmed.

Alfred Mann, our Chairman and Chief Executive Officer, is involved in many other business and charitable activities. As a result, the time and attention Mr. Mann devotes to the operation of our business varies, and he may not expend the same time or focus on our activities as other, similarly situated chief executive officers. If Mr. Mann is unable to devote the time and attention necessary to running our business, we may not be able to execute our business strategy and our business could be materially harmed.

Our facilities that are located in Southern California may be affected by man-made or natural disasters.

Our headquarters and some of our research and development activities are located in Southern California, where they are subject to a risk of man-made disasters, terrorism, and an enhanced risk of natural and other disasters such as fires, power and telecommunications failures, mudslides, and earthquakes. An act of terrorism, fire, earthquake or other catastrophic loss that causes significant damage to our facilities or interruption of our business could harm our business. We do not carry insurance to cover losses caused by earthquakes, and the insurance coverage that we carry for fire damage and for business interruption may be insufficient to compensate us for any losses that we may incur.

If our internal controls over financial reporting are not considered effective, our business and stock price could be adversely affected.

Section 404 of the Sarbanes-Oxley Act of 2002 requires us to evaluate the effectiveness of our internal controls over financial reporting as of the end of each fiscal year, and to include a management report assessing the effectiveness of our internal controls over financial reporting in our annual report on Form 10-K for that fiscal year. Section 404 also requires our independent registered public accounting firm to attest to, and report on, our internal controls over financial reporting.

Our management, including our Chief Executive Officer and Chief Financial Officer, does not expect that our internal controls over financial reporting will prevent all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system s objectives will be met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud involving a company have been, or will be, detected. The design of any system of controls is based in part on certain assumptions about the likelihood of future events, and we cannot assure you that any design will succeed in achieving its stated goals under all potential future conditions. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected. We cannot assure you that we or our independent registered public accounting firm will not identify a material weakness in our internal controls in the future. A material weakness in our internal controls over financial reporting would require management and our independent registered public accounting firm to evaluate our internal controls as ineffective. If our internal controls over financial reporting are not considered effective, we may experience a loss of public confidence, which could have an adverse effect on our business and on the market price of our common stock.

Table of Contents

RISKS RELATED TO REGULATORY APPROVALS

Our product candidates must undergo rigorous nonclinical and clinical testing and we must obtain regulatory approvals, which could be costly and time-consuming and subject us to unanticipated delays or prevent us from marketing any products.

Our research and development activities, as well as the manufacturing and marketing of our product candidates, including AFRESA, are subject to regulation, including regulation for safety, efficacy and quality, by the FDA in the United States and comparable authorities in other countries. FDA regulations and the regulation of comparable foreign regulatory authorities are wide-ranging and govern, among other things:

product design, development, manufacture and testing;

product labeling;

product storage and shipping;

pre-market clearance or approval;

advertising and promotion; and

product sales and distribution.

Clinical testing can be costly and take many years, and the outcome is uncertain and susceptible to varying interpretations. Based on our discussions with the FDA at a pre-NDA meeting, we conducted a study, prior to submitting our NDA, that assessed the bioequivalency of the inhaler used in our clinical trials to date with the modified version of the same inhaler that we intend to use for commercial purposes. The FDA did not request any other trials prior to NDA submission. However, we cannot be certain when the FDA might request additional studies, under what conditions such studies might be requested, or what the size or length of any such studies might be. The clinical trials of our product candidates may not be completed on schedule, the FDA or foreign regulatory agencies may order us to stop or modify our research, or these agencies may not ultimately approve any of our product candidates for commercial sale. The data collected from our clinical trials may not be sufficient to support regulatory approval of our various product candidates, including AFRESA. Even if we believe the data collected from our clinical trials are sufficient, the FDA has substantial discretion in the approval process and may disagree with our interpretation of the data. Our failure to adequately demonstrate the safety and efficacy of any of our product candidates would delay or prevent regulatory approval of our product candidates, which could prevent us from achieving profitability.

The requirements governing the conduct of clinical trials and manufacturing and marketing of our product candidates, including AFRESA, outside the United States vary widely from country to country. Foreign approvals may take longer to obtain than FDA approvals and can require, among other things, additional testing and different clinical trial designs. Foreign regulatory approval processes include all of the risks associated with the FDA approval processes. Some of those agencies also must approve prices of the products. Approval of a product by the FDA does not ensure approval of the same product by the health authorities of other countries. In addition, changes in regulatory policy in the United States or in foreign countries for product approval during the period of product development and regulatory agency review of each submitted new application may cause delays or rejections.

The process of obtaining FDA and other required regulatory approvals, including foreign approvals, is expensive, often takes many years and can vary substantially based upon the type, complexity and novelty of the products involved. We are not aware of any precedent for the successful commercialization of products based on our technology. On January 26, 2006, the FDA approved the first pulmonary insulin product, Exubera. This approval has had an impact on and, notwithstanding the voluntary withdrawal of the product from the market by its manufacturer, could still impact the development and registration of AFRESA in different ways, including: Exubera may be used as a reference for safety and efficacy evaluations of AFRESA, and the approval standards set for Exubera may be applied to other products that follow including AFRESA. The FDA has advised us that it will regulate AFRESA as a

combination product because of the complex nature of the system that includes the combination of a new drug (AFRESA) and a new medical device (the AFRESA inhaler used to administer the insulin). The FDA indicated that the review of a future drug marketing application for AFRESA will involve three separate review groups of the FDA: (1) the Metabolic and Endocrine Drug Products Division; (2) the Pulmonary Drug Products Division; and (3) the Center for Devices and Radiological Health within the FDA that reviews medical devices. We currently understand that the Metabolic and Endocrine Drug Products Division will be the lead group and will obtain consulting reviews from the other two FDA groups. The FDA has not made an official final decision in this regard, however, and we

Table of Contents

can make no assurances at this time about what impact FDA review by multiple groups will have on the review and approval of our product or whether we are correct in our understanding of how AFRESA will be reviewed and approved.

Also, questions that have been raised about the safety of marketed drugs generally, including pertaining to the lack of adequate labeling, may result in increased cautiousness by the FDA in reviewing new drugs based on safety, efficacy, or other regulatory considerations and may result in significant delays in obtaining regulatory approvals. Such regulatory considerations may also result in the imposition of more restrictive drug labeling or marketing requirements as conditions of approval, which may significantly affect the marketability of our drug products. FDA review of AFRESA as a combination product therapy may lengthen the product development and regulatory approval process, increase our development costs and delay or prevent the commercialization of AFRESA.

We are developing AFRESA as a new treatment for diabetes utilizing unique, proprietary components. As a combination product, any changes to either the AFRESA inhaler, or AFRESA, including new suppliers, could possibly result in FDA requirements to repeat certain clinical studies. This means, for example, that switching to an alternate delivery system could require us to undertake additional clinical trials and other studies, which could significantly delay the development and commercialization of AFRESA. Our product candidates that are currently in development for the treatment of cancer also face similar obstacles and costs.

We currently expect that our inhaler will be reviewed for approval as part of the NDA for AFRESA. No assurances exist that we will not be required to obtain separate device clearances or approval for use of our inhaler with AFRESA. This may result in our being subject to medical device review user fees and to other device requirements to market our inhaler and may result in significant delays in commercialization. Even if the device component is approved as part of our NDA for AFRESA, numerous device regulatory requirements still apply to the device part of the drug-device combination.

We have only limited experience in filing and pursuing applications necessary to gain regulatory approvals, which may impede our ability to obtain timely approvals from the FDA or foreign regulatory agencies, if at all.

We will not be able to commercialize AFRESA or any other product candidates until we have obtained regulatory approval. We have no experience as a company in late-stage regulatory filings, such as preparing and submitting NDAs, which may place us at risk of delays, overspending and human resources inefficiencies. Any delay in obtaining, or inability to obtain, regulatory approval could harm our business.

If we do not comply with regulatory requirements at any stage, whether before or after marketing approval is obtained, we may be subject to criminal prosecution, fined or forced to remove a product from the market or experience other adverse consequences, including restrictions or delays in obtaining regulatory marketing approval.

Even if we comply with regulatory requirements, we may not be able to obtain the labeling claims necessary or desirable for product promotion. We may also be required to undertake post-marketing trials. In addition, if we or other parties identify adverse effects after any of our products are on the market, or if manufacturing problems occur, regulatory approval may be withdrawn and a reformulation of our products, additional clinical trials, changes in labeling of, or indications of use for, our products and/or additional marketing applications may be required. If we encounter any of the foregoing problems, our business and results of operations will be harmed and the market price of our common stock may decline.

Even if we obtain regulatory approval for our product candidates, such approval may be limited and we will be subject to stringent, ongoing government regulation.

Even if regulatory authorities approve any of our product candidates, they could approve less than the full scope of uses or labeling that we seek or otherwise require special warnings or other restrictions on use or marketing or could require potentially costly post-marketing follow-up clinical trials. Regulatory authorities may limit the segments of the diabetes population to which we or others may market AFRESA or limit the target population for our other product candidates. Based on currently available clinical studies, we believe that AFRESA may have certain advantages over currently approved insulin products including its approximation of the natural early insulin secretion normally seen in healthy individuals following the beginning of a meal. Nonetheless, there are no assurances that these and other advantages, if any, of AFRESA have clinical significance or can be confirmed in head-to-head clinical trials against

appropriate approved comparator insulin drug products. Such comparative clinical trials are required to make these types of superiority claims in labeling or advertising. These aforementioned observations and others may therefore not be capable of substantiation in comparative clinical trials prior to our NDA submission, if at all, or otherwise may not be suitable for inclusion in

Table of Contents

product labeling or advertising and, as a result, AFRESA may not have competitive advantages when compared to other insulin products.

The manufacture, marketing and sale of these product candidates will be subject to stringent and ongoing government regulation. The FDA may also withdraw product approvals if problems concerning safety or efficacy of the product occur following approval. In response to questions that have been raised about the safety of certain approved prescription products, including the lack of adequate warnings, the FDA and United States Congress are currently considering new regulatory and legislative approaches to advertising, monitoring and assessing the safety of marketed drugs, including legislation providing the FDA with authority to mandate labeling changes for approved pharmaceutical products, particularly those related to safety. We also cannot be sure that the current FDA and United States Congressional initiatives pertaining to ensuring the safety of marketed drugs or other developments pertaining to the pharmaceutical industry will not adversely affect our operations.

We also are required to register our establishments and list our products with the FDA and certain state agencies. We and any third-party manufacturers or suppliers must continually adhere to federal regulations setting forth requirements, known as cGMP (for drugs) and QSR (for medical devices), and their foreign equivalents, which are enforced by the FDA and other national regulatory bodies through their facilities inspection programs. If our facilities, or the facilities of our manufacturers or suppliers, cannot pass a preapproval plant inspection, the FDA will not approve the marketing of our product candidates. In complying with cGMP and foreign regulatory requirements, we and any of our potential third-party manufacturers or suppliers will be obligated to expend time, money and effort in production, record-keeping and quality control to ensure that our products meet applicable specifications and other requirements. QSR requirements also impose extensive testing, control and documentation requirements. State regulatory agencies and the regulatory agencies of other countries have similar requirements. In addition, we will be required to comply with regulatory requirements of the FDA, state regulatory agencies and the regulatory agencies of other countries concerning the reporting of adverse events and device malfunctions, corrections and removals (e.g., recalls), promotion and advertising and general prohibitions against the manufacture and distribution of adulterated and misbranded devices. Failure to comply with these regulatory requirements could result in civil fines, product seizures, injunctions and/or criminal prosecution of responsible individuals and us. Any such actions would have a material adverse effect on our business and results of operations.

Our insulin supplier does not yet supply human recombinant insulin for an FDA-approved product and will likely be subject to an FDA preapproval inspection before the agency will approve a future marketing application for AFRESA.

Our insulin supplier sells its product outside of the United States. However, we can make no assurances that our insulin supplier will be acceptable to the FDA. If we were required to find a new or additional supplier of insulin, we would be required to evaluate the new supplier s ability to provide insulin that meets our specifications and quality requirements, which would require significant time and expense and could delay the manufacturing and future commercialization of AFRESA. We also depend on suppliers for other materials that comprise AFRESA, including our AFRESA inhaler and cartridges. All of our device suppliers must comply with relevant regulatory requirements including QSR. It also is likely that major suppliers will be subject to FDA preapproval inspections before the agency will approve a future marketing application for AFRESA. At the present time our insulin supplier is certified to the ISO9001:2000 Standard. There can be no assurance, however, that if the FDA were to conduct a preapproval inspection of our insulin supplier or other suppliers, that the agency would find that the supplier substantially comply with the QSR or cGMP requirements, where applicable. If we or any potential third-party manufacturer or supplier fails to comply with these requirements or comparable requirements in foreign countries, regulatory authorities may subject us to regulatory action, including criminal prosecutions, fines and suspension of the manufacture of our products.

Reports of side effects or safety concerns in related technology fields or in other companies clinical trials could delay or prevent us from obtaining regulatory approval or negatively impact public perception of our product candidates.

At present, there are a number of clinical trials being conducted by us and other pharmaceutical companies involving insulin delivery systems. If we discover that AFRESA is associated with a significantly increased frequency

of adverse events, or if other pharmaceutical companies announce that they observed frequent adverse events in their trials involving the pulmonary delivery of insulin, we could encounter delays in the timing of our clinical trials or difficulties in obtaining the approval of AFRESA. As well, the public perception of AFRESA might be adversely affected, which could harm our business and results of operations and cause the market price of our common stock to decline, even if the concern relates to another company s products or product candidates.

There are also a number of clinical trials being conducted by other pharmaceutical companies involving compounds similar to, or competitive with, our other product candidates. Adverse results reported by these other companies in their clinical trials could delay or

Table of Contents

prevent us from obtaining regulatory approval or negatively impact public perception of our product candidates, which could harm our business and results of operations and cause the market price of our common stock to decline.

RISKS RELATED TO INTELLECTUAL PROPERTY

If we are unable to protect our proprietary rights, we may not be able to compete effectively, or operate profitably.

Our commercial success depends, in large part, on our ability to obtain and maintain intellectual property protection for our technology. Our ability to do so will depend on, among other things, complex legal and factual questions, and it should be noted that the standards regarding intellectual property rights in our fields are still evolving. We attempt to protect our proprietary technology through a combination of patents, trade secrets and confidentiality agreements. We own a number of domestic and international patents, have a number of domestic and international patent applications pending and have licenses to additional patents. We cannot assure you that our patents and licenses will successfully preclude others from using our technologies, and we could incur substantial costs in seeking enforcement of our proprietary rights against infringement. Even if issued, the patents may not give us an advantage over competitors with similar alternative technologies.

Moreover, the issuance of a patent is not conclusive as to its validity or enforceability and it is uncertain how much protection, if any, will be afforded by our patents. A third party may challenge the validity or enforceability of a patent after its issuance by various proceedings such as oppositions in foreign jurisdictions or re-examinations in the United States. If we attempt to enforce our patents, they may be challenged in court where they could be held invalid, unenforceable, or have their breadth narrowed to an extent that would destroy their value.

We also rely on unpatented technology, trade secrets, know-how and confidentiality agreements. We require our officers, employees, consultants and advisors to execute proprietary information and invention and assignment agreements upon commencement of their relationships with us. We also execute confidentiality agreements with outside collaborators. There can be no assurance, however, that these agreements will provide meaningful protection for our inventions, trade secrets, know-how or other proprietary information in the event of unauthorized use or disclosure of such information. If any trade secret, know-how or other technology not protected by a patent were to be disclosed to or independently developed by a competitor, our business, results of operations and financial condition could be adversely affected.

If we become involved in lawsuits to protect or enforce our patents or the patents of our collaborators or licensors, we would be required to devote substantial time and resources to prosecute or defend such proceedings.

Competitors may infringe our patents or the patents of our collaborators or licensors. To counter infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time-consuming. In addition, in an infringement proceeding, a court may decide that a patent of ours is not valid or is unenforceable, or may refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover its technology. A court may also decide to award us a royalty from an infringing party instead of issuing an injunction against the infringing activity. An adverse determination of any litigation or defense proceedings could put one or more of our patents at risk of being invalidated or interpreted narrowly and could put our patent applications at risk of not issuing.

Interference proceedings brought by the USPTO may be necessary to determine the priority of inventions with respect to our patent applications or those of our collaborators or licensors. Litigation or interference proceedings may fail and, even if successful, may result in substantial costs and be a distraction to our management. We may not be able, alone or with our collaborators and licensors, to prevent misappropriation of our proprietary rights, particularly in countries where the laws may not protect such rights as fully as in the United States. We may not prevail in any litigation or interference proceeding in which we are involved. Even if we do prevail, these proceedings can be very expensive and distract our management.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. In addition, during the course of this kind of litigation, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, the market price of our common stock may decline.

Table of Contents

If our technologies conflict with the proprietary rights of others, we may incur substantial costs as a result of litigation or other proceedings and we could face substantial monetary damages and be precluded from commercializing our products, which would materially harm our business.

Over the past three decades the number of patents issued to biotechnology companies has expanded dramatically. As a result it is not always clear to industry participants, including us, which patents cover the multitude of biotechnology product types. Ultimately, the courts must determine the scope of coverage afforded by a patent and the courts do not always arrive at uniform conclusions.

A patent owner may claim that we are making, using, selling or offering for sale an invention covered by the owner s patents and may go to court to stop us from engaging in such activities. Such litigation is not uncommon in our industry.

Patent lawsuits can be expensive and would consume time and other resources. There is a risk that a court would decide that we are infringing a third party s patents and would order us to stop the activities covered by the patents, including the commercialization of our products. In addition, there is a risk that we would have to pay the other party damages for having violated the other party s patents (which damages may be increased, as well as attorneys fees ordered paid, if infringement is found to be willful), or that we will be required to obtain a license from the other party in order to continue to commercialize the affected products, or to design our products in a manner that does not infringe a valid patent. We may not prevail in any legal action, and a required license under the patent may not be available on acceptable terms or at all, requiring cessation of activities that were found to infringe a valid patent. We also may not be able to develop a non-infringing product design on commercially reasonable terms, or at all.

Although we own a number of domestic and foreign patents and patent applications relating to AFRESA and cancer vaccine products under development, we have identified certain third-party patents having claims relating to pulmonary insulin delivery that may trigger an allegation of infringement upon the commercial manufacture and sale of AFRESA. We have also identified third-party patents disclosing methods of use and compositions of matter related to DNA-based vaccines that also may trigger an allegation of infringement upon the commercial manufacture and sale of our cancer therapy. If a court were to determine that our insulin products or cancer therapies were infringing any of these patent rights, we would have to establish with the court that these patents were invalid or unenforceable in order to avoid legal liability for infringement of these patents. However, proving patent invalidity or unenforceability can be difficult because issued patents are presumed valid. Therefore, in the event that we are unable to prevail in an infringement or invalidity action we will have to either acquire the third-party patents outright or seek a royalty-bearing license. Royalty-bearing licenses effectively increase production costs and therefore may materially affect product profitability. Furthermore, should the patent holder refuse to either assign or license us the infringed patents, it may be necessary to cease manufacturing the product entirely and/or design around the patents, if possible. In either event, our business would be harmed and our profitability could be materially adversely impacted.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. In addition, during the course of this kind of litigation, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, the market price of our common stock may decline.

In addition, patent litigation may divert the attention of key personnel and we may not have sufficient resources to bring these actions to a successful conclusion. At the same time, some of our competitors may be able to sustain the costs of complex patent litigation more effectively than we can because they have substantially greater resources. An adverse determination in a judicial or administrative proceeding or failure to obtain necessary licenses could prevent us from manufacturing and selling our products or result in substantial monetary damages, which would adversely affect our business and results of operations and cause the market price of our common stock to decline.

We may not obtain trademark registrations for our potential trade names.

We have not selected trade names for some of our products and product candidates; therefore, we have not filed trademark registrations for our potential trade names for our products in all jurisdictions, nor can we assure that we will be granted registration of those potential trade names for which we have filed. Although we intend to defend any opposition to our trademark registrations, no assurance can be given that any of our trademarks will be registered in

the United States or elsewhere or that the use of any of our trademarks will confer a competitive advantage in the marketplace. Furthermore, even if we are successful in our trademark registrations, the FDA has its own process for drug nomenclature and its own views concerning appropriate proprietary names. It also has the power, even after granting market approval, to request a company to reconsider the name for a product because of evidence of

Table of Contents

confusion in the marketplace. We cannot assure you that the FDA or any other regulatory authority will approve of any of our trademarks or will not request reconsideration of one of our trademarks at some time in the future.

RISKS RELATED TO OUR COMMON STOCK

Our stock price is volatile.

The current turbulence in the U.S. and global financial markets could adversely affect our stock price and our ability to raise additional capital through the sale of equity and/or debt securities. The stock market, particularly in recent years, has experienced significant volatility particularly with respect to pharmaceutical and biotechnology stocks, and this trend may continue. The volatility of pharmaceutical and biotechnology stocks often does not relate to the operating performance of the companies represented by the stock. Our business and the market price of our common stock may be influenced by a large variety of factors, including:

the progress and results of our clinical trials;

general economic, political or stock market conditions;

announcements by us or our competitors concerning clinical trial results, acquisitions, strategic alliances, technological innovations, newly approved commercial products, product discontinuations, or other developments;

the availability of critical materials used in developing and manufacturing AFRESA or other product candidates;

developments or disputes concerning our patents or proprietary rights;

the expense and time associated with, and the extent of our ultimate success in, securing regulatory approvals;

announcements by us concerning our financial condition or operating performance;

changes in securities analysts estimates of our financial condition or operating performance;

general market conditions and fluctuations for emerging growth and pharmaceutical market sectors;

sales of large blocks of our common stock, including sales by our executive officers, directors and significant stockholders; and

discussion of AFRESA, our other product candidates, competitors products, or our stock price by the financial and scientific press, the healthcare community and online investor communities such as chat rooms.

Any of these risks, as well as other factors, could cause the market price of our common stock to decline.

If other biotechnology and biopharmaceutical companies or the securities markets in general encounter problems, the market price of our common stock could be adversely affected.

Public companies in general and companies included on the Nasdaq Stock Market in particular have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies. There has been particular volatility in the market prices of securities of biotechnology and other life sciences companies, and the market prices of these companies have often fluctuated because of problems or successes in a given market segment or because investor interest has shifted to other segments. These broad market and industry factors may cause the market price of our common stock to decline, regardless of our operating performance. We have no control over this volatility and can only focus our efforts on our own operations, and even these may be affected due to the state of the capital markets.

In the past, following periods of large price declines in the public market price of a company s securities, securities class action litigation has often been initiated against that company. Litigation of this type could result in substantial costs and diversion of management s attention and resources, which would hurt our business. Any adverse

determination in litigation could also subject us to significant liabilities.

Table of Contents

Our Chief Executive Officer and principal stockholder can individually control our direction and policies, and his interests may be adverse to the interests of our other stockholders. After his death, his stock will be left to his funding foundations for distribution to various charities, and we cannot assure you of the manner in which those entities will manage their holdings.

At January 31, 2009, Mr. Mann beneficially owned approximately 47.5% of our outstanding shares of capital stock. We believe members of Mr. Mann s family beneficially owned at least an additional 1% of our outstanding shares of common stock, although Mr. Mann does not have voting or investment power with respect to these shares. By virtue of his holdings, Mr. Mann can and will continue to be able to effectively control the election of the members of our board of directors, our management and our affairs and prevent corporate transactions such as mergers, consolidations or the sale of all or substantially all of our assets that may be favorable from our standpoint or that of our other stockholders or cause a transaction that we or our other stockholders may view as unfavorable.

Subject to compliance with United States federal and state securities laws, Mr. Mann is free to sell the shares of our stock he holds at any time. Upon his death, we have been advised by Mr. Mann that his shares of our capital stock will be left to the Alfred E. Mann Medical Research Organization, or AEMMRO, and AEM Foundation for Biomedical Engineering, or AEMFBE, not-for-profit medical research foundations that serve as funding organizations for Mr. Mann s various charities, including the Alfred Mann Foundation, or AMF, and the Alfred Mann Institute at the University of Southern California, the Technion-Israel Institute of Technology, and at Purdue University, and that may serve as funding organizations for any other charities that he may establish. The AEMMRO is a membership foundation consisting of six members, including Mr. Mann, his wife, three of his children and Dr. Joseph Schulman, the chief scientist of the AEMFBE. The AEMFBE is a membership foundation consisting of five members, including Mr. Mann, his wife, and the same three of his children. Although we understand that the members of AEMMRO and AEMFBE have been advised of Mr. Mann s objectives for these foundations, once Mr. Mann s shares of our capital stock become the property of the foundations, we cannot assure you as to how those shares will be distributed or how they will be voted.

The future sale of our common stock or the conversion of our senior convertible notes into common stock could negatively affect our stock price.

Substantially all of the outstanding shares of our common stock are available for public sale, subject in some cases to volume and other limitations or delivery of a prospectus. If our common stockholders sell substantial amounts of common stock in the public market, or the market perceives that such sales may occur, the market price of our common stock may decline. Likewise the issuance of additional shares of our common stock upon the conversion of some or all of our senior convertible notes could adversely affect the trading price of our common stock. In addition, the existence of these notes may encourage short selling of our common stock by market participants. Furthermore, if we were to include in a company-initiated registration statement shares held by our stockholders pursuant to the exercise of their registrations rights, the sale of those shares could impair our ability to raise needed capital by depressing the price at which we could sell our common stock.

In addition, we will need to raise substantial additional capital in the future to fund our operations. If we raise additional funds by issuing equity securities or additional convertible debt, the market price of our common stock may decline and our existing stockholders may experience significant dilution.

Anti-takeover provisions in our charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management.

We are incorporated in Delaware. Certain anti-takeover provisions under Delaware law and in our certificate of incorporation and amended and restated bylaws, as currently in effect, may make a change of control of our company more difficult, even if a change in control would be beneficial to our stockholders. Our anti-takeover provisions include provisions such as a prohibition on stockholder actions by written consent, the authority of our board of directors to issue preferred stock without stockholder approval, and supermajority voting requirements for specified actions. In addition, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which generally prohibits stockholders owning 15% or more of our outstanding voting stock from merging or combining with us in certain circumstances. These provisions may delay or prevent an acquisition of us, even if the

acquisition may be considered beneficial by some of our stockholders. In addition, they may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors, which is responsible for appointing the members of our management.

Table of Contents

Because we do not expect to pay dividends in the foreseeable future, you must rely on stock appreciation for any return on your investment.

We have paid no cash dividends on any of our capital stock to date, and we currently intend to retain our future earnings, if any, to fund the development and growth of our business. As a result, we do not expect to pay any cash dividends in the foreseeable future, and payment of cash dividends, if any, will also depend on our financial condition, results of operations, capital requirements and other factors and will be at the discretion of our board of directors. Furthermore, we may in the future become subject to contractual restrictions on, or prohibitions against, the payment of dividends. Accordingly, the success of your investment in our common stock will likely depend entirely upon any future appreciation. There is no guarantee that our common stock will appreciate in value after the offering or even maintain the price at which you purchased your shares, and you may not realize a return on your investment in our common stock.

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

None.

Item 2. ***Properties***

In 2001, we acquired a facility in Danbury, Connecticut that included two buildings comprising approximately 190,000 square feet encompassing 17.5 acres. In September 2008, we completed the construction of approximately 140,000 square feet of new manufacturing space providing us with two buildings totaling approximately 328,000 square feet, housing our research and development, administrative and manufacturing functions, primarily for AFRESA, filling and packaging. We believe the Danbury facility will have sufficient space to satisfy potential commercial demand for the launch of AFRESA and, with the expansion completed, the first few years thereafter for AFRESA and other AFRESA-related products.

We own and occupy approximately 147,000 square feet of laboratory, office and manufacturing space in Valencia, California. The facility contains our principal executive offices and houses our research and development laboratories for our cancer and other programs. We also use this facility to provide support for the development of our AFRESA programs.

We lease approximately 59,000 square feet of office space in Paramus, New Jersey pursuant to a lease that ends in May 2010, with an option to extend the lease through May 2012.

Item 3. ***Legal Proceedings***

None.

Item 4. ***Submission of Matters to a Vote of Security Holders***

No matters were submitted to a vote of our security holders during the quarter ended December 31, 2008.

PART II

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

Common Stock Market Price

Our common stock has been traded on the Nasdaq Global Market under the symbol MNKD since July 28, 2004. The following table sets forth for the quarterly periods indicated, the high and low sales prices for our common stock as reported by the Nasdaq Global Market.

	High	Low
Year ended December 31, 2007		
First quarter	$17.52	$14.22
Second quarter	$15.65	$10.18
Third quarter	$13.87	$ 7.85
Fourth quarter	$12.14	$ 7.50

Table of Contents

	High	Low
Year ended December 31, 2008		
First quarter	$8.62	$4.25
Second quarter	$6.44	$1.86
Third quarter	$5.25	$2.39
Fourth quarter	$4.30	$2.61

The closing sales price of our common stock on the Nasdaq Global Market was $3.59 on February 13, 2009 and there were 188 registered holders of record as of that date.

Performance Measurement Comparison

The material in this section is not soliciting material, is not deemed filed with the SEC and shall not be incorporated by reference by any general statement incorporating by reference this Annual Report on Form 10-K into any of our filings under the Securities Act of 1933, as amended, or the Securities Act, or the Exchange Act of 1934, as amended, or the Exchange Act, except to the extent we specifically incorporate this section by reference.

Performance Measurement Comparison

The following graph illustrates a comparison of the cumulative total stockholder return (change in stock price plus reinvested dividends) of our common stock with (i) the Nasdaq Composite Index and (ii) the Nasdaq Biotechnology Index. The comparisons in the graph are required by the SEC and are not intended to forecast or be indicative of possible future performance of our common stock.

Assumes a $100 investment, on July 28, 2004, in (i) our common stock, (ii) the securities comprising the Nasdaq Composite Index and (iii) the securities comprising the Nasdaq Biotechnology Index.

Dividend Policy

We have never declared or paid any cash dividends on our common stock. We currently intend to retain all available funds and any future earnings for use in the operation and expansion of our business. Accordingly, we do not anticipate paying any cash dividends

Table of Contents

on our common stock in the foreseeable future. Any future determination to pay dividends will be at the discretion of our board of directors.

Recent Sales of Unregistered Securities

Not applicable.

Use of Proceeds

None.

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

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

	Year Ended December 31,				
Statement of Operations Data:	**2004**	**2005**	**2006**	**2007**	**2008**
	(In thousands, except per share amounts)				
Revenue	$	$	$ 100	$ 10	$ 20
Operating expenses:					
Research and development	59,406	95,347	191,796	256,844	250,442
General and administrative	17,743	22,775	42,001	50,523	55,343
Total operating expenses	77,149	118,122	233,797	307,367	305,785
Loss from operations	(77,149)	(118,122)	(233,697)	(307,357)	(305,765)
Other income (expense)	226	78	208	(197)	(62)
Interest expense on note payable to principal stockholder			(1,511)		(12)
Interest expense on senior convertible notes			(222)	(3,408)	(2,327)
Interest income	932	3,707	4,679	17,775	5,129
Loss before provision for income taxes	(75,991)	(114,337)	(230,543)	(293,187)	(303,037)
Income tax	(1)	(1)	(5)	(3)	(2)
Net loss	(75,992)	(114,338)	(230,548)	(293,190)	(303,039)
Deemed dividends related to beneficial conversion feature of convertible preferred stock	(19,822)				
Accretion on redeemable preferred stock	(60)				
Net loss applicable to common stockholders	$ (95,874)	$ (114,338)	$ (230,548)	$ (293,190)	$ (303,039)
Basic and diluted net loss per share	$ (3.80)	$ (2.87)	$ (4.52)	$ (3.66)	$ (2.98)
Shares used to compute basic and diluted net loss per share	25,221	39,871	50,970	80,038	101,561

	As of December 31,

Balance Sheet Data:	2004	2005	2006	2007	2008
			(In thousands)		
Cash, cash equivalents and marketable securities	$ 90,533	$ 145,634	$ 436,479	$ 368,285	$ 46,492
Working capital	82,837	128,507	404,588	311,154	503
Total assets	163,483	228,371	539,737	543,443	282,459
Deferred compensation and other liabilities	76	29	24	24	0
Senior convertible notes			111,267	111,761	112,253
Redeemable convertible preferred stock					
Deficit accumulated during the development stage	(442,963)	(557,301)	(787,849)	(1,081,039)	(1,384,078)
Total stockholders equity	150,363	206,977	383,487	364,100	86,734

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

The following discussion of our financial condition and results of operations should be read in conjunction with our consolidated financial statements and notes thereto included in this Annual Report on Form 10-K.

OVERVIEW

We are a biopharmaceutical company focused on the discovery, development and commercialization of therapeutic products for diseases such as diabetes and cancer. Our lead product candidate, AFRESA, is an ultra rapid-acting insulin that has completed Phase 3

Table of Contents

clinical trials evaluating its safety and efficacy in the treatment of diabetes. We believe that the performance characteristics, unique kinetics, convenience and ease of use of AFRESA may have the potential to change the way diabetes is treated.

We are a development stage enterprise and have incurred significant losses since our inception in 1991. As of December 31, 2008, we have incurred a cumulative net loss of $1.4 billion. To date, we have not generated any product revenues and have funded our operations primarily through the sale of equity securities. As discussed below in Liquidity and Capital Resources , if we are unable to obtain additional funding, there will be substantial doubt about our ability to continue as a going concern.

We do not expect to record sales of any product prior to regulatory approval and commercialization of AFRESA. We currently do not have the required approvals to market any of our product candidates, and we may not receive such approvals. We may not be profitable even if we succeed in commercializing any of our product candidates. We expect to make substantial expenditures and to incur additional operating losses for at least the next several years as we:

- continue the clinical development of AFRESA for the treatment of diabetes;
- expand our manufacturing operations for AFRESA to meet our currently anticipated commercial production needs;
- expand our other research, discovery and development programs;
- expand our proprietary Technosphere platform technology and develop additional applications for the pulmonary delivery of other drugs; and
- enter into sales and marketing collaborations with other companies, if available on commercially reasonable terms, or develop these capabilities ourselves.

Our business is subject to significant risks, including but not limited to the risks inherent in our ongoing clinical trials and the regulatory approval process, the results of our research and development efforts, competition from other products and technologies and uncertainties associated with obtaining and enforcing patent rights.

RESEARCH AND DEVELOPMENT EXPENSES

Our research and development expenses consist mainly of costs associated with the clinical trials of our product candidates that have not yet received regulatory approval for marketing and for which no alternative future use has been identified. This includes the salaries, benefits and stock-based compensation of research and development personnel, raw materials, such as insulin purchases, laboratory supplies and materials, facility costs, costs for consultants and related contract research, licensing fees, and depreciation of laboratory equipment. We track research and development costs by the type of cost incurred. We partially offset research and development expenses with the recognition of estimated amounts receivable from the State of Connecticut pursuant to a program under which we can exchange qualified research and development income tax credits for cash. Included in research and development expenses for the year ended December 31, 2008 were purchases of insulin totaling $10.7 million and precursor raw material of $12.5 million.

Our research and development staff conducts our internal research and development activities, which include research, product development, clinical development, manufacturing and related activities. This staff is located in our facilities in Valencia, California; Paramus, New Jersey; and Danbury, Connecticut. We expense the majority of research and development costs as we incur them.

Clinical development timelines, likelihood of success and total costs vary widely. We are focused primarily on advancing AFRESA through regulatory filings. Based on the results of preclinical studies, we plan to develop additional applications of our Technosphere technology. Additionally, we anticipate that we will continue to determine which research and development projects to pursue, and how much funding to direct to each project, on an ongoing basis, in response to the scientific and clinical success of each product candidate. We cannot be certain when any revenues from the commercialization of our products will commence.

At this time, due to the risks inherent in the clinical trial process and given the early stage of development of our product candidates other than AFRESA, we are unable to estimate with any certainty the costs that we will incur in the continued development of our product candidates for commercialization. The costs required to complete the development of AFRESA will be largely dependent the cost and efficiency of our manufacturing process and discussions with the FDA on its requirements.

Table of Contents

GENERAL AND ADMINISTRATIVE EXPENSES

Our general and administrative expenses consist primarily of salaries, benefits and stock-based compensation for administrative, finance, business development, human resources, legal and information systems support personnel. In addition, general and administrative expenses include professional service fees and business insurance costs.

CRITICAL ACCOUNTING POLICIES

We have based our discussion and analysis of our financial condition and results of operations on our financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities and expenses. We evaluate our estimates and judgments on an ongoing basis. We base our estimates on historical experience and on various assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making estimates of expenses such as stock option expenses and judgments about the carrying values of assets and liabilities. Actual results may differ from these estimates under different assumptions or conditions. The significant accounting policies that are critical to the judgments and estimates used in the preparation of our financial statements are described in more detail below.

Impairment of long-lived assets

Assessing long-lived assets for impairment requires us to make assumptions and judgments regarding the carrying value of these assets. We evaluate long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable. The assets are considered to be impaired if we determine that the carrying value may not be recoverable based upon our assessment of the following events or changes in circumstances:

- significant changes in our strategic business objectives and utilization of the assets;
- a determination that the carrying value of such assets cannot be recovered through undiscounted cash flows;
- loss of legal ownership or title to the assets; or
- the impact of significant negative industry or economic trends.

If we believe our assets to be impaired, the impairment we recognize is the amount by which the carrying value of the assets exceeds the fair value of the assets. Any write-downs would be treated as permanent reductions in the carrying amount of the asset and an operating loss would be recognized. In addition, we base the useful lives and related amortization or depreciation expense on our estimate of the useful lives of the assets. If a change were to occur in any of the above-mentioned factors or estimates, our reported results could materially change.

To date, we have had recurring operating losses, and the recoverability of our long-lived assets is contingent upon executing our business plan. If we are unable to execute our business plan, we may be required to write down the value of our long-lived assets in future periods.

Clinical trial expenses

Our clinical trial accrual process seeks to account for expenses resulting from our obligations under contract with vendors, consultants, and clinical site agreements in connection with conducting clinical trials. The financial terms of these contracts are subject to negotiations which vary from contract to contract and may result in payment flows that do not match the periods over which materials or services are provided to us under such contracts. Our objective is to reflect the appropriate trial expenses in our financial statements by matching period expenses with period services and efforts expended. We account for these expenses according to the progress of the trial as measured by patient progression and the timing of various aspects of the trial. We determine accrual estimates through discussions with internal clinical personnel and outside service providers as to the progress or state of completion of trials, or the services completed. Service provider status is then compared to the contractual obligated fee to be paid for such services. During the course of a clinical trial, we adjust our rate of clinical expense recognition if actual results differ from our estimates. In the event that we do not identify certain costs that have begun to be incurred or we underestimate or overestimate the level of services performed or the costs of such services, our reported expenses for a period would be too low or too high. The date on which certain services commence, the level of services performed on

or before a given date and the cost of the services are often judgmental. We make these judgments based upon the facts and circumstances known to us in accordance with generally accepted accounting principles.

Table of Contents

Stock-based compensation

On January 1, 2006, the Company adopted the provisions of FASB Statement No. 123R, which is a revision of FASB Statement No. 123, *Accounting for Stock-Based Compensation* (FASB Statement No. 123). Prior to January 1, 2006, the Company accounted for employee stock options and the employee stock purchase plan using the intrinsic value method in accordance with Accounting Principles Board (APB) Opinion No. 25 (APB No. 25), *Accounting for Stock Issued to Employees*, and adopted the disclosure only alternative of FASB Statement No. 123. FASB Statement No. 123R eliminated the intrinsic value method of accounting for stock options which the Company followed until December 31, 2005. Further, FASB Statement No. 123R requires all share-based payments to employees, including grants of stock options and the compensatory elements of employee stock purchase plans, to be recognized in the income statement based upon the fair value of the awards at the grant date.

Upon adoption of FASB Statement No. 123R, the Company selected the modified prospective transition method whereby unvested awards at the date of adoption, as well as awards that are granted, modified or settled after the date of adoption, will be measured and accounted for in accordance with FASB Statement No. 123R. Measurement and attribution of compensation cost for awards unvested as of January 1, 2006 is based on the same estimate of the grant-date or modification-date fair value and the same attribution method (straight-line) used previously under FASB Statement No. 123. Our consolidated financial statements as of and for the years ended December 31, 2008 and 2007 reflect the impact of FASB Statement No. 123R. In accordance with the modified prospective transition method, our consolidated financial statements for prior periods have not been restated to reflect, and do not include, the impact of FASB Statement 123R.

Accounting for income taxes

We must make management judgments when determining our provision for income taxes, our deferred tax assets and liabilities and any valuation allowance recorded against our net deferred tax assets. At December 31, 2008, we have established a valuation allowance of $525.6 million against all of our net deferred tax asset balance, due to uncertainties related to our deferred tax assets as a result of our history of operating losses. The valuation allowance is based on our estimates of taxable income by jurisdiction in which we operate and the period over which our deferred tax assets will be recoverable. In the event that actual results differ from these estimates or we adjust these estimates in future periods, we may need to change the valuation allowance, which could materially impact our financial position and results of operations.

In July 2006, the FASB issued FASB Interpretation No. 48, *Accounting for Uncertainty in Income Taxes an interpretation of FASB Statement No. 109* (FIN 48), which clarifies the accounting and disclosure for uncertainty in tax positions, as defined. FIN 48 seeks to reduce the diversity in practice associated with certain aspects of the recognition and measurement related to accounting for income taxes. We are subject to the provisions of FIN 48 as of January 1, 2007. We believe that our income tax filing positions and deductions will be sustained on audit and do not anticipate any adjustments that will result in a material change to our financial position. Therefore, no reserves for uncertain income tax positions have been recorded pursuant to FIN 48. The cumulative effect, if any, of applying FIN 48 is to be reported as an adjustment to the opening balance of retained earnings in the year of adoption. Our adoption of FIN 48 did not result in a cumulative effect adjustment to retained earnings. Tax years since 1992 remain subject to examination by the major tax jurisdictions in which we are subject to tax.

RESULTS OF OPERATIONS

Years ended December 31, 2008 and 2007

Revenues

During the years ended December 31, 2008 and 2007, the Company recognized $20,000 and $10,000, respectively, in revenue under a license agreement. We do not anticipate sales of any product prior to regulatory approval and commercialization of AFRESA.

Table of Contents

Research and Development Expenses

The following table provides a comparison of the research and development expense categories for the years ended December 31, 2008 and 2007 (dollars in thousands):

	Year Ended December 31,			
	2008	2007	$ Change	% Change
Clinical	$ 114,922	$ 124,655	$ (9,733)	(8)%
Manufacturing	92,935	86,473	6,462	7%
Research	30,081	36,720	(6,639)	(18)%
Research and development tax credit	(1,846)	(753)	(1,093)	145%
Stock-based compensation expense	14,350	9,749	4,601	47%
Research and development expenses	$ 250,442	$ 256,844	$ (6,402)	(2)%

The decrease in research and development expenses for the year ended December 31, 2008, as compared to the year ended December 31, 2007, was primarily due to decreased costs associated with the clinical development of AFRESA as we completed our pivotal AFRESA trials during 2008, offset by increases in manufacturing costs associated with preparations for commercial scale manufacturing of AFRESA, including the expansion, qualification and validation of our commercial manufacturing processes and facilities. We anticipate that our research and development expenses will decrease in 2009 as we completed our pivotal AFRESA clinical trials and the expansion of our commercial manufacturing facilities during 2008.

The research and development tax credit recognized for the years ended December 31, 2008 and 2007 partially offsets our research and development expenses. The State of Connecticut provides an opportunity to exchange certain research and development income tax credit carryforwards for cash in exchange for forgoing the carryforward of the research and development credits. Estimated amounts receivable under the program are recorded as a reduction of research and development expenses. During the years ended December 31, 2008 and 2007, research and development expenses were offset by $1.8 million and $0.8 million, respectively, in connection with the program.

General and Administrative Expenses

The following table provides a comparison of the general and administrative expense categories for the years ended December 31, 2008 and 2007 (dollars in thousands):

	Year Ended December 31,			
	2008	2007	$ Change	% Change
Salaries, employee related and other general expenses	$ 44,900	$ 42,627	$ 2,273	5%
Stock-based compensation expense	10,443	7,896	2,547	32%
General and administrative expenses	$ 55,343	$ 50,523	$ 4,820	10%

The increase in general and administrative expenses for the year ended December 31, 2008, as compared to the year ended December 31, 2007, was primarily due to increased salary-related expenses and consulting fees. We expect general and administrative expenses to decrease slightly in 2009 as a result of decreased salary-related expenses and consulting fees.

Interest Income and Expense

Interest income for the year ended December 31, 2008 decreased $12.6 million as compared to the year ended December 31, 2007 primarily due to lower cash balances as the company used cash to fund operating and capital expenditures. Interest expense for the year ended December 31, 2007 was related to the convertible notes issued in December 2006 and amortization of the debt issuance costs, partially offset by capitalized interest related to

construction in progress. Interest expense for the year ended December 31, 2008 also included interest related to amounts borrowed under the loan agreement with our principal stockholder in December 2008.

Table of Contents

Years ended December 31, 2007 and 2006

Revenues

During the year ended December 31, 2007 and 2006, the Company recognized $10,000 and $100,000 in revenue under a license agreement. We do not anticipate sales of any product prior to regulatory approval and commercialization of AFRESA.

Research and Development Expenses

The following table provides a comparison of the research and development expense categories for the years ended December 31, 2007 and 2006 (dollars in thousands):

	Year Ended December 31,			
	2007	2006	$ Change	% Change
Clinical	$ 124,655	$ 110,623	$ 14,032	13%
Manufacturing	86,473	40,656	45,817	113%
Research	36,720	33,962	2,758	8%
Research and development tax credit	(753)	(585)	(168)	29%
Stock-based compensation expense	9,749	7,140	2,609	37%
Research and development expenses	$ 256,844	$ 191,796	$ 65,048	34%

The increase in research and development expenses for the year ended December 31, 2007, as compared to the year ended December 31, 2006, was primarily due to increases in manufacturing costs, including clinical supplies, for Technosphere Insulin and increased costs associated with the expanded clinical development of AFRESA and the continuation of other preclinical studies.

The research and development tax credit recognized for the years ended December 31, 2007 and 2006 partially offsets our research and development expenses. The State of Connecticut provides an opportunity to exchange certain research and development income tax credit carryforwards for cash in exchange for forgoing the carryforward of the research and development credits. Estimated amounts receivable under the program are recorded as a reduction of research and development expenses. During the years ended December 31, 2007 and 2006, research and development expenses were offset by $0.8 million and $0.6 million, respectively, in connection with the program.

General and administrative expenses

The following table provides a comparison of the general and administrative expense categories for the years ended December 31, 2007 and 2006 (dollars in thousands):

	Year Ended December 31,			
	2007	2006	$ Change	% Change
Salaries, employee related and other general expenses	$ 42,627	$ 34,474	$ 8,153	24%
Stock-based compensation expense	7,896	7,527	369	5%
General and administrative expenses	$ 50,523	$ 42,001	$ 8,522	20%

The increase in general and administrative expenses for the year ended December 31, 2007, as compared to the year ended December 31, 2006, was primarily due to increased headcount and professional service fees.

Table of Contents

LIQUIDITY AND CAPITAL RESOURCES

We have funded our operations primarily through the sale of equity securities. In October 2007, we issued and sold a total of 27,014,686 shares of our common stock. Of this total, 15,940,489 shares were sold to our principal stockholder at a price per share of $9.41 and 11,074,197 shares were sold to other investors at a price per share of $9.03. The resulting aggregate net proceeds were approximately $249.8 million after expenses. In December 2006, we issued and sold 23,000,000 shares of our common stock at a price of $17.42 per share in an underwritten public offering. The resulting aggregate net proceeds to us from this common stock offering were approximately $384.7 million after expenses. In December 2006, we also sold $115.0 million aggregate principal amount of 3.75% Senior Convertible Notes due 2013. The resulting aggregate net proceeds to us from this note offering were approximately $111.3 million after expenses.

In August 2006, we entered into a $150.0 million loan arrangement with our principal stockholder, which was amended on August 1, 2007 and replaced with a new loan arrangement on October 2, 2007 allowing us to borrow up to a total of $350.0 million before January 1, 2010. On February 26, 2009, as a result of our principal stockholder being licensed as a finance lender under the California Finance Lenders Law, the promissory note underlying the loan arrangement was revised to reflect the lender as The Mann Group LLC, or the Lender, an entity controlled by our principal stockholder. This new license also eliminated the draw restrictions under the previous loan arrangement and we are now able to borrow up to a total of $350.0 million from time to time with appropriate notice to the Lender. Interest will accrue on each outstanding advance at a fixed rate equal to the one-year LIBOR rate as reported by the *Wall Street Journal* on the date of such advance plus 3% per annum and will be payable quarterly in arrears. Principal repayment is due on December 31, 2011. At any time after January 1, 2010, our Lender can require us to prepay up to $200.0 million in advances that have been outstanding for at least 12 months. If our Lender exercises this right, we will have until the earlier of 180 days after our Lender provides written notice or December 31, 2011 to prepay such advances. In the event of a default, all unpaid principal and interest either becomes immediately due and payable or may be accelerated at our Lender s option, and the interest rate will increase to the one-year LIBOR rate calculated on the date of the initial advance or in effect on the date of default, whichever is greater, plus 5% per annum. Any borrowings under the loan arrangement will be unsecured. The loan arrangement contains no financial covenants. There are no warrants associated with the loan arrangement, nor are advances convertible into our common stock. As of December 31, 2008, the amount outstanding under the arrangement was $30.0 million.

During the year ended December 31, 2008, we used $271.3 million of cash for our operations compared to using $245.1 million for our operations in the year ended December 31, 2007. We had a net loss of $303.0 million for the year ended December 31, 2008, of which $37.1 million consisted of non-cash charges such as depreciation and amortization, stock-based compensation, and other stock-based charges pursuant to a research agreement. We expect our negative operating cash flow to continue at least until we obtain regulatory approval and achieve commercialization of AFRESA.

We spent $99.9 million of cash for investing activities during the year ended December 31, 2008, compared to generating $38.7 million for the year ended December 31, 2007. For the year ended December 31, 2008, cash used by investing activities was primarily for $82.5 million in machinery and equipment purchases, mainly used to expand our manufacturing operations, and net purchases of marketable securities of $17.6 million. Cash provided by investing activities in 2007 was primarily from net sales of marketable securities of $116.9 million partially offset by $78.3 million in machinery and equipment purchases.

Our financing activities provided cash of $30.6 million for the year ended December 31, 2008 compared to $255.2 million for 2007. For 2008, cash from financing activities was primarily from the related party borrowings received in December 2008, as well as the exercise of stock awards. Cash from financing activities in 2007 was primarily from the equity offering in October 2007 and the exercise of stock options throughout the year.

As of December 31, 2008, we had $27.6 million in cash and cash equivalents. Although we believe our existing cash resources, including the $320.0 million of available borrowing under the loan arrangement with our principal stockholder, will be sufficient to fund our anticipated cash requirements through the first quarter of 2010, we will require significant additional financing in the future to fund our operations and if we are unable to do so, there will be substantial doubt about our ability to continue as a going concern. Accordingly, we expect that we will need to raise

additional capital, either through the sale of equity and/or debt securities, a strategic business collaboration with a pharmaceutical or biotechnology company or the establishment of other funding facilities, in order to continue the development and commercialization of AFRESA and other product candidates and to support our other ongoing activities.

We intend to use our capital resources to continue the development and commercialization, if approved, of AFRESA and to develop additional applications for our proprietary Technosphere platform technology. In addition, portions of our capital resources will be devoted to expanding our other product development programs for the treatment of different types of cancers. We are expending a portion of our capital to scale up our manufacturing capabilities in our Danbury facilities. We also intend to use our capital resources for general corporate purposes, which may include in-licensing or acquiring additional technologies.

Table of Contents

We have held extensive discussions with a number of pharmaceutical companies concerning a potential strategic business collaboration for AFRESA. To date, we have not reached agreement with any of these companies on a collaboration. While we are continuing to engage in such discussions, we believe that we will have to expend significant additional time and effort before we could reach agreement, and we cannot predict when, if ever, we could conclude such an agreement with a partner. There can be no assurance that any such collaboration will be available to us on a timely basis or on acceptable terms, if at all.

If we enter into a strategic business collaboration with a pharmaceutical or biotechnology company, we would expect, as part of the transaction, to receive additional capital. In addition, we expect to pursue the sale of equity and/or debt securities, or the establishment of other funding facilities. Issuances of debt or additional equity could impact the rights of our existing stockholders, dilute the ownership percentages of our existing stockholders and may impose restrictions on our operations. These restrictions could include limitations on additional borrowing, specific restrictions on the use of our assets as well as prohibitions on our ability to create liens, pay dividends, redeem our stock or make investments. We also may seek to raise additional capital by pursuing opportunities for the licensing, sale or divestiture of certain intellectual property and other assets, including our Technosphere technology platform. There can be no assurance, however, that any strategic collaboration, sale of securities or sale or license of assets will be available to us on a timely basis or on acceptable terms, if at all. If we are unable to raise additional capital, we may be required to enter into agreements with third parties to develop or commercialize products or technologies that we otherwise would have sought to develop independently, and any such agreements may not be on terms as commercially favorable to us.

However, we cannot provide assurances that our plans will not change or that changed circumstances will not result in the depletion of our capital resources more rapidly than we currently anticipate. If planned operating results are not achieved or we are not successful in raising additional equity financing or entering a business collaboration, we may be required to reduce expenses through the delay, reduction or curtailment of our projects, including AFRESA development activities, or further reduction of costs for facilities and administration, and there will be substantial doubt about our ability to continue as a going concern.

Off-Balance Sheet Arrangements

As of December 31, 2008, we did not have any off-balance sheet arrangements.

COMMITMENTS AND CONTINGENCIES

Our contractual obligations represent future cash commitments and liabilities under agreements with third parties, and exclude contingent liabilities for which we cannot reasonably predict future payments. Accordingly, the table below excludes contractual obligations relating to milestone and royalty payments due to third parties, all of which are contingent upon certain future events. The expected timing of payment of the obligations presented below is estimated based on current information. Future payments relate to operating lease obligations (including facility leases executed in March 2005 and November 2005), the senior convertible notes, and open purchase order and supply commitments consisted of the following at December 31, 2008 (in thousands):

	Payments Due in				
Contractual Obligations	**Less Than One Year**	**1-3 Years**	**3-5 Years**	**More Than 5 Years**	**Total**
Open purchase order and supply commitments(1)	$ 43,660	$ 55,321	$ 48,112	$	$ 147,093
Senior Convertible Note Obligations(2)	4,372	8,745	123,757		136,874
Note Payable to Principal Stockholder (3)	1,523	33,047			34,570
Operating lease obligations	1,969	788	1	1	2,759
Total contractual obligations	$ 51,524	$ 97,901	$ 171,870	$ 1	$ 321,296

(1) The amounts included in open purchase order and supply commitments are subject to performance under the purchase order or contract by the supplier of the goods or services and do not become our obligation until such performance is rendered. The amount shown is principally for the purchase of materials for our clinical trials, the acquisition of manufacturing equipment, and commitments related to the expansion of our manufacturing plant and the purchase of raw materials under long-term supply agreements.

(2) The senior convertible note obligation amounts include future interest payments at a fixed rate of 3.75% and payment of the notes in full upon maturity in 2013.

(3) The obligation for the note payable to the principal stockholder includes future principal and interest payments related to the

Table of Contents

$30.0 million borrowing received on December 29, 2008. Interest is paid based on a fixed rate equal to the one-year LIBOR rate on the date of advance plus 3% and the principal payment is due on December 31, 2011.	

RELATED PARTY TRANSACTIONS

For a description of our related party transactions see Note 15 Related Party Transactions in the notes to our financial statements.

RECENT ACCOUNTING PRONOUNCEMENTS

In December 2007, the FASB ratified the EITF consensus on EITF Issue No. 07-1, *Accounting for Collaborative Arrangements,* that discusses how parties to a collaborative arrangement (which does not establish a legal entity within such arrangement) should account for various activities. The consensus indicates that costs incurred and revenues generated from transactions with third parties (i.e. parties outside of the collaborative arrangement) should be reported by the collaborators on the respective line items in their income statements pursuant to EITF Issue No. 99-19, *Reporting Revenue Gross as a Principal Versus Net as an Agent.,* Additionally, the consensus provides that income statement characterization of payments between the participants in a collaborative arrangement should be based upon existing authoritative pronouncements; analogy to such pronouncements if not within their scope; or a reasonable, rational, and consistently applied accounting policy election. EITF Issue No. 07-1 is effective beginning January 1, 2009 and is to be applied retrospectively to all periods presented for collaborative arrangements existing as of the date of adoption. We believe that the adoption of EITF No. 07-1 will not have a material effect on our results of operations, financial position, or cash flows.

In December 2007, the FASB issued FASB Statement No. 141(R), *Business Combinations* and FASB Statement No. 160, *Accounting and Reporting of Noncontrolling Interests in Consolidated Financial Statements an amendment of ARB No. 51* (FASB Statement No. 160). These standards will significantly change the accounting and reporting for business combination transactions and noncontrolling (minority) interests in consolidated financial statements, including capitalizing at the acquisition date the fair value of acquired IPR&D, and remeasuring and writing down these assets, if necessary, in subsequent periods during their development. These new standards will be applied prospectively for business combinations that occur on or after January 1, 2009, except that presentation and disclosure requirements of FASB Statement No. 160 regarding noncontrolling interests shall be applied retrospectively. Adoption of these statements are expected to have a significant effect on how acquisition transactions, subsequent to January 1, 2009, are reflected in the financial statements.

As of January 1, 2008, we adopted on a prospective basis certain required provisions of FASB Statement No. 157, *Fair Value Measurements* (FASB Statement No. 157), as amended by FASB Financial Staff Position (FSP) No. 157-2. Those provisions relate to our financial assets and liabilities carried at fair value and its fair value disclosures related to financial assets and liabilities. FASB Statement 157 defines fair value, expands related disclosure requirements and specifies a hierarchy of valuation techniques based on the nature of the inputs used to develop the fair value measures. Fair value is defined as the price that would be received to sell an asset or paid to

transfer a liability in an orderly transaction between market participants at the measurement date. There are three levels of inputs to fair value measurements Level 1, meaning the use of quoted prices for identical instruments in active markets; Level 2, meaning the use of quoted prices for similar instruments in active markets or quoted prices for identical or similar instruments in markets that are not active or are directly or indirectly observable; and Level 3, meaning the use of unobservable inputs. Observable market data should be used when available. All of our marketable securities are classified as available-for-sale securities and are carried at fair value. Our valuation measurements for the available-for-sale securities are Level 2 measurements. The partial adoption of FASB Statement 157 did not have a significant impact on our results of operations, financial position or cash flows.

In May 2008, the FASB issued FSP No. APB 14-1 (FSP No. APB 14-1), *Accounting for Convertible Debt Instruments that may be Settled in Cash Upon Conversion (Including Partial Cash Settlement).* FSP No. APB 14-1 establishes that the liability and equity components of convertible debt instruments within the scope of FSP APB No. 14-1 shall be separately accounted for in a manner that will reflect the entity s nonconvertible debt borrowing rate when interest cost is recognized in subsequent periods. The carrying amount of the liability component of the convertible debt instrument will be determined by measuring the fair value of a similar liability that does not have an associated equity component. The carrying value of the equity component will be determined by deducting the fair value of the liability component from the initial proceeds ascribed to the convertible debt instrument as a whole. Related transaction costs shall be allocated to the liability and equity components in proportion to the allocation of proceeds and accounted for as debt issuance costs and equity issuance costs, respectively. The excess of the principal amount of the liability component over its carrying amount shall be amortized to interest cost using the interest method. FSP No. APB 14-1 is effective beginning January 1, 2009 and shall be applied retrospectively to all periods presented with the cumulative effect of the change in accounting principle on periods prior to those presented recognized as of the beginning of the first period presented. Early adoption is not permitted. The adoption of FSP No. APB 14-1 will not have a material effect on our financial condition or results of operations.

Table of Contents

In June 2008, the FASB issued EITF Issue 07-5 *Determining whether an Instrument (or Embedded Feature) is indexed to an Entity s Own Stock* (EITF No. 07-5). Paragraph 11(a) of FASB Statement No. 133 Accounting for Derivatives and Hedging Activities specifies that a contract that would otherwise meet the definition of a derivative but is both (a) indexed to the Company s own stock and (b) classified in stockholders equity in the statement of financial position would not be considered a derivative financial instrument. EITF No. 07-5 provides a new two-step model to be applied in determining whether a financial instrument or an embedded feature is indexed to an issuer s own stock and thus able to qualify for the SFAS 133 paragraph 11(a) scope exception. EITF No. 07-5 is effective for financial statements issued for fiscal years beginning after December 31, 2005, and interim periods within those fiscal years. Early adoption is not permitted. We believe that the adoption of EITF No. 07-5 will not have a material effect on our results of operations, financial position, or cash flows.

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

We have not used derivative financial instruments in the past to hedge market risk. We are exposed to market risk related to changes in interest rates impacting our short-term investment portfolio as well as the interest rate on our credit facility with an entity controlled by our principal stockholder. The interest rate on our credit facility with our principal stockholder is a fixed rate equal to the one-year LIBOR rate as reported by the *Wall Street Journal* on the date of such advance plus 3% per annum. Our current policy requires us to maintain a highly liquid short-term investment portfolio consisting mainly of U.S. money market funds and investment-grade corporate, government and municipal debt. None of these investments is entered into for trading purposes. Our cash is deposited in and invested through highly rated financial institutions in North America. Our short-term investments at December 31, 2008 are comprised mainly of short term US treasury notes. If we were to draw the available amount on our $350 million credit facility and interest rates were to increase from levels at December 31, 2008 we could experience a higher level of interest expense than assumed in our current operating plan.

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

The information required by this Item is included in Items 15(a)(1) and (2) of Part IV of this Annual Report on Form 10-K.

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

None.

Item 9A. ***Controls and Procedures***

Conclusion Regarding the Effectiveness of Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in our reports filed under the Exchange Act, is recorded, processed, summarized and reported within the time periods specified in the SEC s rules and forms and that such information is accumulated and communicated to our management, including our chief executive officer and chief financial officer, as appropriate, to allow for timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management is required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

Our chief executive officer and chief financial officer performed an evaluation under the supervision and with the participation of our management, of our disclosure controls and procedures (as defined in Rule 13a-15(e) and 15d-15(e)of the Exchange Act) as of December 31, 2008. Based on that evaluation, our chief executive officer and chief financial officer concluded that our disclosure controls and procedures were effective at the reasonable assurance level.

Management s Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). Under the supervision and with the participation of our management, including our chief executive officer and chief financial officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework set forth in *Internal Control Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on our evaluation under the framework set forth in *Internal Control Integrated Framework*, our management concluded

that our internal control over financial reporting was effective as of December 31, 2008. Deloitte & Touche LLP, the independent registered public accounting firm that audited the financial statements included in this 2008

Table of Contents

Form 10-K, has issued an attestation report on our internal control over financial reporting as of December 31, 2008, which is included herein.

Table of Contents

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of MannKind Corporation
Valencia, California

We have audited the internal control over financial reporting of MannKind Corporation (the Company) as of December 31, 2008, based on criteria established in *Internal Control Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission. The Company s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management s Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company s internal control over financial reporting based on our audit.

We conducted our audit 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 effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company s internal control over financial reporting is a process designed by, or under the supervision of, the company s principal executive and principal financial officers, or persons performing similar functions, and effected by the company s board of directors, management, and other personnel to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company s assets that could have a material effect on the financial statements.

Because of the inherent limitations of internal control over financial reporting, including the possibility of collusion or improper management override of controls, material misstatements due to error or fraud may not be prevented or detected on a timely basis. Also, projections of any evaluation of the effectiveness of the internal control over financial reporting to future periods are subject to the risk that the controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2008, based on the criteria established in *Internal Control Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the financial statements as of and for the year ended December 31, 2008 of the Company and our report dated February 27, 2009 expressed an unqualified opinion on those financial statements.

/s/ DELOITTE & TOUCHE LLP

Los Angeles, California
February 27, 2009

Table of Contents

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

None.

PART III

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

Executive Officers For information regarding the identification and business experience of our executive officers, see Executive Officers in Part I, Item 1 of this Annual Report on Form 10-K.

Directors Our Board of Directors consists of eight directors. Each director is elected to hold office until the next annual meeting of stockholders and until his or her successor is elected, or until the director s death, resignation or removal.

The following is a brief biography of each director.

Name	Age	Position Held With the Company
Alfred E. Mann	83	Chairman of the Board of Directors and Chief Executive Officer
Hakan S. Edstrom	58	President, Chief Operating Officer and Director
Barry E. Cohen(1)	72	Director
Ronald Consiglio(2)(3)	65	Director
Michael Friedman, M.D.(1)(2)	65	Director
Kent Kresa(1)(2)	70	Director
David H. MacCallum(3)	71	Director
Henry L. Nordhoff(3)	66	Director

(1) Member of the Compensation Committee.

(2) Member of the Nominating and Corporate Governance Committee.

(3) Member of the Audit Committee.

Alfred E. Mann has been one of our directors since April 1999, our Chairman of the Board since December 2001 and our Chief Executive Officer since October 2003. He founded and formerly served as Chairman and Chief Executive Officer of MiniMed, Inc., a publicly traded company focused on diabetes therapy and microinfusion drug delivery that was acquired by Medtronic, Inc. in August 2001. Mr. Mann also founded and, from 1972 through 1992, served as Chief Executive Officer of Pacesetter Systems, Inc. and its successor, Siemens Pacesetter, Inc., a manufacturer of cardiac pacemakers, now the Cardiac Rhythm Management Division of St. Jude Medical Corporation. Mr. Mann founded and since 1993, has served as Chairman and until January 2008, as Co-Chief Executive Officer of Advanced Bionics Corporation, a medical device manufacturer focused on neurostimulation to restore hearing to the deaf and to treat chronic pain and other neural deficits, that was acquired by Boston Scientific Corporation in June 2004. In January 2008, the former stockholders of Advanced Bionics Corporation repurchased certain segments from Boston Scientific Corporation and formed Advanced Bionics LLC for cochlear implants and Infusion Systems LLC for infusion pumps. Mr. Mann is non-executive Chairman of both entities. Mr. Mann has also founded and is non-executive Chairman of Second Sight, which is developing a visual prosthesis for the blind and

Quallion, which produces batteries for medical products and for the military and aerospace industries; and Stellar Microelectronics Inc., a supplier of electronic assemblies to the medical, military and aerospace industries. Mr. Mann is also non-executive Chairman of the Alfred Mann Foundation and Alfred Mann Institute at the University of Southern California, AMI Purdue and AMI Technion, and the Alfred Mann Foundation for Biomedical Engineering, which is establishing additional institutes at other research universities. Mr. Mann is also non-executive Chairman of the Southern California Biomedical Council, and a Director of the Nevada Cancer Institute and United Cerebral Palsy Foundation. Mr. Mann holds a bachelor s and master s degree in Physics from the University of California at Los Angeles, honorary doctorates from Johns Hopkins University, the University of Southern California, Western University and the Technion-Israel Institute of Technology and is a member of the National Academy of Engineering.

Hakan S. Edstrom has been our President and Chief Operating Officer since April 2001 and has served as one of our directors since December 2001. Mr. Edstrom was with Bausch & Lomb, Inc., a health care product company, from January 1998 to April 2001, advancing to the position of Senior Corporate Vice President and President of Bausch & Lomb, Inc. Americas Region. From 1981 to 1997, Mr. Edstrom was with Pharmacia Corporation, where he held various executive positions, including President and Chief

Table of Contents

Executive Officer of Pharmacia Ophthalmics Inc. Mr. Edstrom is currently a director of Q-Med AB, a biotechnology and medical device company. Mr. Edstrom was educated in Sweden and holds a master s degree in Business Administration from the Stockholm School of Economics.

Abraham (Barry) E. Cohen has been one of our directors since May 2007. Mr. Cohen served as Senior Vice President of Merck & Co. and from 1977 to 1988 as President of the Merck Sharp & Dohme International Division. Since his retirement in January 1992, Mr. Cohen has been active as an international business consultant. He is presently a director of Akzo Novel NV., Chugai Pharmaceutical Co. U.S.A., Teva Pharmaceutical Industries Ltd., Neurobiological Technologies, Inc. and Vasomedical, Inc.

Ronald Consiglio has been one of our directors since October 2003. Since 1999, Mr. Consiglio has been the managing director of Synergy Trading, a securities-trading partnership. From 1999 to 2001, Mr. Consiglio was Executive Vice President and Chief Financial Officer of Trading Edge, Inc., a national automated bond-trading firm. From January 1993 to 1998 Mr. Consiglio served as Chief Executive Officer of Angeles Mortgage Investment Trust, a publicly traded Real Estate Investment Trust. His prior experience includes serving as Senior Vice President and Chief Financial Officer of Cantor Fitzgerald & Co. and as a member of its board of directors. Mr. Consiglio is currently a member of the board of trustees for the Metropolitan West Funds, a series of mutual funds in the fixed income sector. Mr. Consiglio is a certified public accountant and holds a bachelor s degree in accounting from California State University at Northridge.

Michael Friedman, M.D. has been one of our directors since December 2003. Currently, Dr. Friedman is the President and Chief Executive Officer of the City of Hope National Medical Center. Previously, from September 2001 until April 2003, Dr. Friedman held the position of Senior Vice President of Research and Development, Medical and Public Policy, for Pharmacia Corporation and, from July 1999 until September 2001, was a senior vice president of Searle, a subsidiary of Monsanto Company. From 1995 until June 1999, Dr. Friedman served as Deputy Commissioner for Operations for the Food and Drug Administration, and was Acting Commissioner and Lead Deputy Commissioner from 1997 to 1998. Dr. Friedman received a bachelor of arts degree, magna cum laude, from Tulane University, New Orleans, Louisiana, and a doctorate in medicine from the University of Texas, Southwestern Medical School.

Kent Kresa has been one of our directors since June 2004. Mr. Kresa is Chairman Emeritus of Northrop Grumman Corporation, a defense company and from September 1990 until October 2003, he was its Chairman. He also served as Chief Executive Officer of Northrop Grumman Corporation from January 1990 until March 2003 and as its President from 1987 until September 2001. Mr. Kresa is also Chairman of the Board of Trustees of the California Institute of Technology (Caltech) and has been a member of the Caltech Board of Trustees since 1994. Mr. Kresa serves as non-executive Chairman of Avery Dennison Corporation, a company focused on pressure-sensitive technology and self-adhesive solutions; and on the boards of Fluor Corporation, a provider of engineering, procurement, construction and maintenance services; General Motors Corporation, an automobile manufacturer; and several non-profit organizations and universities. He is also on the Advisory Board of Trust Company of the West, an asset management firm. As a graduate of M.I.T., he received a B.S. in 1959, an M.S. in 1961, and an E.A.A. in 1966, all in aeronautics and astronautics.

David H. MacCallum has been one of our directors since June 2004. Currently, Mr. MacCallum is the Managing Partner of Outer Islands Capital, a hedge fund specializing in health care investments. From June 1999 until November 2001, he was Global Head of Health Care investment banking for Salomon Smith Barney, part of Citigroup, a financial institution. Prior to joining Salomon Smith Barney, he was Executive Vice President and Head of the Health Care group at ING Barings Furman Selz LLC, an investment banking firm and subsidiary of ING Group, a Dutch financial institution, from April 1998 to June 1999. Prior to that, Mr. MacCallum formed the Life Sciences group at UBS Securities, an investment banking firm, where he was Managing Director and Global Head of Life Sciences from May 1994 to April 1998. Before joining UBS Securities, he built the health care practice at Hambrecht & Quist, an investment banking firm, where he was Head of Health Care and Co-Head of Investment Banking. Mr. MacCallum received an A. B. degree from Brown University and an M.B.A. degree from New York University. He is a Chartered Financial Analyst.

Henry L. Nordhoff has been one of our directors since March 2005. Mr. Nordhoff has served as Chief Executive Officer and President of Gen-Probe Incorporated, a clinical diagnostic and blood screening company, since July 1994 and Chairman of the Board of Gen-Probe since September 2002. Prior to joining Gen-Probe, he was President and Chief Executive Officer of TargeTech, Inc., a gene therapy company that was merged into Immune Response Corporation. Prior to that, Mr. Nordhoff was at Pfizer, Inc. in senior positions in Brussels, Seoul, Tokyo and New York. He received a B.A. in international relations and political economy from Johns Hopkins University and an M.B.A. from Columbia University.

Audit Committee

Our Audit Committee consists of Mr. Consiglio (chair), Mr. MacCallum and Mr. Nordhoff, each of whom is an independent member of our Board of Directors (as determined by our board based on its annual review of the definition of independence of Audit Committee members provided in Rule 4350(d)(2)(A)(i) and (ii) of the Nasdaq listing standards).

Table of Contents

We have appointed Mr. Consiglio as our Audit Committee financial expert, as that term is defined in applicable SEC rules. In making such determinations, the Board of Directors made a qualitative assessment of Mr. Consiglio s level of knowledge and experience based on a number of factors, including his formal education and experience.

Code of Business Conduct and Ethics

We have adopted a Code of Business Conduct and Ethics Policy that applies to our directors and employees (including our principal executive officer, principal financial officer, principal accounting officer and controller), and have posted the text of the policy on our website (*www.mannkindcorp.com*) in connection with Investors materials. In addition, we intend to promptly disclose on our website (i) the nature of any amendment to the policy that applies to our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions and (ii) the nature of any waiver, including an implicit waiver, from a provision of the policy that is granted to one of these specified individuals, the name of such person who is granted the waiver and the date of the waiver.

SECTION 16(A) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16(a) of the Exchange Act requires our directors, executive officers and any persons beneficially holding more than 10% of our common stock to report their initial ownership of our common stock and any subsequent changes in that ownership to the SEC. Our executive officers, directors and greater than 10% stockholders are required by SEC regulation to furnish us with copies of all Section 16(a) forms they file.

Specific due dates for these reports have been established and we are required to identify in this annual report those persons who failed to timely file these reports. To our knowledge, based solely on a review of the copies of such reports furnished to us and written representations that no other reports were required, during the fiscal year ended December 31, 2008, all of our directors, officers and greater than 10% stockholders complied with the Section 16(a) filing requirements.

Item 11. ***Executive Compensation***

Compensation Discussion And Analysis

We are pleased to present our report on executive compensation. The report s objective is to assist our stockholders in understanding the objectives and procedures used by the Compensation Committee of our Board of Directors in establishing its recommendation to the Board of Directors regarding the compensation of our executive officers.

MannKind Corporation is a biopharmaceutical company focused on the discovery, development and commercialization of therapeutic products for diseases such as diabetes and cancer. Our compensation program is designed to attract and retain the individuals needed to support our business strategy and to allow us to compete effectively with pharmaceutical and biotechnology companies.

The Compensation Committee is responsible for establishing and administering our policies governing the compensation for our executive officers. The Compensation Committee is composed entirely of independent directors within the meaning of the applicable SEC and Nasdaq Stock Market rules. Hakan Edstrom, our President and Chief Operating Officer, is not a member of the Compensation Committee, but he regularly attends Compensation Committee meetings in order to provide valuable insight and guidance to the Compensation Committee. Similarly, Alfred Mann, our Chief Executive Officer and largest shareholder, is not a member of the Compensation Committee, but he periodically attends Compensation Committee meetings for the same purpose. The Compensation Committee responsibilities and duties are outlined in detail in the Compensation Committee charter, which is available on our website at *www.mannkindcorp.com*. A primary responsibility of the Compensation Committee is to make recommendations regarding the compensation for our executive officers, including the determination and confirmation of annual corporate goal achievement for purposes of awarding bonuses, to the full Board of Directors for its approval. The Compensation Committee engages outside consulting firms to assist in developing compensation levels and practices and to provide external market data. For certain compensation decisions made in 2008 and more recently, the Compensation Committee received support from Mercer Consulting.

The Compensation Committee meets outside the presence of all of our executive officers, including the named executive officers, in order to consider the appropriate compensation for our chief executive officer. For all other named executive officers, the Compensation Committee meets outside the presence of all executive officers except our chief executive officer. The annual performance reviews of our executive officers are considered by the

Compensation Committee when making decisions regarding base salary, targets for and payments under our bonus plan and grants of equity incentive awards. When making recommendations regarding individual executive

Table of Contents

officers, the Compensation Committee considers the importance of the position to us, the past salary history of the executive officer and the contributions we expect the executive officer to make to the success of our business.

Compensation Philosophy And Objectives

The Compensation Committee oversees our executive compensation within the context of a compensation philosophy. This philosophy is to provide compensation and benefits programs designed to attract, motivate, and retain a high caliber workforce that enables us to compete with companies in the pharmaceutical and biotechnology industries and to reward individual and corporate performance.

We believe that a well-designed compensation program for our executive officers should:

align the goals of the executive officer with the goals of the stockholders;

recognize individual initiative, effort and achievement;

provide total compensation that enables us to compete with companies in the pharmaceutical and biotechnology industries; and

align compensation with our short-term and long-term corporate objectives and strategy, focusing executive officer behavior on the fulfillment of those objectives.

In keeping with this philosophy, our executive compensation program is designed to achieve the following objectives:

attract and retain talented and experienced executives;

motivate and reward executives whose knowledge, skills and performance are critical to our success;

retain executives and employees who are instrumental in accomplishing our corporate objectives;

align the interests of our executives and stockholders by motivating executives to increase stockholder value and rewarding executives when stockholder value increases;

provide a competitive compensation package which is weighted towards pay-for-performance, and in which total compensation is primarily determined by the company s and the individual s achievement of results;

ensure fairness among the executive management team by recognizing the contributions each executive makes to our success;

foster a shared commitment among executives by aligning the company s and their individual goals; and

compensate our executives to manage our business to meet our long-term objectives.

We utilize the following principles to guide compensation decisions:

Competitive Market Assessment:

The Compensation Committee regularly reviews competitive market data to determine if our compensation levels remain at targeted levels and our pay practices are appropriate. These assessments include a review of base salary, annual incentives, and long-term incentives. These components are evaluated against a group of peer companies as well as industry specific and general published survey compensation data. Specifically, we utilized the Radford Global Life Sciences Executive Survey, the SIRS Executive Compensation Survey and the Salary.com CompAnalyst Executive Survey. Since 2007, the Compensation Committee has engaged Mercer Consulting to benchmark the compensation levels of eight executive positions relative to a group of peer companies.

In addition to the elements described above, the Compensation Committee also considered the broader economic conditions currently affecting the United States and other major countries. In light of these circumstances, the Compensation Committee determined that it was appropriate to accept a recommendation from management that all

2009 salaries and wages, including those of named executive officers, be held at 2008 levels.

Table of Contents

Peer Group:

In the past, we have developed a peer group for benchmarking purposes, by considering companies in a similar industry and of a similar size in terms of revenue and number of employees. Typically, our peer group was selected to consist equally of (i) companies with zero revenue, (ii) companies with revenue between $0 and $1B and (iii) companies with revenue between $1 and $3B. All companies are either biotechnology or pharmaceutical companies. Companies were selected with various revenue sizes because we are recruiting from and competing for executive with companies that are generating revenue. For 2008, the primary peer group of companies for pay comparison purposes included:

Atherogenics, Inc.	Favrille Inc.
Barr Pharmaceuticals, Inc.	Genitope Corp.
Biogen Idec, Inc.	Genzyme Corp.
Biomarin Pharmaceutical, Inc.	Nektar Therapeutics
Cephalon, Inc.	Tercica, Inc.
CV Therapeutics, Inc.	Theravance, Inc.

In addition, we monitored the executive compensation for three additional companies with which we compete for executives. However, since these three companies have significantly larger revenue than us, they are not included in the peer group: Amgen Inc., Genentech Inc., and Schering-Plough Corporation.

In light of our decision to hold salaries and wages at 2008 levels, we have not updated the peer group for 2009.

Market Positioning:

The Compensation Committee reviews executive compensation at least annually, establishes competitive compensation levels using competitive market data and designs the compensation program to provide pay commensurate with individual and corporate performance. We normally position total compensation levels for executives at the 60th percentile of our peer group; however, compensation may fall above or below this level under a range of circumstances, such as individual performance, tenure with the company or retention concerns. We supplement the peer group data with the survey data described above.

We believe our executive compensation packages are reasonable when considering our business strategy, the revenue potential of our business, our compensation philosophy and the competitive market pay data.

In addition to the factors listed above, we also consider, among other things:

- our business need for the executive officer s skills;
- the contributions that the executive officer has made or we believe will make to our success;
- the transferability of the executive officer s managerial skills to other potential employers; and
- the relevance of the executive officer s experience to other potential employers, particularly in the pharmaceutical and biotechnology industries

Pay-for-Performance:

Our executive compensation program emphasizes pay-for-performance. The compensation package for our executive officers includes both cash and equity incentive plans that align an executive s compensation with our short-term and long-term performance goals and objectives.

The annual cash incentive awards under our bonus plan are intended to compensate our executive officers for achieving our annual goals at the corporate level and for achieving individual annual performance objectives. The goals for our company and individual measures are established so that target attainment is not assured. The attainment of payment for performance at or above target levels requires significant effort on the part of our executives. Long-term equity incentives are intended to reward executives for growth in shareholder value. Additional details of the plan are described below under Bonus Plan and Long-Term Incentives .

Table of Contents

Compensation Components

In order to provide a total compensation package that is tied to shareholder value creation and the achievement of strategic corporate goals, our executive compensation package is comprised of several components. These components are designed to work together to create a balanced approach to compensation, rewarding both short-term and long-term performance and fostering sufficient retentive effect to secure the services of our executive officer while we execute on our plans. Currently, our compensation structure for executive officers includes a combination of base salary, bonus, stock options and restricted stock awards, 401(k), medical and other benefits, severance and change in control and other post termination provisions. Each component is described in further detail below.

Base Salary

Base salaries are designed to provide compensation for day-to-day management of the Company assuming acceptable levels of performance. This component is designed to provide consistent and steady cash flow for the executive and represents only a portion of total compensation. Salary levels are based primarily upon the competitive market for the executive officers services as determined through comparisons with peer companies and survey data. Base salaries for our executives are intended to fall at the median of the competitive market. Individual performance, responsibility, and the importance of each role in our organization can also impact base salary levels.

Bonus Plan

The annual cash incentive awards under our bonus plan are intended to compensate our executive officers for achieving our annual goals at the corporate level and for achieving individual annual performance objectives. For 2008, the corporate goals were based on achievement of certain operational goals. Because we are still in the process of developing our proprietary products and have not yet brought any such products to market, the use of traditional performance standards, such as profit levels and return on equity, are not appropriate in our evaluation of executive officer performance.

Each eligible position, including the executive officers, is assigned a target bonus opportunity expressed as a percentage of base salary, which reflects market competitive levels. Target bonus opportunities are generally positioned at the 50th percentile of the market. For Mr. Mann, the target bonus opportunity for 2008 was 50% of base salary. The target bonuses for the other named executive officers for 2008 were as follows: Mr. Edstrom, 50%; Mr. Pfeffer, 35%; Dr. Richardson, 40%; and Dr. Martens, 35%. Payments of target bonuses are not guaranteed and are subject to funding and corporate and individual performance.

Our bonus plan was funded based on the achievement of overall corporate goals, based on a careful review by the Compensation Committee of the accomplishments of the Company during the previous year. For 2008, the annual incentive awards of our named executive officers were determined solely by performance against corporate objectives.

The corporate objectives for 2008, their relative weight and the achievement levels for each were as follows:

Objective	Weight	Score
Prepare a high quality NDA for AFRESA	30%	100%
Determine the commercialization strategy for AFRESA	40%	95%
Complete the Danbury manufacturing facility	20%	150%
Expand the Company s pipeline of product opportunities	10%	125%

As a result, the Compensation Committee determined that the Company achieved 110% of the corporate goals for 2008. Accordingly, for 2008, each of the named executive officers will receive a bonus payment that represents 110% of his target award.

Long-Term Incentives

In order to provide a significant retention incentive and to ensure a strong link to the long-term interests of shareholders, we provide a portion of our total compensation in the form of equity compensation specifically, stock options and restricted stock units. Executive officers, as well as all full-time employees, are eligible to receive awards at the discretion of the Compensation Committee. Equity awards are granted under the 2004 Equity Incentive Plan, or the Plan, which is administered by the Compensation Committee.

In 2007, we adopted annual and new hire equity grant guidelines that formed the baseline for the number of awards granted to each executive. In developing these guidelines, the Compensation Committee utilized published surveys

and peer compensation information to determine an appropriate and competitive annual award value. This value also took into consideration historical grant practices, internal pay equity, and share dilution. The intended award value was then split between stock options and restricted stock units. The guidelines for executive officers seek to deliver approximately 75% of the award value in stock options and 25% of the award value in restricted stock

Table of Contents

units. We believe this mix of equity aligns with the interests of stockholders and encourages both stock price growth and retention. The majority of equity compensation is delivered in stock options, which have no intrinsic value unless the stock price appreciates. Awards of restricted stock units foster equity ownership and encourage retention. Restricted stock units also require fewer shares than an equivalent grant value in stock options. We target equity compensation at the median of the competitive market.

Our policy with regard to the timing of grants of equity compensation is to issue equity awards in the form of options and restricted stock units in connection with an employee s hire date, or promotion date as well as in connection with an annual grant of equity awards that generally occurs in August of each year. All employee grants are approved by the Compensation Committee at its regularly scheduled quarterly meeting with the grant date on or after the approval date. The timing of grant dates is not based on any favorable or unfavorable non-public information anticipated to be disclosed at a later date. All stock option awards are granted with an exercise price equal to the closing sale price of our common stock on the Nasdaq Global Market on the date of grant.

Stock options typically vest over a four-year period, with a one-year cliff for 25% of the award and 1/48 of the award vesting monthly thereafter. Options expire ten years from the date of grant. Awards of restricted stock units vest 25% per year over four years. The vesting of all awards ceases when an employee leaves our employ.

The named executive officers received awards in August 2008 that vest on a time basis as part of the annual grants of equity awards. These awards were made in accordance with the guidelines adopted by the Compensation Committee.

In February 2008, the Compensation Committee recommended to the Board of Directors and the Board of Directors authorized the Compensation Committee to grant a specified number of restricted stock units to the majority of our employees, including executives. This proposal was designed to encourage employee retention during a busy and critical period for us. A total of 1,678,674 restricted stock units were granted. All units remain unvested until June 30, 2009, at which point they will fully vest.

On July 9, 2008, we announced an Offer to Exchange Outstanding Options to Purchase Common Stock, or the Offer, under which we offered eligible employees, including our named executive officers, the opportunity to exchange up to an aggregate of 5,417,840 shares underlying of their out-of-the money stock options, on a grant by grant basis, for a reduced number of restricted stock units that vest according to the following vesting schedule: 50% on August 1, 2009, 25% on February 1, 2010, and 25% on August 1, 2010. Eligible options consisted of outstanding stock options under the Plan that had an exercise price equal to or greater than $7.00 per share. Eligible employees included all persons employed by us as of the Offer date and excluded members of the Board of Directors who were not our employees. Additionally, the Offer permitted eligible options that were subject to performance-based vesting to be exchanged for restricted stock units that vest in three installments as follows: 20% upon the acceptance by the FDA of a filing of an NDA for AFRESA, 30% upon approval from the FDA to market AFRESA and 50% upon the first commercial sale of AFRESA. The Offer expired on August 6, 2008. Pursuant to the Offer, we accepted for exchange options to purchase an aggregate of 4,493,509 shares of our common stock from 322 eligible participants, representing 83% of the shares subject to options that were eligible to be exchanged in the Offer.

Other Benefits

We provide a competitive benefits package to all full-time employees, which includes health and welfare benefits, such as medical, dental, vision care, life insurance benefits, and a 401(k) savings plan. Executives, including the named executive officers, receive additional benefits, including additional life insurance, as well as short-term and long-term disability insurance.

In November 2008, the Compensation Committee approved a benefit that would make our medical plans available to executives who retire from employment with us after reaching age 65 or early (age 55 - 64). Early retiring executives would be able to access all of the Aetna plans currently offered to active employees and the Aetna Premium PPO plan would be available to retirees age 65 and over as a supplement to Medicare coverage. The premiums for these plans will be paid 100% by the retiring executive.

In 2008, our executive officers also received an automobile allowance of $1,000 per month. Mr. Edstrom received an automobile allowance of $1,300 per month. Mr. Mann received no automobile allowance in 2008. We have no other structured perquisite benefits (e.g. club memberships or financial planning services) for any executive officer,

including the named executive officers, and we currently do not provide any deferred compensation programs or supplemental pensions to any executive officer, including the named executive officers.

Employee Stock Purchase Plan

Table of Contents

In order to encourage stock ownership and provide greater incentives to contribute to our success at all levels, we provide all employees, including executive officers, the ability to purchase our common stock at a discount. The plan is designed to comply with section 423 of the Internal Revenue Code and provides all employees with the opportunity to purchase up to $25,000 of common stock annually at a purchase price that is the lower of 85% of the fair market value of the common stock on either the date of purchase or the commencement of the offering period. The executive s rights under the employee stock purchase plan are identical to those of all other employees.

Severance Provisions

We have entered into severance agreements with our executives, including each of the named executive officers other than Mr. Mann, in order to ensure that we have the continued dedication of such executives and in order to provide such executives with reasonable compensation and benefit arrangements in the event of termination of their employment. We believe that it is imperative to diminish any distraction of our executives arising from the personal uncertainty and insecurity that arises in the absence of any assurance of job security, thereby allowing executives to focus on corporate objectives and strategy. The terms of these agreements and amounts that may be realized are detailed under the heading Potential Payments Upon Termination Or Change Of Control.

Change in Control Provisions

We have entered into change of control agreements with our executives, including each of the named executive officers other than Mr. Mann, in order to ensure that we have the continued dedication of such executives and in order to provide such executives with reasonable compensation and benefit arrangements in the event of termination of their employment following a change of control. We believe that it is imperative to diminish any distraction of our executives arising from the personal uncertainty and insecurity that arises in the absence of any assurance of job security, thereby allowing executives to focus on corporate objectives and strategy. The terms of these agreements and amounts that may be realized are detailed under the heading Potential Payments Upon Termination Or Change of Control.

Summary Compensation Table

The following table includes information concerning compensation received for the fiscal years ended December 31, 2008, 2007 and 2006, by our named executive officers:

Name and Principal Position	Year	Salary ($)(1)	Restricted Stock Awards ($)	Option Awards ($)(2)	Non-Equity Incentive Plan Compensation ($)(3)	All Other Compensation ($)(4)	Total ($)
Alfred E. Mann	2008	$ 743,077	$ 1,980,495	$ 212,678	$ 408,692	$ 6,594(5)	$ 3,351,536
Chief Executive Officer and Chairman of the Board of Directors	2007	$ 449,231	$ 707,000	$ 863,308	$ 240,339	$ 5,591	$ 2,265,469
	2006	$ 409,615	$ 746,863	$ 1,248,740	$ 184,327	$ 2,240	$ 2,591,785
Matthew J. Pfeffer (6)							
Corporate Vice President and Chief Financial Officer	2008	$ 235,577	$ 14,827	$ 48,657	$ 90,697	$ 184,468(7)	$ 574,226
Hakan S. Edstrom	2008	$ 583,269	$ 1,822,018	$ 83,285	$ 296,048	$ 24,753(8)	$ 2,809,373
President, Chief Operating Officer and Director	2007	$ 449,231	$ 412,347	$ 1,002,956	$ 240,339	$ 30,639	$ 2,135,512
	2006	$ 409,615	$ 418,702	$ 905,098	$ 184,327	$ 25,508	$ 1,943,250
Dr. Peter Richardson	2008	$ 377,585	$ 728,197	$ 25,238	$ 166,137	$ 15,239(9)	$ 1,312,396
Corporate Vice President, Chief Scientific Officer	2007	$ 359,423	$ 205,103	$ 179,070	$ 161,231	$ 13,095	$ 917,922

Juergen A. Martens, Ph.D. *Corporate Vice President, Chief Technical Officer*	2008	$ 323,577	$ 661,601	$ 25,238	$ 124,577	$ 21,849(10)	$ 1,156,842

Table of Contents

(1) Includes amounts earned but deferred at the election of the named executive officer, such as salary deferrals under our 401(k) Plan established under Section 401(k) of the Internal Revenue Code.

(2) Reference Note 10 Stock Award Plans in Part IV, Item 15 of this Form 10-K for the period ended December 31, 2008 which identifies the assumptions made in the valuation of option awards in accordance with FAS 123R.

(3) Non-Equity Incentive Plan compensation is based on individual performance in the achievement of corporate objectives. Performance is compared to these objectives annually. For 2008, the amounts represent what

was earned by each of the named executive officers scheduled to be paid in March 2009.

(4) Amounts include employer contributions credited under our 401(k) Plan and the incremental cost of perquisites received by the named executive officers. Under the 401(k) Plan, which is open to substantially all of our employees, we make matching contributions based on each participant s voluntary salary deferrals, subject to plan and Internal Revenue Code limits.

(5) Includes $6,594 in medical benefits.

(6) Effective April 21, 2008, Matthew J. Pfeffer was appointed to the position of Corporate Vice President and Chief Financial

Officer. Mr. Pfeffer s 2008 annual salary was $350,000.

(7) Includes $7,269 in auto allowance, $174,765 in reimbursed relocation expenses and $2,434 in contributions under the 401(k) Plan.

(8) Includes $15,600 in auto allowance, $2,841 in medical benefits, $250 in airline club and $6,062 in contributions under the 401(k) Plan.

(9) Includes $11,972 in auto allowance, $497 in medical benefits, $350 in airline club and $2,420 in contributions under the 401(k) Plan.

(10) Includes $11,972 in auto allowance, $3,800 in medical benefits, $300 in airline club and $5,777 in contributions under the 401(k)

Plan.

Grants of Plan-Based Awards

We grant options and restricted stock units to our employees, including the named executive officers, under the Plan. All options granted to our named executive officers are nonstatutory stock options that do not qualify as incentive stock options within the meaning of Section 422 of the Code. As of December 31, 2008, 5,591,101 options and 5,947,408 restricted stock units were outstanding under the Plan and an additional 2,048,783 shares of common stock were available for issuance under the Plan. Options expire ten years from date of grant.

The exercise price per share of each option granted to our named executive officers was equal to the fair market value on the date of the grant. The exercise price is payable in cash, shares of our common stock previously owned by the optionee or pursuant to the net exercise of the option.

The following table summarizes option grants to the named executive officers during the fiscal year ended December 31, 2008, and the value of the underlying securities held by each of these individuals at December 31, 2008. No stock appreciation rights covering our common stock were granted to any named executive officer in 2008.

Grants of Plan-Based Awards in Fiscal 2008

Table of Contents

Name	Grant Date	Equity Incentive Plan Awards Number of Shares of Stock or Units (1) (#)	All Other Stock Awards: Number of Shares of Stock or Units (2) (#)	All Other Option Awards: Number of Securities Underlying Options (3) (#)	Exercise or Base Price of Options Awards Options ($/Sh)	Market Price on Grant Date
Alfred E. Mann	2/6/2008		163,568			$7.44
	8/6/2008		166,500			$4.23
	8/13/2008			430,000	$3.89	$3.89
Matthew J. Pfeffer	4/28/2008			20,300	$2.86	$2.86
	4/28/2008	120,000			$2.86	$2.86
	4/28/2008	30,000				$2.86
	4/28/2008		4,500			$2.86
	8/13/2008			40,000	$3.89	$3.89
Hakan S. Edstrom	2/6/2008		124,575			$7.44
	8/6/2008		249,150			$4.23
	8/13/2008			330,000	$3.89	$3.89
Dr. Peter Richardson	2/6/2008		52,750			$7.44
	8/6/2008		45,500			$4.23
	8/6/2008	60,000				$4.23
	8/13/2008			100,000	$3.89	$3.89
Juergen A. Martens, Ph.D.	2/6/2008		52,675			$7.44
	8/6/2008		45,350			$4.23
	8/6/2008	60,000				$4.23
	8/13/2008			100,000	$3.89	$3.89

(1) Performance-based awards vest upon achieving three pre-determined performance milestones which are expected to occur over periods ranging from 27 months to 42 months.

(2)

Restricted stock awards vest annually over a four-year period, with the exception of awards issued as a result of the stock option exchange on August 6, 2008, which will vest 50% on August 1, 2009, 25% on February 1, 2010 and 25% on August 1, 2010.

(3) The options have exercise prices equal to the fair market value of our common stock on the date of grant, vest over a four-year period with a one-year cliff vesting monthly thereafter and expire ten years from the date of grant. Vesting ceases should the executive officer leave our employ.

Table of Contents

Outstanding Equity Awards at Fiscal Year End

The following table sets forth summary information regarding the outstanding equity awards at December 31, 2008 granted to each of our named executive officers.

	Option Awards					Stock Awards			
Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#)	Option Exercise Price ($)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units of Stock That Have not Vested ($)	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#)	Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested ($)
Alfred E. Mann	167,638			25.23	2/26/2012				
	73,333			25.23	4/30/2012				
	26,766	53,534		9.22	8/15/2017				
		430,000		3.89	8/13/2018				
						388,056	1,331,032		
Matthew J. Pfeffer		20,300		2.86	4/28/2018				
		40,000		3.89	8/13/2018				
			120,000	2.86	4/28/2018				
						4,500	15,435	30,000	102,900
Hakan S. Edstrom		330,000		3.89	8/13/2018				
						415,469	1,425,059		
Dr. Peter Richardson		100,000		3.89	8/13/2018				
						122,334	419,606	90,000	308,700
Juergen A. Martens, Ph.D.		100,000		3.89	8/13/2018				
						112,725	386,647	90,000	308,700

Option Exercises and Stock Vested

The following table contains information relating to the exercise of options by the named executive officers during the fiscal year ended December 31, 2008.

Options Exercises and Stock Vested in Fiscal 2008

	Option Awards(1)		Stock Awards(2)	
Name	**Number of Shares Acquired on Exercise (#)**	**Value Realized on Exercise ($)**	**Number of Shares Acquired on Vesting (#)**	**Value Realized on Vesting ($)**
Alfred E. Mann			45,506	153,712
Matthew J. Pfeffer				
Hakan S. Edstrom			29,261	99,941
Dr. Peter Richardson			3,875	14,613
Juergen A. Martens, Ph.D.			5,850	30,765

(1) All options were granted under our 2004 Equity Incentive Plan.

(2) Stock awards acquired on vesting represent restricted stock awards that vest annually over a four-year period.

Potential Payments Upon Termination or Change of Control

Estimated Potential Payments

The table below sets forth the estimated current value of payments and benefits to each of the named executive officers upon termination or change of control. The amounts shown assume that the triggering event occurred on December 31, 2008 and do not include other benefits earned during the term of the named executive officer s employment that are available to all salaried employees, such as accrued vacation and benefits paid by insurance providers under life and disability policies.

Table of Contents

		Triggering Event	
		Termination ($)	Change in Control ($)
Alfred E. Mann(1)	Lump sum cash severance payment	$	$
	Continuing health and welfare benefits(2)		
	Value of extending exercisability term of stock options(3)		
	Intrinsic value of accelerated unvested stock options(4)		
	Total	$	$
Matthew J. Pfeffer	Lump sum cash severance payment	$ 647,500	$ 708,750
	Continuing health and welfare benefits(2)	26,392	26,392
	Value of extending exercisability term of stock options(3)		
	Intrinsic value of accelerated unvested stock options(4)	79,971	79,971
	Total	$ 753,863	$ 815,113
Hakan S. Edstrom	Lump sum cash severance payment	$ 1,041,556	$ 1,157,333
	Continuing health and welfare benefits(2)	17,911	17,911
	Value of extending exercisability term of stock options(3)		
	Intrinsic value of accelerated unvested stock options(4)		
	Total	$ 1,059,467	$ 1,175,244
Dr. Peter Richardson	Lump sum cash severance payment	$ 723,216	$ 801,324
	Continuing health and welfare benefits(2)	32,810	32,810
	Value of extending exercisability term of stock options(3)		
	Intrinsic value of accelerated unvested stock options(4)		
	Total	$ 756,026	$ 834,134
Juergen A. Martens, Ph.D.	Lump sum cash severance payment	658,805	718,208
	Continuing health and welfare benefits(2)	32,810	32,810
	Value of extending exercisability term of stock options(3)		
	Intrinsic value of accelerated unvested stock options(4)		
	Total	$ 691,615	$ 751,018

(1) We have entered into severance and change of control agreements with our executives, including each of the named executive officers other than Mr. Mann. Accordingly, there are no potential payments to Mr. Mann upon termination or change of control.

(2) Represents the estimated cost of providing or paying for continuing medical and dental coverage for 18 months. The amounts for medical and dental insurance coverage are based on rates charged to our employees for post-employment coverage provided in accordance with the Consolidated Omnibus Reconciliation Act of 1985, or COBRA.

(3) Represents the fair value of the stock options held by the named executive officer

that would be exercisable for a period ending on the earlier of 18 months following the triggering event or the end of the original term of the option.

(4) Per SEC rules, the intrinsic value of accelerated unvested stock options shown in the table above was calculated using the closing price of our common stock on December 31, 2008 ($3.43). The intrinsic value is the aggregate spread between $3.43 and the exercise price of the accelerated options, if less than $3.43.

Executive Severance Agreements

We have entered into executive severance agreements with Messrs. Edstrom and Pfeffer, Drs. Richardson, Martens, and Thomson, and Ms. Palumbo. Each agreement is for a period of two years and will be automatically renewed for additional one-year periods unless either party gives notice to terminate the agreement at least 90 days prior to the end of its initial term or any subsequent term.

The agreements provide that each executive is an at will employee and that his employment with us may be terminated at any time by the employee or us. Under the agreements, in the event we terminate an executive s employment without cause (as defined below) or the employee terminates his employment with us for good reason (as defined below), the employee is generally entitled to receive the following:

the portion of the employee s annual base salary earned through the termination date that was not paid prior to his termination, if any;

Table of Contents

on the condition the employee executes a general release and settlement agreement, or release, in favor of us, the employee s annual base salary on the date of termination for a period of 18 months following his termination, subject to certain limitations;

on the condition the employee executes a release, an amount equal to the average annual bonus received by the employee for the three years prior to his termination (or the prior period up to three years during which the employee was one of our executive officers and received a bonus);

in the event the employee met the performance criteria for earning an annual bonus prior to his termination, a portion of the annual bonus earned for the year based on the number of days worked during the year;

any compensation previously deferred by the employee and any accrued paid time-off that the employee is entitled to under our policy; and

on the condition the employee executes a release, health insurance and, under certain circumstances, life, disability and other insurance benefits for a period expiring on the earlier of 18 months following his termination or until he qualifies for related benefits from another employer.

In addition, the executive severance agreements provide that, on the condition the employee executes a release, each vested stock option held by the employee on the date of termination will be exercisable for a period ending on the earlier of 18 months following that date or the end of the original term of the option.

Under the agreements, an employee may be terminated for cause if he, among other things:

refuses to carry out or satisfactorily perform any of his lawful duties or any lawful instruction of our Board of Directors or senior management;

violates any local, state or federal law involving the commission of a crime other than a minor traffic offense;

is grossly negligent, engages in willful misconduct or breaches a fiduciary obligation to us;

engages in any act that materially compromises his reputation or ability to represent us with investors, customers or the public; or

reaches a mandatory retirement age established by us.

Under the agreements, good reason includes, among other things:

a reduction of the executive s annual base salary to a level below his salary as of October 10, 2007 (April 21, 2008 in the case of Mr. Pfeffer);

a material diminution in the executive s position, authority, duties or responsibilities with us, subject to certain limitations;

an order by us to relocate the executive to an office located more than 50 miles from the executive s current residence and worksite;

any non-renewal of the executive severance agreement by us, on the condition that the executive may terminate the agreement for good reason only during the 30-day period after he receives notice from us that we intend to terminate the agreement; and

any material violation of the executive severance agreement by us.

Under the agreements, an employee must inform us if he intends to terminate his agreement for good reason. We have 30 days from the date we receive notice of the employee s intent to terminate the agreement for good reason to cure the default.

Transition Agreement with Mr. Anderson

On December 20, 2007, we entered into an agreement with Mr. Anderson setting forth the terms of Mr. Anderson s transition to the position of Corporate Vice President Office of the Chairman, which commenced on April 1, 2008. In this new position, Mr. Anderson continues to report to Hakan Edstrom, our President and Chief Operating Officer, and works not less than 75% of a full-time schedule, for which Mr. Anderson is paid a salary equal to 75% of his salary in effect immediately prior to his transition to the

Table of Contents

new position. Mr. Anderson is eligible for a 2008 year-end bonus that will be proportionately adjusted to reflect the total salary paid to him during the year (as a percentage of the total salary that would have been paid to him if he had not transitioned to the new position). Upon his retirement on March 31, 2009, all of Mr. Anderson s unvested stock options and restricted stock unit awards that were subject to time-based vesting become vested, and the stock options will be exercisable until March 31, 2011, on which date any unexercised stock options will expire.

Under the agreement, Mr. Anderson continues as an at-will employee, and his employment may be terminated by either party prior to March 31, 2009. If we terminate Mr. Anderson s employment without cause (as defined in our standard form of executive severance agreement) or if Mr. Anderson terminates his employment for good reason (as defined in our standard form of executive severance agreement) or Mr. Anderson dies or becomes disabled, we must pay Mr. Anderson (i) an amount equal to the salary that he would have been paid had he worked until March 31, 2009, (ii) an amount equal to the average bonus paid or payable to Mr. Anderson for the three years preceding the year in which his employment terminates, and (iii) the premiums on the health insurance and additional health coverage for Mr. Anderson and his family members until March 31, 2009.

Change of Control Agreements

We have entered into change of control agreements with Messrs. Edstrom and Pfeffer, Drs. Richardson, Martens, and Thomson, and Ms. Palumbo. Each agreement is for a period of two years and will be automatically renewed for additional one-year periods unless either party gives notice to terminate the agreement at least 90 days prior to the end of its initial term or any subsequent term.

Under the agreements, a change of control will be deemed to occur upon:

- any transaction that results in a person or group acquiring beneficial ownership of 50% or more of our voting stock, other than us, one of our employee benefit plans, Mr. Mann or any other entity in which Mr. Mann holds a majority of the beneficial interests;
- any merger, consolidation or reorganization of us in which our stockholders immediately prior to the transaction hold less than 50% of the voting power of the surviving entity following the transaction, subject to certain limitations;
- any transaction in which we sell all or substantially all of our assets, subject to certain limitations;
- our liquidation; or
- any reorganization of our Board of Directors in which our incumbent directors (as defined in the agreements) cease for any reason to constitute a majority of the members of our board.

The agreements provide that in the event of a change of control, the employee is generally entitled to maintain the same position, authority and responsibilities held before the change of control, as well as the following compensation and benefits during the period ending on the earlier of 24 months following the change of control or the termination of his employment with us:

- his annual base salary in an amount equal or greater to his annual salary as of the date the change of control occurs;
- an annual bonus in an amount equal to the average annual bonus received by him for the three years prior to his termination (or the prior period up to three years during which he was one of our executive officers and received a bonus);
- medical, dental and other insurance, and any other benefits we may offer to our executives; and
- prompt reimbursement for all reasonable employment expenses incurred by him in accordance with our policies and procedures.

Under the change of control agreements, we may terminate an executive with or without cause (as defined below) and the executive may terminate his employment with us for good reason (as defined below) or any reason at any time during the 2-year period following a change of control. In the event we terminate an executive without cause or an executive terminates his employment with us for good reason, he is generally entitled to receive the following:

the portion of his annual base salary earned through the termination date that was not paid prior to his termination, if any;

on the condition the employee executes a release, the employee s annual base salary on the date of termination for a period of 18 months following his termination, subject to certain limitations;

Table of Contents

on the condition the employee executes a release, an amount equal to 150% of his average annual bonus received by the employee for the three years prior to his termination (or the prior period up to three years during which the employee was one of our executive officers and received a bonus);

in the event the employee met the performance criteria for earning an annual bonus prior to his termination, a portion of the annual bonus earned for the year based on the number of days worked during the year;

any compensation previously deferred by the employee and any accrued paid time-off that the employee is entitled to under our policy; and

on the condition the employee executes a release, health insurance and, under certain circumstances, life, disability and other insurance benefits for a period expiring on the earlier of 18 months following his termination or until he qualifies for related benefits from another employer.

In addition, the agreements provide that, on the condition the employee executes a release, each option to purchase shares of our common stock held by him as of the termination date will become fully vested and exercisable at any point during the term of the option, subject to certain limitations.

Under the agreements, in the event we terminate an employee with cause or an employee terminates his employment with us without good reason, his agreement will terminate without any further obligation to either party.

The change of control agreements provide that an employee may be terminated for cause if he, among other things:

refuses to carry out or satisfactorily perform any of his lawful duties or any lawful instruction of our Board of Directors or senior management;

violates any local, state or federal law involving the commission of a crime other than a minor traffic offense;

is grossly negligent, engages in willful misconduct or breaches a fiduciary obligation to us;

engages in any act that materially compromises his reputation or ability to represent us with investors, customers or the public; or

reaches a mandatory retirement age established by us before a change of control occurs.

Under the agreements, good reason includes, among other things:

a failure by us to make all compensation payments and provide all insurance and related benefits to the employee required under the agreement during his employment following a change of control, subject to certain limitations;

a material diminution in the employee s position, authority, duties or responsibilities with us;

an order by us to relocate the employee to an office located more than 50 miles from the employee s current residence and worksite;

any non-renewal of the change of control agreement by us, on the condition that the employee may terminate the agreement for good reason only during the 30-day period after he receives notice from us that we intend to terminate the agreement; and

any material violation of the change of control agreement by us.

Under the change of control agreements, an employee must inform us if he intends to terminate his agreement for good reason. We have 30 days from the date we receive notice of the employee s intent to terminate the agreement for good reason to cure the default.

The executive and change of control agreements provide that in the event an executive becomes entitled to benefits under both agreements, compensation payments and other benefits will be coordinated to ensure the executive is entitled to receive the benefits described above without duplicating coverage.

65

Table of Contents

COMPENSATION OF DIRECTORS

Fees

Each of our non-employee directors receives an annual retainer of $25,000 for service on the Board of Directors. Each of our non-employee directors who serve as a committee chairman receives, in addition to the annual retainer, an additional retainer of $3,000 per year for his or her service as committee chairman and committee members receive an additional retainer of $2,000 per year; provided, however, the Audit Committee chairman s additional retainer is $8,000 per year and each Audit Committee members additional retainer is $4,000 per year. Each of our non-employee directors also receives $2,000 for each meeting of the Board of Directors attended, and $750 for attending each meeting of any committee of the Board of Directors on which he or she serves. In the fiscal year ended December 31, 2008, the total compensation paid to non-employee directors was $336,050. The members of the Board of Directors are also eligible for reimbursement for their expenses incurred in attending Board of Directors meetings in accordance with Company policy.

Options

Each non-employee director of the Company also receives stock option grants under the 2004 Non-Employee Directors Stock Option Plan, or the Directors Plan. Only non-employee directors of the Company or an affiliate of such directors (as defined in the Internal Revenue Code of 1986, as amended, or the Code) are eligible to receive options under the Directors Plan. Options granted under the Directors Plan are intended by the Company not to qualify as incentive stock options under the Code.

Option grants under the Directors Plan are non-discretionary. Pursuant to the terms of the Directors Plan, each of our non-employee directors automatically receives, and each person who is elected or appointed for the first time to be a non-employee director will automatically receive, on the date of his or her initial election or appointment to our Board of Directors, an option to purchase 30,000 shares of our common stock as an initial grant, or the Initial Option. On the date of each of our annual stockholder meetings, each non-employee director is automatically granted an option to purchase 10,000 shares of our common stock as an annual grant under the Directors Plan, or the Annual Option. However, if a non-employee director has not been serving as a non-employee director for the entire period beginning from the preceding annual stockholders meeting, then the number of shares subject to such Annual Option shall be reduced proportionately for each full quarter prior to the date of the Annual Option during which such person did not serve as a non-employee director. No other options may be granted at any time under the Directors Plan.

The exercise price of options granted under the Directors Plan cannot be less than 100% of the fair market value of the common stock subject to the option on the date of the option grant. Acceptable consideration for the purchase of our common stock issued under the Directors Plan will be determined by our Board of Directors and may include cash or common stock previously owned by the optionee or may be paid through a broker assisted exercise or net exercise feature. All Initial Options vest in equal annual installments over three years. All Annual Options vest monthly over a period of three years. An optionee whose service relationship with us or any of our affiliates, whether as a non-employee director or subsequently as an employee, director or consultant to either us or one of our affiliates, ceases for any reason may exercise options for the term provided in the option agreement to the extent the options were exercisable on the date of termination. The term of options granted under the Directors Plan is ten years.

Our Board of Directors will administer the Directors Plan, but the Board of Directors may delegate authority to administer the Directors Plan to a committee of one or more members of the board. The Board of Directors has broad discretion to interpret and administer the Directors Plan. Our Board of Directors may amend or terminate the Directors Plan at any time. However, some amendments will require stockholder approval and no amendment or termination may adversely affect a non-employee directors outstanding options without the non-employee directors written consent.

In the event of a merger of us with or into another corporation or a consolidation, acquisition of assets or other change-in-control transaction involving us, the option will terminate if not exercised prior to the consummation of the transaction, unless the surviving entity or acquiring corporation chooses to assume any stock options outstanding under the Directors Plan or substitute similar stock options for those outstanding under the plan. Our Board of Directors will make appropriate adjustments for a stock split, reverse stock split, stock dividend, combination or reclassification of the stock, or any other increase or decrease in the number of issued shares of common stock

effected without our receipt of consideration.

Table of Contents

Director Compensation Table

Name	Fees Earned or Paid in Cash ($)	Option Awards ($)(1)	Restricted Stock Awards ($)(2)	Total ($)
Abraham E. Cohen	$ 44,750	$ 76,084	$ 38,900	$ 159,734
Ronald Consiglio	58,550	76,084	38,900	173,534
Michael A. Friedman	42,750	76,084	38,900	157,734
Kent Kresa	51,250	76,084	38,900	166,234
David MacCallum	49,750	76,084	38,900	164,734
Heather Hay Murren [3]	42,250	76,084	38,900	157,234
Henry L. Nordhoff	46,750	76,084	38,900	161,734

(1) These amounts reflect expense recognized by us in 2008. Reference Note 10 Stock Award Plans our financial statements for the period ended December 31, 2008, included in Part IV of this Form 10-K which identifies the assumptions made in the valuation of option awards in accordance with FAS 123R. All non-employee directors received a stock option to purchase 10,000 shares of our common stock upon re-election to the Board of Directors on May 22, 2008 and an additional grant

of 22,000 options on August 13, 2008. Options granted to non-employee directors vest monthly over a period of three years. The exercise price per share represents the fair market value of such common stock on the date of each respective grant (based on the closing sales price reported on the Nasdaq Global Market on the date of grant). We have no consulting agreements with any of our directors pursuant to which stock awards were issued. As of December 31, 2008, our non-employee directors had option grants outstanding to purchase 529,500 shares of our common stock.

(2) These amounts reflect expense recognized by us in 2008. Reference Note 10 Stock Award Plans our

financial statements for the period ended December 31, 2008, included in Part IV of this Form 10-K which identifies the assumptions made in the valuation of option awards in accordance with FAS 123R. All non-employee directors received restricted stock award grant of 10,000 shares on August 13, 2008. Restricted stock awards granted to non-employee directors vest annually over a period of three years. As of December 31, 2008, our non-employee directors had restricted stock grants outstanding to receive 60,000 shares of our common stock.

(3) On December 1, 2008, Heather Hay Murren, resigned from the Board of Directors effective immediately given that, having re-assumed the

role of Chief Executive Officer of the Nevada Cancer Institute, she anticipated that her increased duties would prevent her from continuing as a director.

Compensation Committee Interlocks and Insider Participation

During the fiscal year ended December 31, 2008, Messrs. Cohen and Kresa served on our Compensation Committee. Neither Mr. Cohen nor Mr. Kresa has ever been one of our officers or employees. During 2008, none of our executive officers served as a member of the Board of Directors or Compensation Committee of any other entity that had one or more executive officers who served on our Board of Directors or Compensation Committee.

COMPENSATION COMMITTEE REPORT

The material in this report is not soliciting material, is not deemed filed with the SEC and shall not be incorporated by reference into any filing of MannKind under the Securities Act or the Exchange Act, except to the extent MannKind specifically incorporates this report by reference.

The Compensation Committee has reviewed and discussed with management the Compensation Discussion and Analysis contained in this Annual Report on Form 10-K. Based on this review and discussion, the Compensation Committee has recommended to our Board of Directors that the Compensation Discussion and Analysis be incorporated into this Annual Report on Form 10-K for the fiscal year ended December 31, 2008.

Table of Contents

Compensation Committee
Kent Kresa (Chair)
Abraham E. Cohen
Michael Friedman

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

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth certain information regarding the ownership of the Company s common stock as of January 31, 2009 by: (i) each director and nominee for director; (ii) each of the executive officers named in the Summary Compensation Table; (iii) all executive officers and directors of the Company as a group; and (iv) all those known by the Company to be beneficial owners of more than five percent of its common stock. The table is based upon information supplied by our officers, directors and principal stockholders and a review of Schedules 13D and 13G, if any, filed with the SEC. Unless otherwise indicated in the footnotes to the table and subject to community property laws where applicable, we believe that each of the stockholders named in the table has sole voting and investment power with respect to the shares indicated as beneficially owned.

Applicable percentages are based on 102,013,623 shares outstanding on January 31, 2009, adjusted as required by rules promulgated by the SEC. These rules generally attribute beneficial ownership of securities to persons who possess sole or shared voting power or investment power with respect to those securities. In addition, the rules include shares of common stock issuable pursuant to the exercise of stock options or warrants that are either immediately exercisable or exercisable on April 1, 2009, which is 60 days after January 31, 2009. These shares are deemed to be outstanding and beneficially owned by the person holding those options or warrants for the purpose of computing the percentage ownership of that person, but they are not treated as outstanding for the purpose of computing the percentage ownership of any other person. Certain of the options in this table are exercisable at any time but, if exercised, are subject to a lapsing right of repurchase until the options are fully vested. Except as otherwise noted in the table, the address for each person or entity listed in the table is c/o MannKind Corporation, 28903 North Avenue Paine, Valencia, CA 91355.

	Beneficial Ownership	
Identity of Owner or Group	**Number of Shares**	**Percent of Total**
Named Executive Officers and Directors:		
Alfred E. Mann(1)(2)	48,487,184	47.5%
Matthew J. Pfeffer(2)	3,431	*
Hakan S. Edstrom(2)	95,735	*
Dr. Peter Richardson(2)	21,157	*
Juergen A. Martens, Ph.D.(2)	20,065	*
Abraham E. Cohen(2)	39,821	*
Ronald Consiglio(2)	72,609	*
Michael Friedman(2)	72,609	*
Kent Kresa(2)	115,109	*
David H. MacCallum(2)	66,775	*
Henry L. Nordhoff(2)	55,109	*
All current executive officers and directors as a group (14 persons)(2)	49,339,186	48.4%
Five Percent Stockholders:		
LMM LLC(3)	6,911,953	6.8%
FMR LLC(4)	12,468,321	12.2%

* Less than one percent.

(1) Includes (i) 39,677,899 shares held by the Alfred E. Mann Living Trust; (ii) 10,968 shares held by Mannco LLC, (iii) 4,025,979 shares held by Biomed Partners, LLC, and (v) 2,406,027 shares held by Biomed Partners II, LLC. The Alfred E. Mann Living Trust and MiniMed Infusion, Inc. are each 0.1% managing members of each of Biomed Partners, LLC and Biomed Partners II, LLC. Alfred Mann has voting and dispositive power over the shares owned by each of these entities.

(2) Includes shares described in the note above. Includes shares which certain executive officers, directors and principal stockholders of the Company have the right to acquire within

60 days after the date of this table pursuant to outstanding options and warrants, as follows: Alfred E. Mann Living Trust, 1,388,993 shares; Alfred E. Mann, 272,756 shares; Biomed Partners,

Table of Contents

LLC, 321,098; Juergen A. Martens, Ph.D., 2,100 shares; Abraham E. Cohen, 17,054 shares; Ronald Consiglio, 72,609 shares; Michael Friedman, 72,609 shares; Kent Kresa, 2,100 shares issuable pursuant to warrants and 60,109 pursuant to options; David H. MacCallum, 60,109 shares; and Henry L. Nordhoff, 55,109 shares. Also includes 14,986 shares owned by Diane Palumbo, our Corporate Vice President of Human Resources and 11,320 shares owned by David Thomson, our Corporate Vice President, General Counsel. Includes 261,676 shares beneficially owned by Richard Anderson, our Corporate Vice President, Office of the

Chairman, including 229,875 shares issuable upon his retirement on March 31, 2009, at which time all of his unvested stock options and restricted stock unit awards that were subject to time-based vesting become vested.

(3) The address of LMM LLC is 100 Light Street, Baltimore, Maryland 21202. Legg Mason Opportunity Trust and LMM LLC, the manager of such fund, share voting and dispositive power with respect to these shares, and therefore may be deemed beneficial owners of the shares.

(4) The address of FMR LLC is 82 Devonshire Street, Boston, Massachusetts 02109. Fidelity Management & Research Company (Fidelity), a

wholly-owned subsidiary of FMR LLC, beneficially owns the shares, including 334,219 shares issuable upon the exercise of outstanding warrants, as a result of acting as investment advisor to various investment companies, including Fidelity Contrafund, which owns 7,981,107 shares. Edward C. Johnson 3d and FMR LLC, through its control of Fidelity and the various Fidelity funds, each has sole power to dispose of such shares. The sole power to vote or direct the voting of these shares resides with the Boards of Trustees of the various funds.

SECURITIES AUTHORIZED FOR ISSUANCE UNDER EQUITY COMPENSATION PLANS

The following table provides certain information with respect to all of our equity compensation plans in effect as of December 31, 2008.

Equity Compensation Plan Information

	Number of Securities to be	Weighted-Average	Number of Securities Remaining Available for Issuance Under Equity

Plan Category	Issued Upon Exercise of Outstanding Options, Warrants and Rights (a)	Exercise Price of Outstanding Options, Warrants and Rights (b)	Compensation Plans (Excluding Securities Reflected in Column (a) (c)
Equity compensation plans approved by security holders	11,270,222	$ 2.91	3,026,271(1)
Equity compensation plans not approved by security holders	268,287(2)	$ 23.06	
Total	11,538,509		3,026,271

(1) Includes 2,048,783 shares available for issuance under the Plan and 977,488 shares available for purchase under our 2004 Employee Stock Purchase Plan. On the first day of each calendar year, for a period of ten years beginning on January 1, 2005, the share reserve under our 2004 Employee Stock Purchase Plan will automatically increase by the lesser of 700,000 shares or 1% of the total number of shares of our common stock outstanding on that date, or by an amount to be determined by our Board of Directors. On January 1, 2009, the available shares for

purchase under our 2004 Employee Stock Purchase Plan was increased by 700,000 shares.

(2) Includes options to purchase 27,315 shares under the AlleCure Corp. 2000 Stock Option and Stock Plan and the CTL ImmunoTherapies Corp. 2000 Stock Option and Stock Plan granted to employees and options to purchase 240,972 shares granted to Mr. Mann outside of our plans. Mr. Mann s options have the same terms as those granted under the Plan, described elsewhere in this proxy statement, and have an exercise price of $25.23 per share. All of these options were exercisable as of December 31, 2008.

The equity compensation plans that were in effect as of December 31, 2008 and that were adopted without the approval of our security holders are the AlleCure Corp. 2000 Stock Option and Stock Plan and the CTL ImmunoTherapies Corp. 2000 Stock Option and Stock Plan. The material terms of these plans are described below.

AlleCure Corp. 2000 Stock Option and Stock Plan and CTL ImmunoTherapies Corp. 2000 Stock Option and Stock Plan

Table of Contents

In connection with the acquisition by us of AlleCure Corp. and CTL ImmunoTherapies Corp. on December 12, 2001, we assumed all of the outstanding options granted under the AlleCure Corp. 2000 Stock Option and Stock Plan, or the AlleCure plan, and the CTL ImmunoTherapies Corp. 2000 Stock Option and Stock Plan, or the CTL plan. Subsequent to the acquisition, these options were adjusted to cover shares of our common stock at the exchange ratios set forth in the applicable merger agreements. As of December 31, 2007, options to purchase an aggregate of 34,296 shares of our common stock under the AlleCure plan and the CTL plan were outstanding. The AlleCure plan and CTL plan were terminated and we will not grant additional equity awards under the AlleCure plan or the CTL plan, which we collectively refer to as the 2000 plans.

Share reserve. Except with respect to the outstanding options referenced above, no shares of our common stock remain reserved or available for issuance under the 2000 plans.

Administration. Pursuant to the merger, our Board of Directors administers the 2000 plans, but the Board of Directors may delegate authority to administer the 2000 plans to a committee that complies with applicable law. Our Board of Directors has broad authority to administer the 2000 plans.

Eligibility of awards. The 2000 plans provided for the grant of ISOs, NSOs and stock purchase rights to employees, directors and consultants.

Stock options. Stock options were granted under the 2000 plans pursuant to a stock option agreement. Options granted under the 2000 plans have a maximum term of ten years and vest at the rate specified in the option agreements. Except in the case of options granted to officers, directors, and consultants, options become exercisable at a rate of no less than 20% per year over five years from the date the options were granted.

Acceptable consideration for the purchase of common stock issued pursuant to options granted under the 2000 plans includes cash, common stock previously owned by the optionee, a promissory note or consideration received through a cashless exercise program.

Generally, options under the 2000 plans may not be sold, pledged, assigned, hypothecated, transferred or disposed of in any manner other than by will or by laws of descent and distribution and may be exercised, during the lifetime of the optionee, only by the optionee.

Unless an optionee s stock option agreement provides for earlier termination, if an optionee s service relationship with us terminates due to disability or death, the optionee, or his or her beneficiary, generally may exercise any vested options for up to twelve months after the date the service relationship ends. If an optionee s relationship with us ceases for any reason other than disability or death, the optionee may exercise his or her option within the time specified in the option agreement, or if not specified, for three months. In no event may an option be exercised after the expiration of the term of the option set forth in the option agreement.

The administrator may at any time offer to buy out for a payment in cash or shares, an option previously granted, based on such terms and conditions as the administrator may establish and communicate to the optionee at the time such offer is made.

Stock purchase rights. Unless the administrator determines otherwise, a restricted stock purchase agreement grants us a repurchase option exercisable upon the voluntary or involuntary termination of the purchaser s service with us for any reason (including death or disability). The purchase price for shares repurchased pursuant to the restricted stock purchase agreement is the original price paid by the purchaser and may be paid by cancellation of any indebtedness of the purchaser. The repurchase option lapses at such rate as the administrator may determine. Except with respect to shares purchased by officers and directors, the repurchase option lapses at a rate of no less than 20% per year over five years from the date of purchase.

Corporate transactions or changes in control. Our Board of Directors will make appropriate adjustments for a stock split, reverse stock split, stock dividend, combination or reclassification of the stock, or any other increase or decrease in the number of issued shares of common stock effected without receipt of consideration by the company. In the event of the proposed dissolution or liquidation of the company, the administrator shall notify each optionee as soon as practicable prior to the effective date of such proposed transaction. The administrator in its discretion may provide for an optionee to have the right to exercise his or her option or stock purchase right until fifteen days prior to such transaction as to all of the optioned stock covered thereby, including shares as to which the option or stock purchase right would not otherwise be exercisable. In addition, the administrator may provide that any company

repurchase option applicable to any shares purchased upon exercise of an option or stock purchase right shall lapse as to all such shares, provided the proposed dissolution or liquidation takes place at the time and in the

Table of Contents

manner contemplated. To the extent it has not been previously exercised, an option or stock purchase right will terminate immediately prior to the consummation of such proposed action.

In addition, in the event we merge or sell all or substantially all of our assets, all outstanding stock awards under the 2000 plans will be assumed, continued or substituted for by any surviving or acquiring entity. If the surviving or acquiring entity elects not to assume, continue or substitute for these awards, each participant will be given notice of the transaction and permitted to exercise all outstanding awards held under the 2000 plans for a period of fifteen days after notice is provided. To the extent it has not been previously exercised, an option or stock purchase right will terminate at the end of such period.

Additional provisions. Our Board of Directors has the authority to amend outstanding awards granted under the 2000 plans, except that no amendment may adversely affect an award without the recipient s written consent. Our Board of Directors has the power to amend the 2000 plans. We are required to provide annual financial statements to participants in the 2000 plans.

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

CERTAIN TRANSACTIONS

The following is a description of transactions or series of transactions since January 1, 2008 to which we have been a party, in which the amount involved in the transaction or series of transactions exceeds $120,000, and in which any of our directors, executive officers or persons who we know held more than five percent of any class of our capital stock, including their immediate family members, had or will have a direct or indirect material interest, other than compensation arrangements, which are described under Management. We believe that the terms obtained or consideration that we paid or received, as applicable, in connection with the transactions described below were comparable to terms available or the amounts that would be paid or received, as applicable, in arm s-length transactions. In accordance with its charter, our Audit Committee approves or ratifies any related party transaction as required by NASDAQ rules.

Sales of Common Stock

Since January 1, 2008, we sold shares of our common stock as follows:

on June 30, 2008, we sold shares of common stock through our Employee Stock Purchase Plan at a purchase price of $2.60 per share to among other employees the following executive officers:

Purchaser	Shares	Total Purchase Price
Richard L. Anderson	3,140	$ 8,164

on December 31, 2008, we sold shares of common stock through our Employee Stock Purchase Plan at a purchase price of $2.55 per share to among other employees the following executive officer:

Purchaser	Shares	Total Purchase Price
Hakan S. Edstrom	5,294	$ 13,500
Matthew J. Pfeffer	3,431	$ 8,749

Other Transactions

On October 2, 2007, we entered into a new loan arrangement with Mr. Mann to borrow up to a total of $350.0 million before January 1, 2010. This new arrangement replaced the existing loan arrangement with Mr. Mann to borrow up to $150.0 million through August 1, 2008. On December 29, 2008, we received an installment of $30.0 million against this advance. As of December 31, 2008, the amount outstanding under the arrangement was $30.0 million. On February 26, 2009, as a result of our principal stockholder being licensed as a finance lender under the California Finance Lenders Law, the promissory note underlying the loan arrangement was revised to reflect the lender as The Mann Group LLC, or the Lender, an entity controlled by Mr. Mann. This new license also eliminated the draw restrictions under the previous loan arrangement and we are now able to borrow up to a total of $350.0 million from

time to time with appropriate notice to the Lender.

Table of Contents

In connection with certain meetings of our Board of Directors and on other occasions when our business necessitated air travel for Mr. Mann and other MannKind employees, we utilized Mr. Mann s private aircraft and we paid the charter company that manages the aircraft on behalf of Mr. Mann approximately $130,000 in 2008 on the basis of the corresponding cost of commercial airfare.

The above related-party transactions were approved by a majority or more of the disinterested members of our Board of Directors. We believe that the foregoing agreements were and continue to be in our best interests. It is our current policy that all agreements between us and any of our officers, directors, 5% stockholders, or any of their affiliates, will be entered into only if such agreements are approved by a majority of our disinterested directors and are on terms no less favorable to us than could be obtained from unaffiliated parties.

Independence of the Board of Directors

As required under the Nasdaq Stock Market, or Nasdaq**,** listing standards, a majority of the members of a listed company s Board of Directors must qualify as independent, as affirmatively determined by the Board of Directors. The Board of Directors consults with our counsel to ensure that the board s determinations are consistent with all relevant securities and other laws and regulations regarding the definition of independent, including those set forth in pertinent listing standards of the Nasdaq, as in effect time to time.

Consistent with these considerations, after review of all relevant transactions or relationships between each director, or any of his family members, and us, our senior management and our independent auditors, the Board of Directors affirmatively has determined that all of our directors other than Mr. Mann and Mr. Edstrom are independent directors within the meaning of the applicable Nasdaq listing standards. In making this determination, the board found that none of the directors have a material or other disqualifying relationship with us.

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

Principal Accounting Fees And Services

The following table represents aggregate fees billed to the Company for fiscal years ended December 31, 2008 and 2007 by Deloitte, the Company s principal accountant.

	Fiscal Year Ended December 31,	
	2008	**2007**
	(In thousands)	
Audit Fees(1)	$ 1,259,079	$ 1,661,750
Tax Fees(2)	98,924	138,200
All Other Fees(3)	32,745	10,639
Total Fees	$ 1,390,748	$ 1,810,589

(1) Represents the aggregate fees billed for professional services rendered for the integrated audit and/or reviews of our financial statements and in connection with our statutory and

regulatory filings or engagements. Also includes fees for services related to Sarbanes-Oxley and a tender offer that took place in August 2008.

(2) Represents tax preparation and compliance with various provisions of the Internal Revenue Code of 1986, as amended, or the Code.

(3) Represents tax consultation regarding the application of various provisions of the U.S. Tax Code.

All fees described above were pre-approved by the Audit Committee.

During the fiscal year ended December 31, 2008, none of the total hours expended on our financial audit by Deloitte were provided by persons other than Deloitte s full-time permanent employees.

Pre-Approval Policies And Procedures

Table of Contents

The Audit Committee has adopted a policy and procedures for the pre-approval of audit and non-audit services rendered by our independent auditor, Deloitte. The policy generally pre-approves specified services in the defined categories of audit services, audit-related services, tax services and other services up to specified amounts. Pre-approval may also be given on an individual explicit case-by-case basis before the independent auditor is engaged to provide each service. The pre-approval of services may be delegated to one or more of the Audit Committee s members, but the decision must be reported to the full Audit Committee at its next scheduled meeting. The delegation of pre-approval of services is limited to non-audit services, as set forth in the Audit Committee Charter.

The Audit Committee has determined that the rendering of the services other than audit services by Deloitte is compatible with maintaining Deloitte s independence.

Table of Contents

PART IV

Item 15. ***Exhibits and Financial Statement Schedules***

(a) The following documents are filed as part of, or incorporated by reference into, this Annual Report on Form 10-K:

(1)(2) Financial Statements and Financial Statement Schedules. The following Financial Statements of MannKind Corporation, Financial Statement Schedules and Report of Independent Registered Public Accounting Firm are included in a separate section of this report beginning on page F-2:

Report of Independent Registered Public Accounting Firm	71
Balance Sheets	72
Statements of Operations	73
Statements of Stockholders Equity (Deficit)	74
Statements of Cash Flows	78
Notes to Financial Statements	80

All financial statement schedules have been omitted because the required information is not applicable or not present in amounts sufficient to require submission of the schedule, or because the information required is included in the consolidated financial statements or the notes thereto.

(3) Exhibits. The exhibits listed under Item 15(c) hereof are filed with, or incorporated by reference into, this Annual Report on Form 10-K. Each management contract or compensatory plan or arrangement is identified separately in Item 15(c) hereof.

(c) Exhibits. The following exhibits are filed as part of, or incorporated by reference into, this Annual Report on Form 10-K:

Table of Contents

Exhibit Index

Exhibit Number	Description of Document
3.1(1)	Amended and Restated Certificate of Incorporation.
3.2(12)	Certificate of Amendment of Amended and Restated Certificate of Incorporation.
3.3(9)	Amended and Restated Bylaws.
4.1(10)	Indenture, by and between MannKind and Wells Fargo Bank, N.A., dated November 1, 2006.
4.2(3)	First Supplemental Indenture, by and between MannKind and Wells Fargo Bank, N.A., dated December 12, 2006.
4.3(3)	Form of 3.75% Senior Convertible Note due 2013.
4.4(1)	Form of common stock certificate.
4.5(1)	Registration Rights Agreement, dated October 15, 1998 by and among CTL ImmunoTherapies Corp., Medical Research Group, LLC, McLean Watson Advisory Inc. and Alfred E. Mann, as amended.
10.1	Promissory Note made by MannKind in favor of The Mann Group LLC dated February 26, 2009.
10.2(12)	Agreement, dated September 13, 2006, between MannKind and Torcon, Inc.
10.3(2)	Securities Purchase Agreement, dated August 2, 2005 by and among MannKind and the purchasers listed on Exhibit A thereto.
10.4**(4)	Supply Agreement, dated December 31, 2004, between MannKind and Vaupell, Inc.
10.5*(1)	Form of Indemnity Agreement entered into between MannKind and each of its directors and officers.
10.6*(8)	Description of Officers Incentive Program.
10.7*(5)	Description of 2006 executive officer salaries.
10.8*(5)	Description of 2006 non-employee director compensation.
10.9*(11)	Executive Severance Agreement, dated October 10, 2007, between MannKind and Hakan Edstrom.
10.10*(11)	Executive Severance Agreement, dated October 10, 2007, between MannKind and David Thomson.
10.11*(11)	Executive Severance Agreement, dated October 10, 2007, between MannKind and Peter Richardson.
10.12*(11)	Executive Severance Agreement, dated October 10, 2007, between MannKind and Juergen Martens.
10.13*(11)	Executive Severance Agreement, dated October 10, 2007, between MannKind and Diane Palumbo.
10.14*(11)	Executive Severance Agreement, dated April 21, 2008, between MannKind and Matthew J. Pfeffer.
10.15*(11)	Change of Control Agreement, dated October 10, 2007, between MannKind and Hakan Edstrom.
10.16*(11)	Change of Control Agreement, dated October 10, 2007, between MannKind and David Thomson.
10.17*(11)	Change of Control Agreement, dated October 10, 2007, between MannKind and Peter Richardson.
10.18*(11)	Change of Control Agreement, dated October 10, 2007, between MannKind and Juergen Martens.
10.19*(11)	Change of Control Agreement, dated October 10, 2007, between MannKind and Diane Palumbo.
10.20*(11)	Change of Control Agreement, dated April 21, 2008, between MannKind and Matthew J. Pfeffer.
10.21*(13)	Agreement dated December 20, 2007, between MannKind and Richard L. Anderson.
10.22*(7)	2004 Equity Incentive Plan, as amended.
10.23*(1)	Form of Stock Option Agreement under the 2004 Equity Incentive Plan.
10.24*(6)	Form of Phantom Stock Award Agreement under the 2004 Equity Incentive Plan.
10.25*(8)	2004 Non-Employee Directors Stock Option Plan and form of stock option agreement there under.
10.26*(1)	2004 Employee Stock Purchase Plan and form of offering document there under.
10.27*(1)	Pharmaceutical Discovery Corporation 1991 Stock Option Plan.
10.28*(1)	Pharmaceutical Discovery Corporation 1999 Stock Plan and form of stock option plan there under.
10.29*(1)	AlleCure Corp. 2000 Stock Option and Stock Plan.
10.30*(1)	CTL Immunotherapies Corp. 2000 Stock Option and Stock Plan.
10.31*(1)	2001 Stock Awards Plan.

Table of Contents

Exhibit Number	Description of Document
10.32**	Supply Agreement, dated November 16, 2007, between MannKind and N.V. Organon.
23.1	Consent of Independent Registered Public Accounting Firm
31.1	Certification of the Chief Executive Officer pursuant to Rules 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.
31.2	Certification of the Chief Financial Officer pursuant to Rules 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.
32	Certifications of the Chief Executive Officer and Chief Financial Officer pursuant to Rules 13a-14(b) and 15d-14(b) of the Securities Exchange Act of 1934, as amended and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. § 1350)

* Indicates management contract or compensatory plan.

** Confidential treatment has been granted with respect to certain portions of this exhibit. Omitted portions have been filed separately with the SEC.

(1) Incorporated by reference to MannKind s registration statement on Form S-1 (File No. 333-115020), filed with the SEC on April 30, 2004, as amended.

(2) Incorporated by reference to MannKind s current report on Form 8-K filed with the SEC on August 5, 2005.

(3) Incorporated by reference to MannKind s current report on Form 8-K filed with the SEC on December 12, 2006.

(4) Incorporated by reference to MannKind s current report on Form 8-K filed with the SEC on February 23, 2005.

(5) Incorporated by reference to MannKind s current report on Form 8-K filed with the SEC on February 22, 2006.

(6) Incorporated by reference to MannKind s current report on Form 8-K filed with the SEC on December 14, 2005.

(7) Incorporated by reference to MannKind s Quarterly Report on Form 10-Q filed with the SEC on May 29, 2008.

(8) Incorporated by reference to MannKind s Annual Report on Form 10-K filed with the SEC on March 16, 2006.

(9) Incorporated by reference to MannKind s Current Report on Form 8-K filed with the SEC on November 19, 2007.

(10) Incorporated by reference to MannKind s Registration Statement on Form S-3 (File No. 333-138373) filed with the SEC on November 2, 2006.

(11) Incorporated by reference to MannKind s Current Report on Form 8-K, as amended, filed with the SEC on October 16, 2007.

(12) Incorporated by reference to MannKind s Quarterly Report on Form 10-Q filed with the SEC on August 9, 2007.

(13) Incorporated by reference to MannKind s Quarterly Report on Form 10-Q filed with the SEC on December 20, 2007.

Table of Contents

SIGNATURES

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

Mannkind Corporation

By: /s/ Alfred E. Mann
Alfred E. Mann
Chief Executive Officer

Dated: February 27, 2009

POWER OF ATTORNEY

KNOW ALL BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Hakan S. Edstrom, Matthew Pfeffer and David Thomson, and each of them, as his or her true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him or her and in his or her name, place, and stead, in any and all capacities, to sign any and all amendments to this Report, and any other documents in connection therewith, and to file the same, with all exhibits thereto, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them or their or his substitute or substituted, may lawfully do or cause to be done by virtue hereof.

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

Signature	Title	Date
/s/ Alfred E. Mann Alfred E. Mann	Chief Executive Officer and Chairman of the Board of Directors *(Principal Executive Officer)*	February 27, 2009
/s/ Hakan S. Edstrom Hakan S. Edstrom	President, Chief Operating Officer and Director	February 27, 2009
/s/ Matthew J. Pfeffer Matthew J. Pfeffer	Corporate Vice President and Chief Financial Officer *(Principal Financial and Accounting Officer)*	February 27, 2009
/s/ A. E. Cohen A. E. Cohen	Director	February 27, 2009
/s/ Ronald J. Consiglio Ronald J. Consiglio	Director	February 27, 2009
/s/ Michael Friedman, M.D. Michael Friedman, M.D.	Director	February 27, 2009
/s/ Kent Kresa Kent Kresa	Director	February 27, 2009
/s/ David H. MacCallum	Director	February 27, 2009

David H. MacCallum		
/s/ Henry L. Nordhoff	Director	February 27, 2009
Henry L. Nordhoff		

Table of Contents

MANNKIND CORPORATION AND SUBSIDIARIES
(A Development Stage Company)
INDEX TO FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm	79
Balance Sheets	80
Statements of Operations	81
Statements of Stockholders Equity (Deficit)	82
Statements of Cash Flows	85
Notes to Financial Statements	87

Table of Contents

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of MannKind Corporation
Valencia, California

We have audited the accompanying balance sheets of MannKind Corporation (a development stage company) (the Company) as of December 31, 2007 and 2008 and the related statements of operations, stockholders equity (deficit), and cash flows for each of the three years in the period ended December 31, 2008 and for the period from February 14, 1991 (date of inception) to December 31, 2008. These financial statements are the responsibility of the Company s management. Our responsibility is to express an opinion on the 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. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, such financial statements present fairly, in all material respects, the financial position of MannKind Corporation as of December 31, 2007 and 2008, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2008 and for the period from February 14, 1991 (date of inception) to December 31, 2008, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the Company s internal control over financial reporting as of December 31, 2008, based on the criteria established in *Internal Control Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 27, 2009 expressed an unqualified opinion on the Company s internal control over financial reporting.

/s/ DELOITTE & TOUCHE LLP

Los Angeles, California
February 27, 2009

Table of Contents

MANNKIND CORPORATION AND SUBSIDIARIES
(A Development Stage Company)
BALANCE SHEETS

	December 31, 2007	2008
	(In thousands, except share data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 368,285	$ 27,648
Marketable securities		18,844
State research and development credit exchange receivable current	831	1,500
Prepaid expenses and other current assets	9,596	5,983
Total current assets	378,712	53,975
Property and equipment net	162,683	226,436
State research and development credit exchange receivable net of current portion	1,500	1,500
Other assets	548	548
Total	$ 543,443	$ 282,459
LIABILITIES AND STOCKHOLDERS EQUITY		
Current liabilities:		
Accounts payable	$ 35,463	$ 15,630
Accrued expenses and other current liabilities	32,095	37,842
Total current liabilities	67,558	53,472
Senior convertible notes	111,761	112,253
Note payable to related party		30,000
Other liabilities	24	
Total liabilities	179,343	195,725
Commitments and contingencies Stockholders equity:		
Undesignated preferred stock, $0.01 par value 10,000,000 shares authorized; no shares issued or outstanding at December 31, 2007 and 2008		
Common stock, $0.01 par value 150,000,000 shares authorized at December 31, 2007 and 2008; 101,380,823 and 102,008,096 shares issued and outstanding at December 31, 2007 and 2008, respectively	1,014	1,020
Additional paid-in capital	1,444,125	1,469,497
Accumulated other comprehensive income		295
Deficit accumulated during the development stage	(1,081,039)	(1,384,078)

Total stockholders equity	364,100	86,734
Total	$ 543,443	$ 282,459

See notes to financial statements.

Table of Contents

MANNKIND CORPORATION AND SUBSIDIARIES
(A Development Stage Company)
STATEMENTS OF OPERATIONS

	Year Ended December 31,			Cumulative Period from February 14, 1991 (Date of Inception) to December 31,
	2006	2007	2008	2008
	(In thousands, except per share data)			
Revenue	$ 100	$ 10	$ 20	$ 2,988
Operating expenses:				
Research and development	191,796	256,844	250,442	997,482
General and administrative	42,001	50,523	55,343	245,842
In-process research and development costs				19,726
Goodwill impairment				151,428
Total operating expenses	233,797	307,367	305,785	1,414,478
Loss from operations	(233,697)	(307,357)	(305,765)	(1,411,490)
Other income (expense)	208	(197)	(62)	(1,943)
Interest expense on note payable to principal stockholder	(1,511)		(12)	(1,523)
Interest expense on senior convertible notes	(222)	(3,408)	(2,327)	(5,957)
Interest income	4,679	17,775	5,129	36,861
Loss before provision for income taxes	(230,543)	(293,187)	(303,037)	(1,384,052)
Income taxes	(5)	(3)	(2)	(26)
Net loss	(230,548)	(293,190)	(303,039)	(1,384,078)
Deemed dividend related to beneficial conversion feature of convertible preferred stock				(22,260)
Accretion on redeemable preferred stock				(952)
Net loss applicable to common stockholders	$ (230,548)	$ (293,190)	$ (303,039)	$ (1,407,290)
Net loss per share applicable to common stockholders basic and diluted	$ (4.52)	$ (3.66)	$ (2.98)	
Shares used to compute basic and diluted net loss per share applicable to common stockholders	50,970	80,038	101,561	

See notes to financial statements.

Table of Contents

MANNKIND CORPORATION AND SUBSIDIARIES
(A Development Stage Company)
STATEMENTS OF STOCKHOLDERS EQUITY (DEFICIT)

	Series B Convertible Preferred Stock Shares	Series B Convertible Preferred Stock Amount	Series C Convertible Preferred Stock Shares	Series C Convertible Preferred Stock Amount	Stock Subscriptions Receivable	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Notes Receivable from Stockholders	Notes Receivable Officers	Other Comprehensive Income	Deficit Accumulated During the Development Stage	Total
Issuance of common stock for cash	$	$	$	$		998	$ 10	$ 890	$	$	$	$	$ 900
Net loss												(911)	(911)
BALANCE, FEBRUARY 29, 1992						998	10	890				(911)	(11)
Issuance of common stock for cash and services						73	1	887					888
Capital contribution								20					20
Net loss												(1,175)	(1,175)
BALANCE, FEBRUARY 28, 1993						1,071	11	1,797				(2,086)	(278)
Issuance of common stock for cash						11		526					526
Issuance of stock for notes receivable						8		400	(400)				
Net loss												(1,156)	(1,156)
BALANCE, FEBRUARY 28, 1994						1,090	11	2,723	(400)			(3,242)	(908)
						36		1,805					1,805

Issuance of common stock for cash and services						
Collection of stock subscription				400		400
Net loss					(2,004)	(2,004)
BALANCE, DECEMBER 31, 1994	1,126	11	4,528		(5,246)	(707)
Issuance of common stock for services			8			8
Exercise of stock options	1		22			22
Stock compensation			384			384
Net loss					(2,815)	(2,815)
BALANCE, DECEMBER 31, 1995	1,127	11	4,942		(8,061)	(3,108)
Issuance of common stock for cash and services	1		59			59
Exercise of stock options	3		12			12
Stock compensation			126			126
Net loss					(2,570)	(2,570)
BALANCE, DECEMBER 31, 1996	1,131	11	5,139		(10,631)	(5,481)
Issuance of common stock for cash and services	548	6	190			196
Stock compensation			2			2
Exercise of stock options	27		135			135
Conversion of notes payable	12		60			60
Net loss					(2,280)	(2,280)

BALANCE, DECEMBER 31, 1997			1,718	17	5,526		(12,911)	(7,368)
Issuance of common stock for cash and services			2,253	23	12,703			12,726
Stock compensation					150			150
Exercise of stock options			68	1	24			25
Conversion of notes payable			215	2	1,200			1,202
Net loss							(3,331)	(3,331)
BALANCE, DECEMBER 31, 1998			4,254	43	19,603		(16,242)	3,404
Issuance of common stock			162	2	532			534
Conversion of notes payable			80	1	994			995
Net loss							(5,679)	(5,679)
BALANCE, DECEMBER 31, 1999			4,496	46	21,129		(21,921)	(746)
Conversion of notes payable			63	1	1,073			1,074
Issuance of Series B preferred stock for cash	193	15,000						15,000
Issuance of common stock for cash, services and notes			4,690	46	33,945	(2,358)		31,633
Discount on notes below market rate						241		241
Accrued interest on notes						(117)		(117)
Purchase of Series A redeemable					(993)			(993)

convertible preferred stock								
Amount in excess of redemption obligation					999			999
Accretion to redemption value on Series A redeemable convertible preferred stock					(149)			(149)
Stock-based compensation					9,609			9,609
Net loss							(24,661)	(24,661)
BALANCE, DECEMBER 31, 2000	193	15,000	9,249	93	65,613	(2,234)	(46,582)	31,890
Issuance of common stock for cash			3,052	30	78,000			78,030
Cash received for common stock to be issued					3,900			3,900
Issuance of common stock for services			3		60			60
Exercise of stock options			1		13			13
Accrued interest on notes						(189)		(189)
Payments on notes receivable						28		28

Table of Contents

	Series B Convertible Preferred Stock		Series C Convertible Preferred Stock		Series C Convertible Preferred Stock Issuable	Stock Subscriptions Receivable	Common Stock		Additional Paid-In Capital	Notes Receivable from Stockholders	Notes Receivable from Officers	Other Comprehensive Income	Deficit Accumulated During the Development Stage	Total
	Shares	Amount	Shares	Amount			Shares	Amount						
retion to mption e on es A emable ertible erred k									(239)					(
k-based pensation ance of option by kholder ord ger of ies loss									1,565					1,
									(2,949)					(2,
									171,154					171,
													(48,245)	(48,
LANCE, CEMBER 2001	193	15,000					12,305	123	317,117	(2,395)			(94,827)	235,
ance of mon stock ash							3,922	40	58,775					58,
ance of mon stock ash dy ved							234	2	(2)					
ance of k award to loyee n received ommon k issuable rued							3		84					
									98					
										(229)				(
est on														

s ments on s vable							1,314		1,
eficial ersion re of es B ertible erred k						1,421			1,
med lend ed to ficial ersion re of es B ertible erred k						(1,421)			(1,
retion to mption e on es A emable ertible erred k						(251)			(
k-based pensation						268			
option mption by kholder						1,921			1,
loss								(206,265)	(206,
LANCE, CEMBER 2002	193	15,000			16,464	165	378,010	(1,310)	(301,092)	90,
ance of es C ertible erred k									
scriptions			50,000	(50,000)					
collected eries C ertible erred k				31,847					31,

criptions						
ance of						
mon stock						
ash	3,494	35	49,965			50,
-cash						
pensation						
nse of						
er						
ting from						
kholder						
ribution			70			
ance of						
mon stock						
ash						
dy						
ved	17					
s						
vable by						
kholder						
d to						
ers			225		(225)	
ued						
est on						
s				(102)	(3)	(
ficial						
ersion						
re of						
es B						
ertible						
erred						
k			1,017			1,
med						
lend						
ed to						
ficial						
ersion						
re of						
es B						
ertible						
erred						
k			(1,017)			(1,
etion to						
mption						
e on						
es A						
emable						
ertible						
erred						
k			(253)			(
k-based						
pensation			4,501			4,

shares to rity kholder								623				
oss											(65,879)	(65,
LANCE, CEMBER 2003	193	15,000			50,000	(18,153)	19,975	200	433,141	(1,412)	(228)	(366,971)	111,
ance of es C ertible erred k for cash			356	18,153	(18,153)	18,153							18,
ance of es C ertible erred k for cash dy ved			624	31,847	(31,847)								
cise of k options							86		1,079				1,
cise of ants							4		46				
rued est on s										(107)			(
ayment of s vable by kholder d to ers									(225)		228		
ayment of k note vable							(90)	(1)	(1,518)	1,519			
version of es A ertible erred k to mon stock							891	9	5,239				5,
version of es B ertible erred k to mon stock	(193)	(15,000)					811	8	14,992				
			(980)	(50,000)			4,464	45	49,955				

version of es C ertible erred k to mon stock ance of mon es in ange for ants	22				
ance of mon es under loyee k hase Plan	36		430		
proceeds initial ic ring	6,557	66	83,110		83,
eficial ersion ure of es B ertible erred k			19,822		19,
med lends ed to ficial ersion ure of es B and es C ertible erred k			(19,822)		(19,
retion to mption e on es A emable ertible erred k			(60)		
k-based pensation			6,810		6,
loss				(75,992)	(75,

83

Table of Contents

	Series B Convertible Preferred Stock Shares	Series B Convertible Preferred Stock Amount	Series C Convertible Preferred Stock Shares	Series C Convertible Preferred Stock Amount	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Notes Receivable from Stockholders	Notes Receivable Other	Accumulated Other Comprehensive Income	Deficit Accumulated During the Development Stage	Total
BALANCE, DECEMBER 31, 2004					32,756	327	592,999				(442,963)	150,363
Issuance of common shares in exchange for warrants					24		245					245
Issuance of common shares under Employee Stock Purchase Plan					58	1	494					495
Exercise of stock options					304	3	1,948					1,951
Issuance of stock awards to consultants					40	1	(146)					(145)
Issuance of stock and warrants for cash					17,132	171	170,063					170,234
Stock-based compensation							(1,828)					(1,828)
Net loss											(114,338)	(114,338)
BALANCE, DECEMBER 31, 2005					50,314	503	763,775				(557,301)	206,977
Exercise of warrants					339	3	2,691					2,694
Issuance of common shares under Employee Stock Purchase Plan					86	1	980					981
Exercise of stock options					263	3	2,309					2,312

Cancellation of common shares for stock notes receivable	(844)	(8)	8		
Issuance of stock for cash	23,000	230	384,440		384,670
Issuance of common shares from the release of restricted stock units	102	1	(341)		(340)
Issuance of common shares pursuant to research agreement	100	1	2,073		2,074
Stock-based compensation			14,667		14,667
Net loss				(230,548)	(230,548)
BALANCE, DECEMBER 31, 2006	73,360	734	1,170,602	(787,849)	383,487
Issuance of common shares under Employee Stock Purchase Plan	124	1	1,064		1,065
Exercise of stock options	607	6	4,917		4,923
Issuance of stock awards to consultants	30		123		123
Issuance of stock for cash	27,014	270	249,480		249,750
Issuance of common shares from the release of restricted stock units	146	2	(526)		(524)
Issuance of common shares pursuant to research agreement	100	1	943		944
Stock-based compensation			17,522		17,522
Net loss				(293,190)	(293,190)

BALANCE, DECEMBER 31, 2007	101,381	1,014	1,444,125		(1,081,039)	364,100
Issuance of common shares under Employee Stock Purchase Plan	349	4	896			900
Issuance of stock awards to consultants	30		(18)			(18)
Issuance of common shares from the release of restricted stock units	248	2	(317)			(315)
Stock-based compensation			24,811			24,811
Comprehensive loss:						
Net loss					(303,039)	(303,039)
Unrealized gain (loss) on available-for-sale securities				295		295
Comprehensive loss						(302,744)
BALANCE, DECEMBER 31, 2008	102,008	1,020	1,469,497	295	(1,384,078)	86,734

See notes to financial statements.

Table of Contents

MANNKIND CORPORATION AND SUBSIDIARIES
(A Development Stage Company)
STATEMENTS OF CASH FLOWS

	Years Ended December 31,			Cumulative Period from February 14, 1991 (Date of Inception) to December 31,
	2006	2007	2008	2008
	(In thousands)			
CASH FLOWS FROM OPERATING ACTIVITIES:				
Net loss	$ (230,548)	$ (293,190)	$ (303,039)	$ (1,384,078)
Adjustments to reconcile net loss to net cash used in operating activities:				
Depreciation and amortization	8,517	8,973	12,287	60,414
Stock-based compensation expense	14,667	17,645	24,793	79,623
Stock expense for shares issued pursuant to research agreement	2,074	944		3,018
Loss on sale, abandonment/disposal or impairment of property and equipment	79	7,047	213	10,706
Accrued interest on investments, net of amortization of premiums (discounts)	204		(237)	(179)
In-process research and development				19,726
Discount on stockholder notes below market rate				241
Non-cash compensation expense of officer resulting from stockholder contribution				70
Accrued interest expense on notes payable to stockholders				1,538
Non-cash interest expense				3
Accrued interest on notes receivable				(747)
Goodwill impairment				151,428
Loss on available-for-sale securities				229
Changes in assets and liabilities:				
State research and development credit exchange receivable	(693)	1,587	(669)	(3,000)
Prepaid expenses and other current assets	(7,606)	2,654	3,613	(4,383)
Other assets	(77)	(186)		(548)
Accounts payable	7,168	16,265	(14,620)	12,360
Accrued expenses and other current liabilities	16,426	(6,885)	6,395	33,754
Other liabilities	(5)		(24)	(2)
Net cash used in operating activities	(189,794)	(245,146)	(271,288)	(1,019,827)
CASH FLOWS FROM INVESTING ACTIVITIES:				

Purchase of marketable securities	(154,431)	(169,801)	(63,651)	(790,601)
Sales of marketable securities	126,900	286,725	46,100	772,765
Purchase of property and equipment	(20,773)	(78,262)	(82,453)	(291,857)
Proceeds from sale of property and equipment	32		70	284
Net cash (used in) provided by investing activities	(48,272)	38,662	(99,934)	(309,409)
CASH FLOWS FROM FINANCING ACTIVITIES:				
Issuance of common stock and warrants	390,657	255,738	902	1,140,548
Collection of Series C convertible preferred stock subscriptions receivable				50,000
Issuance of Series B convertible preferred stock for cash				15,000
Cash received for common stock to be issued				3,900
Repurchase of common stock				(1,028)
Put shares sold to majority stockholder				623
Borrowings under lines of credit				4,220
Proceeds from notes receivables				1,742
Borrowings on notes payable from principal stockholder	70,000		30,000	100,000
Principal payments on notes payable to principal stockholder	(70,000)			(70,000)
Borrowings on notes payable				3,460
Principal payments on notes payable				(1,667)
Payable to stockholder	85			

Table of Contents

	Years Ended December 31,			Cumulative Period from February 14, 1991 (Date of Inception) to December 31,
	2006	2007	2008	2008
	(In thousands)			
Proceeds from senior convertible notes	111,267			111,267
Payment of employment taxes related to vested restricted stock units	(340)	(524)	(317)	(1,181)
Net cash provided by financing activities	501,584	255,214	30,585	1,356,884
NET (DECREASE) INCREASE IN CASH AND CASH EQUIVALENTS	$ 263,518	$ 48,730	$ (340,637)	$ 27,648
CASH AND CASH EQUIVALENTS, BEGINNING OF PERIOD	56,037	319,555	368,285	
CASH AND CASH EQUIVALENTS, END OF PERIOD	$ 319,555	$ 368,285	$ 27,648	$ 27,648
SUPPLEMENTAL CASH FLOWS DISCLOSURES:				
Cash paid for income taxes	$ 5	$ 3	$ 2	$ 26
Interest paid in cash	1,615	4,348	4,313	10,356
Accretion on redeemable convertible preferred stock				(952)
Issuance of common stock upon conversion of notes payable				3,331
Increase in additional paid-in capital resulting from merger				171,154
Issuance of common stock for notes receivable				2,758
Issuance of put option by stockholder				(2,949)
Put option redemption by stockholder				1,921
Issuance of Series C convertible preferred stock subscriptions				50,000
Issuance of Series A redeemable convertible preferred stock				4,296
Conversion of Series A redeemable convertible preferred stock				(5,248)
Non-cash construction in progress and property and equipment		13,219	6,597	6,597
Non-cash transfer from property and equipment to other current assets		1,600		

In connection with the Company s initial public offering, all shares of Series B and Series C convertible preferred stock, in the amount of $15.0 million and $50.0 million, respectively, automatically converted into common stock in August 2004.

See notes to financial statements.

Table of Contents

MANNKIND CORPORATION AND SUBSIDIARIES
(A Development Stage Company)
NOTES TO FINANCIAL STATEMENTS

1. Description of Business and Basis of Presentation

Business MannKind Corporation (the Company) is a biopharmaceutical company focused on the discovery, development and commercialization of therapeutic products for diseases such as diabetes and cancer. The Company s lead product candidate, AFRESA, is an ultra rapid-acting insulin that has completed Phase 3 clinical trials which evaluated its safety and efficacy in the treatment of diabetes. AFRESA consists of the Company s proprietary Technosphere particles onto which insulin molecules are loaded. These loaded particles are then aerosolized and inhaled deep into the lung using the Company s AFRESA inhaler.

Basis of Presentation The Company is considered to be in the development stage as its primary activities since incorporation have been establishing its facilities, recruiting personnel, conducting research and development, business development, business and financial planning, and raising capital. Since its inception through December 31, 2008 the Company has reported accumulated net losses of $1.4 billion, which include a goodwill impairment charge of $151.4 million (see Note 2), and cumulative negative cash flow from operations of $1.0 billion. It is costly to develop therapeutic products and conduct clinical trials for these products. At December 31, 2008 the Company s capital resources consisted of cash, cash equivalents, and marketable securities of $46.5 million and $320.0 million of available borrowings under the loan agreement with an entity controlled by the Company s principal shareholder (see Note 7). Based upon the Company s current expectations, management believes the Company s existing capital resources will enable it to continue planned operations through the first quarter of 2010. However, the Company cannot provide assurances that its plans will not change or that changed circumstances will not result in the depletion of its capital resources more rapidly than it currently anticipates. Accordingly, the Company expects that it will need to raise additional capital, either through the sale of equity and/or debt securities, a strategic business collaboration with a pharmaceutical company or the establishment of other funding facilities, in order to continue the development and commercialization of AFRESA and other product candidates and to support its other ongoing activities.

On December 12, 2001, the stockholders of AlleCure Corp. (AlleCure) and CTL ImmunoTherapies Corp. (CTL) voted to exchange their shares for shares of Pharmaceutical Discovery Corporation (PDC). Upon approval of the merger, PDC then changed its name to MannKind Corporation. PDC was incorporated in the State of Delaware on February 14, 1991. The stockholders of PDC did not vote on the merger. At the date of the merger, Mr. Alfred Mann owned 76% of PDC, 59% of AlleCure and 69% of CTL. Accordingly, only the minority interest of AlleCure and CTL was stepped up to fair value using the purchase method of accounting. As a result of this purchase accounting, in-process research and development of $19.7 million and goodwill of $151.4 million were recorded at the entity level. The historical basis of PDC and the historical basis relating to the ownership interests of Mr. Mann in AlleCure and CTL have been reflected in the financial statements. For periods prior to December 12, 2001, the results of operations have been presented on a combined basis. All references in the accompanying financial statements and notes to the financial statements to number of shares, sales price and per share amounts of the Company s capital stock have been retroactively restated to reflect the share exchange ratios for each of the entities that participated in the merger.

For periods subsequent to December 12, 2001, the accompanying financial statements have been presented on a consolidated basis and include the wholly-owned subsidiaries, AlleCure and CTL. On December 31, 2002, AlleCure and CTL merged with and into MannKind and ceased to be separate entities.

Segment Information In accordance with Financial Accounting Standards Board (FASB) Statement No. 131, *Disclosures about Segments of an Enterprise and Related Information*, operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision-maker in making decisions regarding resource allocation and assessing performance. To date, the Company has viewed its operations and manages its business as one segment operating entirely in the United States of America.

2. Summary of Significant Accounting Policies

Financial Statement Estimates The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

Table of Contents

Cash and Cash Equivalents The Company considers all highly liquid investments with a purchased maturity date of three months or less to be cash equivalents.

Concentration of Credit Risk Financial instruments that potentially subject the Company to concentration of credit risk consist of cash and cash equivalents and marketable securities. Cash and cash equivalents consist primarily of interest-bearing accounts and are regularly monitored by management and held in high credit quality institutions. Marketable securities consist of highly liquid short-term investment securities such as government and investment-grade corporate debt.

Marketable Securities The Company accounts for marketable securities as available for sale, in accordance with FASB Statement No. 115, *Accounting for Certain Debt and Equity Securities.* Unrealized holding gains and losses for available-for-sale securities are reported as a separate component of stockholders equity until realized. The Company reviews the portfolio for other than temporary impairment in accordance with Emerging Issues Task Force (EITF) Issue No. 03-01, *The Meaning of Other-Than-Temporary Impairment and Its Application to Certain Investments* and Financial Accounting Standards Board (FASB) Staff Position No. 115-1, *The Meaning of Other-Than-Temporary Impairment and Its Application to Certain Investments.*

State Research and Development Credit Exchange Receivable The State of Connecticut provides certain companies with the opportunity to exchange certain research and development income tax credit carryforwards for cash in exchange for foregoing the carryforward of the research and development credits. The program provides for an exchange of research and development income tax credits for cash equal to 65% of the value of corporation tax credit available for exchange. Estimated amounts receivable under the program are recorded as a reduction of research and development expenses.

Fair Value of Financial Instruments The carrying amounts of financial instruments, which include cash equivalents, marketable securities and accounts payable, approximate their fair values due to their relatively short maturities. The fair value of the note payable to related party cannot be reasonably estimated as the Company would not be able to obtain a similar credit arrangement in the current economic environment. The senior convertible notes had a carrying value of $111.8 million and $112.3 million and an estimated fair value of $95.2 million and $53.9 million as of December 31, 2007 and 2008, respectively.

Goodwill and Identifiable Intangibles As a result of the merger with AlleCure and CTL on December 12, 2001, as described in Note 1, goodwill of $151.4 million was recorded at the entity level in 2001. Upon adoption of FASB Statement No. 142, *Goodwill and Other Intangible Assets*, the Company adopted a policy of testing goodwill and intangible assets with indefinite lives for impairment at least annually, as of December 31, with any related impairment losses being recognized in earnings when identified. In December 2002 the Company concluded that the major AlleCure product development program should be terminated and that the clinical trials of the CTL product should be halted and returned to the research stage. As a result of this determination, the Company closed the CTL facility and reduced headcount for AlleCure and CTL by approximately 50%. In connection with the annual test for impairment of goodwill as of December 31, 2002, the Company determined that on the basis of the internal study, the goodwill recorded for the AlleCure and CTL units was potentially impaired. The Company performed the second step of the annual impairment test as of December 31, 2002 for each of the potentially impaired reporting units and estimated the fair value of the AlleCure and CTL programs using the expected present value of future cash flows which were expected to be negligible. Accordingly, the goodwill balance of $151.4 million was determined to be fully impaired and an impairment loss was recorded in 2002. Subsequent to December 31, 2002, the Company had no goodwill or intangibles with indefinite lives included on its balance sheet.

Property and Equipment Property and equipment are recorded at cost and depreciated using the straight-line method over the estimated useful lives of the related assets. Leasehold improvements are amortized over the term of the lease or the service lives of the improvements, whichever is shorter. Assets under construction are not depreciated until placed into service.

Impairment of Long-Lived Assets The Company evaluates long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable in accordance with FASB Statement No. 144, *Accounting for the Impairment or Disposal of Long Lived-Assets.* Assets are considered to be impaired if the carrying value may not be recoverable based upon management s assessment of the following events or

changes in circumstances:

Table of Contents

significant changes in the Company s strategic business objectives and utilization of the assets;

a determination that the carrying value of such assets can not be recovered through undiscounted cash flows;

loss of legal ownership or title to the assets; or

the impact of significant negative industry or economic trends.

If the Company believes an asset to be impaired, the impairment recognized is the amount by which the carrying value of the assets exceeds the fair value of the assets. Any write-downs would be treated as permanent reductions in the carrying amount of the asset and an operating loss would be recognized. For the year ended December 31, 2006 the Company did not consider any long-lived assets to be impaired based on management s assessment. During the years ended December 31, 2007 and 2008, asset impairments of approximately $6.6 million and $0.5 million, respectively, were recognized as described in Note 5 Property and Equipment.

Accounts Payable and Accrued Expenses All liabilities, including accounts payable and accrued expenses, are recorded consistent with the definition of liabilities and accrual accounting as provided by FASB Statement of Financial Accounting Concepts No. 6, *Elements of Financial Statements.*

Income Taxes In accordance with FASB Statement No. 109, *Accounting for Income Taxes,* deferred income tax assets and liabilities are recorded for the expected future tax consequences of temporary differences between the financial statement carrying amounts and the income tax basis of assets and liabilities. A valuation allowance is recorded to reduce net deferred income tax assets to amounts that are more likely than not to be realized (see Note 14).

Income tax positions are considered for uncertainty in accordance with FASB Interpretation No. 48, *Accounting for Uncertainty in Income Taxes an interpretation of FASB Statement No. 109* (FIN 48). The provisions of FIN 48 are effective beginning January 1, 2007. The Company believes that its income tax filing positions and deductions will be sustained on audit and does not anticipate any adjustments that will result in a material change to its financial position. Therefore, no reserves for uncertain income tax positions have been recorded pursuant to FIN 48. The cumulative effect, if any, of applying FIN 48 is to be reported as an adjustment to the opening balance of retained earnings in the year of adoption. The Company s adoption of FIN 48 did not result in a cumulative effect adjustment to retained earnings.

Significant management judgment is involved in determining the provision for income taxes, deferred tax assets and liabilities and any valuation allowance recorded against net deferred tax assets. Due to uncertainties related to deferred tax assets as a result of the history of operating losses, a valuation allowance has been established against the gross deferred tax asset balance. The valuation allowance is based on management s estimates of taxable income by jurisdiction in which the Company operates and the period over which deferred tax assets will be recoverable. In the event that actual results differ from these estimates or the Company adjusts these estimates in future periods, a change in the valuation allowance may be needed, which could materially impact the Company s financial position and results of operations.

Contingencies Contingencies are recorded in accordance with FASB Statement No. 5, *Accounting for Contingencies.*

Stock-Based Compensation As of December 31, 2008, the Company had three active stock-based compensation plans, which are described more fully in Note 10. On January 1, 2006, the Company adopted the provisions of FASB Statement No. 123R (FASB Statement No. 123R), *Share-based Payment*, which is a revision of FASB Statement No. 123 (FASB Statement No. 123), *Accounting for Stock-Based Compensation.* Prior to January 1, 2006, the Company accounted for employee stock options and the employee stock purchase plan using the intrinsic value method in accordance with Accounting Principles Board (APB) Opinion No. 25 (APB No. 25), *Accounting for Stock Issued to Employees*, and adopted the disclosure only alternative of FASB Statement No. 123. FASB Statement No. 123R eliminated the intrinsic value method of accounting for stock options which the Company followed until December 31, 2005. Further, FASB Statement No. 123R requires all share-based payments to employees, including grants of stock options and the compensatory elements of employee stock purchase plans, to be recognized in the income statement based upon the fair value of the awards at the grant date.

Upon adoption of FASB Statement No. 123R, the Company selected the modified prospective transition method whereby unvested awards at the date of adoption as well as awards that are granted, modified, or settled after the date of adoption will be measured and accounted for in accordance with FASB Statement No. 123R. Measurement and attribution of compensation cost for awards unvested

Table of Contents

as of January 1, 2006 is based on the same estimate of the grant-date or modification-date fair value and the same attribution method (straight-line) used previously under FASB Statement No. 123.

Warrants The Company has issued warrants to purchase shares of its common stock. Warrants have been accounted for as equity in accordance with the provisions of EITF Issue No. 00-19: *Accounting for Derivative Financial Instruments Indexed to, and Potentially Settled in, a Company s Own Stock.*

Comprehensive Income (Loss) - Other Comprehensive Income (loss) (OCI) is recorded in accordance with FASB Statement No. 130, *Reporting Comprehensive Income* , which requires that all components of comprehensive income (loss) be reported in the financial statements in the period in which they are recognized. OCI includes certain changes in stockholders equity that are excluded from net income. Specifically, the Company includes in OCI unrealized gains and losses on our available-for-sale securities.

Research and Development Expenses Research and development expenses consist primarily of costs associated with the clinical trials of the Company s product candidates, manufacturing supplies and other development materials, including raw material purchases of insulin, compensation and other expenses for research and development personnel, costs for consultants and related contract research, facility costs, and depreciation. Research and development costs, which are net of any tax credit exchange recognized for the Connecticut state research and development credit exchange program, are expensed as incurred consistent with FASB Statement No. 2, *Accounting for Research and Development Costs.*

Clinical Trial Expenses Clinical trial expenses, which are reflected in research and development expenses in the accompanying statements of operations, result from obligations under contracts with vendors, consultants, and clinical site agreements in connection with conducting clinical trials. The financial terms of these contracts are subject to negotiations which vary from contract to contract and may result in payment flows that do not match the periods over which materials or services are provided to the Company under such contracts. The appropriate level of trial expenses are reflected in the Company s financial statements by matching period expenses with period services and efforts expended. These expenses are recorded according to the progress of the trial as measured by patient progression and the timing of various aspects of the trial. Clinical trial accrual estimates are determined through discussions with internal clinical personnel and outside service providers as to the progress or state of completion of trials, or the services completed. Service provider status is then compared to the contractually obligated fee to be paid for such services. During the course of a clinical trial, the Company may adjust the rate of clinical expense recognized if actual results differ from management s estimates. The date on which certain services commence, the level of services performed on or before a given date and the cost of the services are often judgmental.

Interest Expense Interest costs are expensed as incurred, except to the extent such interest is related to construction in progress, in which case interest is capitalized in accordance with FASB Statement No. 34, *Capitalization of Interest Cost*. Interest expense, net, for the years ended December 31, 2007 and 2008 was $3.4 million and $2.3 million, respectively. Interest costs capitalized for the years ended December 31, 2007 and 2008 were $1.4 million and $2.5 million, respectively.

Net Loss Per Share of Common Stock Basic net loss per share excludes dilution for potentially dilutive securities and is computed by dividing loss applicable to common stockholders by the weighted average number of common shares outstanding during the period. Diluted net loss per share reflects the potential dilution that could occur if securities or other contracts to issue common stock were exercised or converted into common stock. Potentially dilutive securities are excluded from the computation of diluted net loss per share for all of the periods presented in the accompanying statements of operations because the reported net loss in each of these periods results in their inclusion being antidilutive.

Potentially dilutive securities outstanding are summarized as follows:

	December 31,		
	2006	**2007**	**2008**
Exercise of common stock options	6,216,698	6,886,657	5,591,101
Conversion of senior convertible notes into common stock	5,117,523	5,117,523	5,117,523

Exercise of common stock warrants	2,895,332	2,882,873	2,882,873
Vesting of restricted stock units	776,653	1,359,662	5,947,408

Exit or Disposal Activities FASB Statement No. 146, *Accounting for Costs Associated with Exit or Disposal Activities*, was effective for exit or disposal activities initiated after December 31, 2002. FASB Statement No. 146 addresses financial accounting and reporting for the costs associated with exit or disposal activities and EITF Issue No. 94-3, *Liability Recognition for Certain Employee*

Table of Contents

Termination Benefits and Costs to Exit and Disposal Activity (Including Certain Costs Incurred in a Restructuring). FASB Statement No. 146 requires that a liability for costs associated with an exit or disposal activity be recognized when the liability is incurred and establishes that fair value is the objective for initial measurements of the liability.

Recently Issued Accounting Standards In December 2007, the FASB ratified the EITF consensus on EITF Issue No. 07-1, *Accounting for Collaborative Arrangements,* that discusses how parties to a collaborative arrangement (which does not establish a legal entity within such arrangement) should account for various activities. The consensus indicates that costs incurred and revenues generated from transactions with third parties (i.e. parties outside of the collaborative arrangement) should be reported by the collaborators on the respective line items in their income statements pursuant to EITF Issue No. 99-19, *Reporting Revenue Gross as a Principal Versus Net as an Agent,* Additionally, the consensus provides that income statement characterization of payments between the participants in a collaborative arrangement should be based upon existing authoritative pronouncements; analogy to such pronouncements if not within their scope; or a reasonable, rational, and consistently applied accounting policy election. EITF Issue No. 07-1 is effective beginning January 1, 2009 and is to be applied retrospectively to all periods presented for collaborative arrangements existing as of the date of adoption. Management believes that the adoption of EITF No. 07-1 will not have an impact on the Company s results of operations, financial position or cash flows.

In December 2007, the FASB issued FASB Statement No. 141(R), *Business Combinations* and FASB Statement No. 160, *Accounting and Reporting of Noncontrolling Interests in Consolidated Financial Statements an amendment of ARB No. 51* (FASB Statement No. 160). These standards will significantly change the accounting and reporting for business combination transactions and noncontrolling (minority) interests in consolidated financial statements, including capitalizing at the acquisition date the fair value of acquired IPR&D, and remeasuring and writing down these assets, if necessary, in subsequent periods during their development. These new standards will be applied prospectively for business combinations that occur on or after January 1, 2009, except that presentation and disclosure requirements of FASB Statement No. 160 regarding noncontrolling interests shall be applied retrospectively. Adoption of these statements are expected to have a significant effect on how acquisition transactions, subsequent to January 1, 2009, are reflected in the financial statements.

As of January 1, 2008, the Company adopted on a prospective basis certain required provisions of Statement of Financial Accounting Standards (FASB Statement) No. 157, *Fair Value Measurements* (FASB Statement No. 157), as amended by FASB Financial Staff Position (FSP) No. 157-2. Those provisions relate to the Company s financial assets and liabilities carried at fair value and its fair value disclosures related to financial assets and liabilities. FASB Statement 157 defines fair value, expands related disclosure requirements and specifies a hierarchy of valuation techniques based on the nature of the inputs used to develop the fair value measures. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. There are three levels of inputs to fair value measurements Level 1, meaning the use of quoted prices for identical instruments in active markets; Level 2, meaning the use of quoted prices for similar instruments in active markets or quoted prices for identical or similar instruments in markets that are not active or are directly or indirectly observable; and Level 3, meaning the use of unobservable inputs. Observable market data should be used when available. All of the Company s marketable securities are classified as available-for-sale securities and are carried at fair value. The Company s valuation measurements for the available-for-sale securities are Level 2 measurements. The partial adoption of FASB Statement 157 did not have a significant impact on the Company s results of operations, financial position or cash flows. The adoption of FASB Statement No. 157, as it relates to nonfinancial assets and liabilities will not have a material effect on the Company s results of operations, financial position or cash flows.

In May 2008, the FASB issued FSP No. APB 14-1 (FSP No. APB 14-1), *Accounting for Convertible Debt Instruments that may be Settled in Cash Upon Conversion (Including Partial Cash Settlement).* FSP No. APB 14-1 establishes that the liability and equity components of convertible debt instruments within the scope of FSP APB No. 14-1 shall be separately accounted for in a manner that will reflect the entity s nonconvertible debt borrowing rate when interest cost is recognized in subsequent periods. The carrying amount of the liability component of the convertible debt instrument will be determined by measuring the fair value of a similar liability that does not have an

associated equity component. The carrying value of the equity component will be determined by deducting the fair value of the liability component from the initial proceeds ascribed to the convertible debt instrument as a whole. Related transaction costs shall be allocated to the liability and equity components in proportion to the allocation of proceeds and accounted for as debt issuance costs and equity issuance costs, respectively. The excess of the principal amount of the liability component over its carrying amount shall be amortized to interest cost using the interest method. FSP No. APB 14-1 is effective beginning January 1, 2009 and shall be applied retrospectively to all periods presented with the cumulative effect of the change in accounting principle on periods prior to those presented recognized as of the beginning of the first period presented. Early adoption is not permitted. Management believes the adoption of FSP No. APB 14-1 will not have a material effect on its results of operations, financial position or cash flows.

Table of Contents

In June 2008, the FASB issued EITF Issue 07-5 *Determining whether an Instrument (or Embedded Feature) is indexed to an Entity s Own Stock* (EITF No. 07-5). Paragraph 11(a) of SFAS 133 Accounting for Derivatives and Hedging Activities specifies that a contract that would otherwise meet the definition of a derivative but is both (a) indexed to the Company s own stock and (b) classified in stockholders equity in the statement of financial position would not be considered a derivative financial instrument. EITF No. 07-5 provides a new two-step model to be applied in determining whether a financial instrument or an embedded feature is indexed to an issuer s own stock and thus able to qualify for the SFAS 133 paragraph 11(a) scope exception. EITF No. 07-5 is effective for financial statements issued for fiscal years beginning after December 15, 2008, and interim periods within those fiscal years. Early application is not permitted. Management believes that the adoption of EITF No. 07-5 will not have a material effect on our results of operations, financial position or cash flows.

3. Investment in securities

The following is a summary of the available-for-sale securities classified as current assets (in thousands).

	December 31, 2007		December 31, 2008		
	Cost Basis	Fair Value	Cost Basis	Gross Unrealized Gain	Fair Value
US agency securities and other available-for-sale securities			18,549	295	18,844

As of December 31, 2007, the Company did not hold any available-for-sale securities. The Company s available-for-sale securities at December 31, 2008 consist principally of US agency securities, which are stated at fair value based on quoted prices for similar securities in active markets (Level 2 in the fair value hierarchy). The Company s policy is to maintain a highly liquid short-term investment portfolio. Proceeds from the sales and maturities of available-for-sale securities amounted to approximately $126.9 million, $286.7 million, and $46.1 million for the years ended December 31, 2006, 2007, and 2008, respectively. Gross realized gains and losses for available-for-sale securities were insignificant for the years ended December 31, 2006, 2007, and 2008. Gross realized gains and losses for available-for-sale securities are recorded as other income (expense). The cost of securities sold is based on the specific identification method. Unrealized gains and losses for available-for-sale securities were not significant for the year ended December 31, 2007 and were $295,000 for the year ended December 31, 2008. Unrealized gains and losses are included in other comprehensive income (loss).

4. State research and development credit exchange receivable

The State of Connecticut provides certain companies with the opportunity to exchange certain research and development income tax credit carryforwards for cash in exchange for forgoing the carryforward of the research and development income tax credits. The program provides for an exchange of research and development income tax credits for cash equal to 65% of the value of corporation tax credit available for exchange. Estimated amounts receivable under the program are recorded as a reduction of research and development expenses. During the years ended December 31, 2006, 2007, and 2008, research and development expenses were offset by $0.6 million, $0.8 million, and $1.8 million, respectively, in connection with the program.

5. Property and equipment

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

	Estimated Useful Life (Years)	December 31, 2007	2008
Land		$ 5,273	$ 5,273
Buildings	39-40	9,566	53,786

Building improvements	5-40	52,438	111,346
Machinery and equipment	3-15	30,172	70,633
Furniture, fixtures and office equipment	5-10	3,657	6,622
Computer equipment and software	3	7,559	14,818
Leasehold improvements		205	184

Table of Contents

	Estimated Useful Life (Years)	December 31, 2007	December 31, 2008
Construction in progress		89,657	15,165
Deposits on equipment		4,882	
		203,409	277,827
Less accumulated depreciation and amortization		(40,726)	(51,391)
Property and equipment net		$ 162,683	$ 226,436

Leasehold improvements are amortized over four years which is the shorter of the term of the lease or the service lives of the improvements. Depreciation and amortization expense related to property and equipment for the years ended December 31, 2006, 2007 and 2008, and the cumulative period from February 14, 1991 (date of inception) to December 31, 2008 was $8.5 million, $8.5 million, $11.8 million and $59.4 million, respectively. Capitalized interest during the years ended December 31, 2006, 2007 and 2008 was $0.1 million, $1.4 million and $2.5 million, respectively.

In December 2007, the Company determined that machinery being built for commercial manufacturing use would no longer be used for this purpose and had no other further alternative use other than for research related to AFRESA. Accordingly, the Company expensed to research and development the $5.0 million carrying value of the machinery previously included in construction in progress. Additionally, in November 2007, the Company initiated a plan to sell certain manufacturing machines. A charge in the amount of $1.6 million is reflected in the research and development expenses in the accompanying statement of operations for the year ended December 31, 2007 to write down the machines being held for sale to their estimated fair value of $1.6 million. The $1.6 million carrying value of the machines held for sale are included in the prepaid expenses and other current assets caption in the accompanying consolidated balance sheet as of December 31, 2007 and were sold in early 2008. In December 2008, the Company determined that software previously purchased would no longer be utilized, resulting in an impairment charge of $459,000.

6. Accrued expenses and other current liabilities

Accrued expenses and other current liabilities are comprised of the following (in thousands):

	December 31, 2007	December 31, 2008
Salary and related expenses	$ 11,989	$ 12,452
Research and clinical trial costs	11,657	13,438
Accrued interest	192	204
Construction in progress	4,736	3,327
Other	3,521	8,421
Accrued expenses and other current liabilities	$ 32,095	$ 37,842

7. Related-party loan arrangement

On August 2, 2006, the Company entered into a $150.0 million loan arrangement with its principal stockholder, which was amended on August 1, 2007 and replaced with a new loan arrangement on October 2, 2007. Under the new arrangement, the Company can borrow up to a total of $350.0 million before January 1, 2010. On February 26, 2009, the promissory note underlying the loan arrangement was revised as a result of the principal stockholder being licensed as a finance lender under the California Finance Lenders Law. Accordingly, the lender was revised to The

Mann Group LLC, or the Lender, an entity controlled by the Company s principal stockholder. This new licensing also eliminated the draw restrictions under the previous loan arrangement and the Company is now able to borrow up to a total of $350.0 million from time to time with appropriate notice to the Lender. Interest will accrue on each outstanding advance at a fixed rate equal to the one-year LIBOR rate as reported by the *Wall Street Journal* on the date of such advance plus 3% per annum and will be payable quarterly in arrears. Principal repayment is due on December 31, 2011. At any time after January 1, 2010, the principal stockholder can require the Company to prepay up to $200.0 million in advances that have been outstanding for at least 12 months. If the principal stockholder exercises this right, the Company will have until the earlier of 180 days after the principal stockholder provides written notice or December 31, 2011 to prepay such advances. In the event of a default, all unpaid principal and interest either becomes immediately due and payable or may be accelerated at the principal stockholder s option, and the interest rate will increase to the one-year LIBOR rate calculated on the date of the initial advance or in effect on the date of default, whichever is greater, plus 5% per annum. Any borrowings under the loan arrangement will be unsecured. The loan arrangement contains no financial covenants. There are no warrants associated with the loan arrangement, nor are advances convertible into the Company s common stock.

Under the previous loan arrangement, the Company borrowed $50.0 million on August 2, 2006 and $20.0 million on November 27, 2006. On December 12, 2006, the Company paid off the total borrowings of $70.0 million following the completion of concurrent offerings of convertible notes and common stock.

Table of Contents

In July 2008, the Company requested an advance of up to $150.0 million. On December 29, 2008, the Company received an installment of $30.0 million against this advance. As of December 31, 2008, the amount outstanding under the arrangement was $30.0 million.

8. Senior convertible notes

On December 12, 2006, the Company completed an offering of $115.0 million aggregate principal amount of 3.75% Senior Convertible Notes due 2013 (the Notes), including $15.0 million aggregate principal amount of the Notes sold pursuant to the underwriters over-allotment option that was exercised in full. The Notes are governed by the terms of an indenture dated as of November 1, 2006 and a First Supplemental Indenture, dated as of December 12, 2006. The Notes bear interest at the rate of 3.75% per year on the principal amount of the Notes, payable in cash semi-annually in arrears on June 15 and December 15 of each year, beginning June 15, 2007. The Company had accrued interest of $192,000 related to the Notes for the years ended December 31, 2007 and 2008. The Notes are general, unsecured, senior obligations of the Company and effectively rank junior in right of payment to all of the Company s secured debt, to the extent of the value of the assets securing such debt, and to the debt and all other liabilities of the Company. The maturity date of the Notes is December 15, 2013 and payment is due in full on that date for unconverted securities. Holders may convert, at any time prior to the close of business on the business day immediately preceding the stated maturity date, any outstanding Notes into shares of the Company s common stock at an initial conversion rate of 44.5002 shares per $1,000 principal amount of Notes, which is equal to a conversion price of approximately $22.47 per share, subject to adjustment. Except in certain circumstances, if the Company undergoes a fundamental change: (1) the Company will pay a make-whole premium on the Notes converted in connection with a fundamental change by increasing the conversion rate on such Notes, which amount, if any, will be based on the Company s common stock price and the effective date of the fundamental change, and (2) each holder of the Notes will have the option to require the Company to repurchase all or any portion of such holder s Notes at a repurchase price of 100% of the principal amount of the Notes to be repurchased plus accrued and unpaid interest, if any.

The Company incurred approximately $3.7 million in debt issuance costs which are recorded as an offset to the debt in the accompanying balance sheet. These costs are being amortized to interest expense using the effective interest method over the term of the Notes.

9. Common and preferred stock

Private Placements On August 5, 2005, the Company closed a $175.0 million private placement of common stock and the concurrent issuance of warrants for the purchase of additional shares of common stock to accredited investors including the Company s principal stockholder who purchased $87.3 million of the private placement. The Company sold 17,132,000 shares of common stock in the private placement, together with warrants to purchase up to 3,426,000 shares of common stock at an exercise price of $12.228 per share which became exercisable on February 1, 2006 and expire on August 5, 2010. In connection with this private placement, the Company paid $4.5 million in commissions to the placement agents and incurred $300,000 in other offering expenses which resulted in net proceeds of approximately $170.2 million.

On October 2, 2007, the Company sold 15,940,489 shares of the Company s common stock to its principal stockholder at a price per share of $9.41 and 11,074,197 million shares of common stock to other investors at a price per share of $9.03. The sales of common stock resulted in aggregate net proceeds to the Company of approximately $249.8 million after deducting offering expenses.

Public Equity Offering On December 12, 2006, the Company closed the sale of 20,000,000 shares of its common stock at a public offering price of $17.42 per share and on December 19, 2006, closed the sale of an additional 3,000,000 shares of its common stock at a public offering price of $17.42 per share pursuant to an over-allotment option granted to the underwriters of the offering. Approximately 5.8 million shares were sold to certain of the Company s officers and directors, including 5.75 million shares sold to the principal stockholder. In connection with this offering, the Company paid approximately $15.0 million in underwriting fees and incurred approximately $1.1 million in other offering expenses which resulted in net proceeds of approximately $384.7 million.

Common Stock In May 2007, the Company s stockholders approved an increase in the Company s authorized shares of common stock from 90,000,000 to 150,000,000. As of December 31, 2008, 102,008,096 shares of common stock are issued and outstanding.

The Company had reserved shares of common stock for issuance as follows:

	December 31, 2007	December 31, 2008
Exercise of common stock options	6,886,657	5,591,101
Conversion of senior convertible notes into common stock	5,117,523	5,117,523
Exercise of common stock warrants	2,882,873	2,882,873

Table of Contents

	December 31, 2007	December 31, 2008
Vesting of restricted stock units	1,359,662	5,947,408
	16,246,715	19,538,905

Preferred Stock The Company is authorized to issue 10,000,000 shares of preferred stock. As of December 31, 2008, no shares of preferred stock are issued and outstanding.

Registration rights In August 2007, the registration rights of the holders of 17,132,000 shares of common stock together with warrants to purchase up to 2,882,873 shares of common stock, all of which were issued in the August 2005 private placement, expired. All of the warrants remained outstanding as of December 31, 2008.

As of December 31, 2006 the holders of 916,715 shares of the Company s common stock and the holders of warrants to purchase 12,459 shares of the Company s common stock had rights, subject to some conditions, to require the Company to file registration statements covering the resale of their shares or to include their shares in registration statements that the Company may file for itself or other stockholders. All such rights expired on December 1, 2007. Additionally, the warrants to purchase 12,459 shares of common stock all expired, unexercised on December 1, 2007.

10. Stock award plans

As of December 31, 2008, the Company has three active stock-based compensation plans the 2004 Equity Incentive Plan (the Plan), the 2004 Non-Employee Directors Stock Option Plan (the NED Plan), and the 2004 Employee Stock Purchase Plan (the ESPP). The Plan provides for the granting of stock awards including stock options and restricted stock units, to employees, directors and consultants. The NED Plan provides for the automatic, non-discretionary grant of options to the Company s non-employee directors. Awards also remain outstanding at December 31, 2008 under the following inactive plans: the 1999 Stock Plan, the CTL Plan, and the Allecure Plan. There are also options outstanding to our principal stockholder at December 31, 2008 that were not granted under any plan; these options were granted during the year ended December 31, 2002, vested over four years, and have an exercise price of $25.23 per share. The following table summarizes information about our stock-based award plans as of December 31, 2008:

	Outstanding Options	Outstanding Restricted Stock Units	Shares Available For Future Issuance
2004 Equity Incentive Plan	4,580,712	5,887,408	1,931,782
2004 Non-Employee Directors Stock Option Plan	622,999	60,000	117,001
1999 Stock Plan	119,103		
CTL and Allecure Plan	27,315		
Options outside of any plan granted to principal stockholder	240,972		
Total	5,591,101	5,947,408	2,048,783

The Company s board of directors determines eligibility, vesting schedules and exercise prices for stock awards granted under the Plan. The NED Plan provides for automatic, non-discretionary grant of options to the Company s non-employee directors. Options and other stock awards under the Plan and the NED Plan expire not more than ten years from the date of the grant and are exercisable upon vesting. Stock options generally vest over four years. Current stock option grants vest and become exercisable at the rate of 25% after one year and ratably on a monthly basis over a period of 36 months thereafter. Restricted stock units generally vest at a rate of 25% per year over four years with

consideration satisfied by service to the Company. Certain performance-based awards vest upon achieving three pre-determined performance milestones which are expected to occur over periods ranging from 27 months to 42 months from the date of grant. The Plan provides for full acceleration of vesting if an employee is terminated within thirteen months of a change in control, as defined.

On February 6, 2008, the Compensation Committee approved a management proposal designed to encourage employee retention. The proposal involved the issuance of restricted stock units to the majority of employees and executive officers of the Company. A total of 1,678,674 restricted stock units were granted under the 2004 Equity Incentive Plan. These units will remain unvested until June 30, 2009, at which point they will fully vest. Stock compensation expense associated with these grants will be recorded on a straight line basis from February 6, 2008 through June 30, 2009 and is estimated to total approximately $11.0 million.

On May 22, 2008, the Company s stockholders approved an amendment to the 2004 Equity Incentive Plan to increase the number of shares of common stock available for issuance under the plan by 5,000,000 shares.

Table of Contents

On July 9, 2008, the Company announced an Offer to Exchange Outstanding Options to Purchase Common Stock (the Offer) under which the Company offered eligible employees the opportunity to exchange up to an aggregate of 5,417,840 shares underlying their out-of-the money stock options, on a grant by grant basis, for a reduced number of restricted stock units. The Offer expired on August 6, 2008. Pursuant to the Offer, the Company accepted for exchange options to purchase an aggregate of 4,493,509 shares of the Company s common stock and issued restricted stock units covering an aggregate of 2,246,781 shares of the Company s common stock. For the newly issued restricted stock units, both the remaining estimated unamortized stock compensation expense related to the exchanged options of approximately $13.9 million and the estimated incremental stock compensation expense resulting from the exchange of approximately $3.7 million will be amortized over the vesting periods of the newly issued restricted stock units.

In March 2004, the Company s board of directors approved the 2004 Employee Stock Purchase Plan (ESPP), which became effective upon the closing of the Company s initial public offering. Initially, the aggregate number of shares that could be sold under the plan was 2,000,000 shares of common stock. On January 1 of each year, for a period of ten years beginning January 1, 2005, the share reserve automatically increases by the lesser of: 700,000 shares, 1% of the total number of shares of common stock outstanding on that date, or an amount as may be determined by the board of directors. However, under no event can the annual increase cause the total number of shares reserved under the ESPP to exceed 10% of the total number of shares of capital stock outstanding on December 31 of the prior year. On January 1, 2006, 2007, and 2008 the ESPP share reserve was increased by 503,141, 700,000 and 700,000 shares, respectively. In November 2006, the Company s board of directors approved a decrease of 2.6 million shares to the reserve in order to make additional shares available for the Company s December 2006 offerings (see Note 1 Description of Business and Basis of Presentation Public Offerings). As of December 31, 2008, 977,488 shares were available for issuance under the ESPP. For the years ended December 31, 2006, 2007, and 2008 the Company sold 86,093, 124,011, and 349,317 shares, respectively, of its common stock to employees participating in the ESPP.

Upon adoption of FASB Statement No. 123R, the Company continues to account for non-employee stock-based compensation expense based on the estimated fair value of the options, determined using the Black-Scholes option valuation model, in accordance with EITF No. 96-18, and amortizes such expense on a straight-line basis. In November 2004, pursuant to assignment agreements with two consultants, the Company issued 200 shares of its common stock under its 2004 Equity Incentive Plan. The Company agreed to issue 99,800 additional shares upon the achievement of certain milestones specified in consulting agreements and for the year ended December 31, 2004, the Company recorded approximately $1.1 million in stock-based compensation expense related to these agreements. In November 2005, 39,800 of the 99,800 shares were issued to the consultants and the Company decreased stock-based compensation expense by approximately $146,000 based on the fair market value of the shares when issued. In September 2007, the next milestone was considered probable and the Company decreased stock compensation expense by approximately $115,000 based on the fair market value of the shares. In October 2007, the milestone was met and 30,000 shares were issued. In December 2007, the third milestone was considered probable of achievement and the Company recognized stock compensation expense of approximately $238,000. In January 2008, the final milestone was met and 30,000 shares were issued. As of December 31, 2008, there were 284,470 options outstanding to consultants.

During the years ended December 31, 2006, 2007, and 2008, the Company recorded stock-based compensation expense related to its stock award plans and the ESPP of $14.7 million, $17.6 million, and $24.8 million, respectively. Total stock-based compensation expense/(benefit) recognized in the accompanying statements of operations is as follows (in thousands):

	Year Ended December 31,		
	2006	2007	2008
Employee-related	$ 14,387	$ 17,513	$ 24,716
Consultant-related	280	132	77
Total	$ 14,667	$ 17,645	$ 24,793

Total stock-based compensation expense/(benefit) recognized in the accompanying statements of operations is included in the following categories (in thousands):

	Year Ended December 31,		
	2006	**2007**	**2008**
Research and development	$ 7,140	$ 9,749	$ 14,350
General and administrative	7,527	7,896	10,443
Total	$ 14,667	$ 17,645	$ 24,793

Included in stock compensation expense is approximately $332,000 in expense related to the modification of stock awards for two individuals during the year ended December 31, 2008. Under the terms of their modification of stock awards, these individuals options that were granted during their association with the Company will continue to vest over their respective modification periods.

Table of Contents

The Company uses the Black-Scholes option valuation model to estimate the grant date fair value of employee stock options. The expected life of the option is estimated using the simplified method as provided in SEC Staff Accounting Bulletin No. 107 (SAB No. 107). Under this method, the expected life equals the arithmetic average of the vesting term and the original contractual term of the options. The Company estimates volatility using the historical volatility of its stock. The Company has selected risk-free interest rates based on U.S. Treasury Securities with an equivalent expected term in effect on the date the options were granted. Additionally, the Company uses historical data and management judgment to estimate stock option exercise behavior and employee turnover rates to estimate the number of stock option awards that will eventually vest. The Company calculated the fair value of employee stock options for the years ended December 31, 2007 and 2008 using the following assumptions:

	Year Ended December 31,	
	2007	2008
Risk-free interest rate	4.03% 4.80%	2.64% 3.69%
Expected lives	5.9 6.2 years	5.6 6.1 years
Volatility	51% 57%	55% 77%
Dividends		

The following table summarizes information about stock options outstanding:

	Number of Shares	Weighted Average Exercise Price per Share	Weighted Average Grant Date Fair Value per Share	Aggregate Intrinsic Value ($000)
Outstanding at January 1, 2006	4,985,831	12.40		
Granted	1,792,525	17.51	$10.41	
Exercised	(262,987)	8.79		$2,523
Forfeit	(250,216)	13.25		
Expired	(48,455)	17.94		
Outstanding at December 31, 2006	6,216,698	13.94		
Granted	1,639,845	10.48	$ 5.86	
Exercised	(606,833)	8.11		$1,252
Forfeit	(252,016)	14.11		
Expired	(111,036)	12.66		
Outstanding at December 31, 2007	6,886,658	13.64		
Granted	3,903,370	3.43	$ 2.25	
Exercised		0.00		
Forfeit	(2,669,230)	12.56		
Expired	(2,529,697)	13.86		
Outstanding at December 31, 2008	5,591,101	6.97		$1,292
Vested or expected to vest at December 31, 2008	5,248,303	7.16		$1,187
Exercisable at December 31, 2008	1,605,079	14.17		$ 76

There were no stock option exercises during the year ended December 31, 2008. Cash received from the exercise of options during the years ended December 31, 2006 and 2007 was approximately $2.3 million and $4.9 million, respectively. The weighted-average remaining contractual terms for options outstanding, vested or expected to vest, and exercisable at December 31, 2008 was 8.2 years, 8.0, and 5.2 years, respectively.

A summary of restricted stock units activity for the years ended December 31, 2006, 2007 and 2008 is presented below:

	Number of Shares	Weighted Average Grant Date Fair Value per Share
Outstanding at January 1, 2006	164,901	
Granted	773,713	17.02
Vested	(135,744)	
Forfeited	(26,217)	
Outstanding at December 31, 2006	776,653	16.26

Table of Contents

	Number of Shares	Weighted Average Grant Date Fair Value per Share
Granted	876,575	9.81
Vested	(202,009)	15.63
Forfeited	(91,557)	13.54
Outstanding at December 31, 2007	1,359,662	12.36
Granted	5,135,000	6.63
Vested	(328,449)	12.94
Forfeited	(218,805)	8.43
Outstanding at December 31, 2008	5,947,408	7.51

The total fair value of restricted stock units vested during the years ended December 31, 2007 and 2008 was $1.9 million and $1.2 million, respectively. The weighted-average remaining contractual terms for restricted stock units outstanding at December 31, 2008 was 9.2 years. As of December 31, 2008, there were 124,625 restricted stock units outstanding to five consultants.

A summary of the status of the Company s nonvested stock options for the year ended December 31, 2008, is presented below:

	Number of Shares	Weighted Average Grant Date Fair Value per Share
Nonvested at January 1, 2008	3,596,365	$ 8.02
Granted	3,903,370	2.25
Vested	(844,483)	8.88
Forfeited	(2,669,230)	7.45
Nonvested at December 31, 2008	3,986,022	2.64

As of December 31, 2008, there was $11.2 million and $33.5 million of unrecognized compensation cost related to options and restricted stock units, respectively, which is expected to be recognized over the weighted average vesting period of 2.3 years.

11. Warrants

During 1995 and 1996, the Company issued warrants to purchase shares of common stock. The warrants contain provisions for the adjustment of the exercise price and the number of shares issuable upon the exercise of the warrant in the event the Company declares any stock dividends or effects any stock split, reclassification or consolidation of its common stock. The warrants also contain a provision that provides for an adjustment to the exercise price and the number of shares issuable in the event that the Company issues securities for a per share price less than a specified price. As of December 31, 2004, warrants to purchase 131,628 shares of common stock were outstanding. During the second quarter ended June 30, 2005, warrants to purchase 110,888 shares of common stock were exchanged for

24,210 shares of common stock resulting in stock-based compensation expense of $245,000 based on a fair market value of the common stock of $10.12 per share. Warrants to purchase 8,304 shares of common stock expired during 2005. The remaining warrants to purchase 12,459 shares of common stock at a weighted average exercise price of $12.64 per share all expired unexercised on December 1, 2007.

In connection with the sale of common stock in the private placement which closed on August 5, 2005, the Company concurrently issued warrants to purchase up to 3,426,000 shares of common stock at an exercise price of $12.228 per share. See also Note 9 Common and Preferred Stock Private Placement. These warrants became exercisable on February 1, 2006 and expire in August 2010. During the year ended December 31, 2006, approximately 543,000 warrants were exercised and net settled for approximately 339,000 shares. As of December 31, 2008, warrants to purchase 2,882,873 shares of common stock remained outstanding. In connection with the sale of common stock in the public offering that closed on December 6, 2006, two holders of outstanding warrants to purchase a total of 1,710,091 shares of common stock agreed to amend the terms of their warrants to provide that such warrants would not be exercisable from December 6, 2006 until the date on which the Company has at least 100,000,000 shares of its common stock duly and validly authorized. In May 2007, the Company s stockholders approved an increase in the Company s authorized shares of common stock from 90,000,000 to 150,000,000. As of December 31, 2008, all warrants were exercisable.

12. Commitments and contingencies

Table of Contents

Operating Leases The Company leases certain facilities and equipment under various operating leases, which expire at various dates through 2013. Future minimum rental payments required under operating leases are as follows at December 31, 2008 (in thousands):

Year Ending December 31,	
2009	$ 1,969
2010	788
2011	1
After 2011	1
Total minimum lease payments	$ 2,759

Rent expense under all operating leases for the years ended December 31, 2006, 2007 and 2008 was approximately, $1.3 million, $1.5 million, and $1.7 million, respectively.

Capital Leases The Company s capital leases were not material for the years ended December 31, 2006, 2007 and 2008.

Supply Agreement In November 2007, the Company entered into a long-term supply agreement with Organon N.V. (Organon) pursuant to which Organon will manufacture and supply specified quantities of recombinant human insulin. The initial term of this supply agreement will end on December 31, 2012 and can be automatically extended for consecutive two-year terms under specified circumstances. The Company has made annual purchase commitments through the initial term aggregating to approximately $104 million. These purchases are expected to be delivered from 2009 through 2012. If the Company terminates the supply agreement following failure to obtain or maintain regulatory approval of AFRESA or either party terminates the agreement following the parties inability to agree after any regulatory authority mandated changes to product specifications that relate specifically to the use of insulin in AFRESA, the Company will be required to pay Organon a specified termination fee if Organon is unable to sell certain quantities of insulin to other parties.

Guarantees and Indemnifications In the ordinary course of its business, the Company makes certain indemnities, commitments and guarantees under which it may be required to make payments in relation to certain transactions. The Company, as permitted under Delaware law and in accordance with its Bylaws, indemnifies its officers and directors for certain events or occurrences, subject to certain limits, while the officer or director is or was serving at the Company s request in such capacity. The term of the indemnification period is for the officer s or director s lifetime. The maximum amount of potential future indemnification is unlimited; however, the Company has a director and officer insurance policy that may enable it to recover a portion of any future amounts paid. The Company believes the fair value of these indemnification agreements is minimal. The Company has not recorded any liability for these indemnities in the accompanying consolidated balance sheets. However, the Company accrues for losses for any known contingent liability, including those that may arise from indemnification provisions, when future payment is probable. No such losses have been recorded to date.

Litigation The Company is involved in various legal proceedings and other matters. In accordance with FASB Statement No. 5, *Accounting for Contingencies*, the Company would record a provision for a liability when it is both probable that a liability has been incurred and the amount of the loss can be reasonably estimated.

Licensing Arrangement On October 12, 2006, the Company entered into an agreement with The Technion Research and Development Foundation Ltd. (TRDF), an Israeli corporation affiliated with the Technion-Israel Institute of Technology (the Technion) to license certain technology from TRDF and to collaborate with TRDF in the further research in and the development and commercialization of such technology. In exchange for the rights that the Company obtained under this agreement, the Company agreed to pay to TRDF aggregate license fees of $3.0 million and to issue to TRDF a total of 300,000 shares of the Company s common stock. The license fees were to be paid and the shares issued in three equal installments. The first installment occurred on October 18, 2006. The second installment was paid on December 3, 2007. The third installment was scheduled to occur, subject to the accomplishment of certain milestones, on October 12, 2008. The Company had also agreed to pay royalties to TRDF

with respect to sales of certain products that contain or use the licensed technology or are covered by patents included in the licensed technology or are discovered through the use of the licensed technology. The Company agreed to pay up to $6.0 million of the royalties in advance upon the receipt of specified regulatory approvals. The Company agreed to pay to TRDF specified percentages of any lump-sum sub-license payments that the Company received if it decided to sub-license the technology. The Company had also agreed to pay a total of $2.0 million to TRDF in three nearly equal installments to fund sponsored research to be conducted at TRDF by a team led by a faculty member at Technion. The initial sponsored research payment was made upon signing of the agreement. The second sponsored research payment occurred on December 3, 2007 and the third sponsored research payment was scheduled to occur, subject to the

Table of Contents

accomplishment of certain milestones, on October 12, 2008. The Company had also agreed to retain the services of the Technion faculty member as a consultant, for which the Company agreed to pay the consultant $60,000 per year and granted the individual an option to purchase 60,000 shares of the Company s common stock. Under the terms of the agreement, the Company issued 100,000 shares of common stock to TRDF on October 12, 2006 and November 29, 2007, respectively. Additionally, $1.6 million in license fees were paid on October 18, 2006 and December 3, 2007, respectively. In August of 2008, we ended our agreement with TRDF and made no further payments for licensing fees in 2008.

13. Employee benefit plans

The Company administers a 401(k) Savings Retirement Plan (the MannKind Retirement Plan) for its employees. For the years ended December 31, 2006, 2007 and 2008, the Company contributed $567,000, $821,000 and $914,000 respectively, to the MannKind Retirement Plan.

14. Income taxes

Deferred income taxes reflect the tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting and income tax purposes. A valuation allowance is established when uncertainty exists as to whether all or a portion of the net deferred tax assets will be realized. Components of the net deferred tax asset as of December 31, 2007 and 2008 are approximately as follows (in thousands):

	December 31,	
	2007	**2008**
Deferred Tax Assets:		
Net operating loss carryforwards	$ 317,939	$ 424,497
Research and development credits	25,677	37,415
Accrued expenses	29,036	38,187
Non-qualified stock option expense	13,175	21,546
Depreciation	1,626	3,916
Total gross deferred tax assets	387,453	525,561
Valuation allowance	(387,453)	(525,561)
Net deferred tax assets	$	$

The Company s effective income tax rate differs from the statutory federal income tax rate as follows for the years ended December 31, 2006, 2007 and 2008:

	December 31,		
	2006	**2007**	**2008**
Federal tax benefit rate	35.0%	35.0%	35.0%
State tax benefit, net of federal benefit			
Permanent items			
Other			
Valuation allowance	(35.0)	(35.0)	(35.0)
Effective income tax rate	0.0%	0.0%	0.0%

As required by FASB Statement No. 109, management of the Company has evaluated the positive and negative evidence bearing upon the realizability of its deferred tax assets. Management has concluded, in accordance with the applicable accounting standards, that it is more likely than not that the Company may not realize the benefit of its deferred tax assets. Accordingly, the net deferred tax assets have been fully reserved. Management reevaluates the positive and negative evidence on an annual basis. During the years ended December 31, 2006, 2007 and 2008, the

change in the valuation allowance was $96.2 million, $135.4 million and $138.1 million respectively, for income taxes.

At December 31, 2008, the Company had federal and state net operating loss carryforwards of approximately $1.1 billion and $558.1 million available, respectively, to reduce future taxable income and which will expire at various dates beginning in 2009 and 2012, respectively. As a result of the Company s initial public offering, an ownership change within the meaning of Internal Revenue Code Section 382 occurred in August 2004. As a result, federal net operating loss and credit carry forwards of approximately $216.0 million are subject to an annual use limitation of approximately $13.0 million. The annual limitation is cumulative and therefore, if not fully utilized in a year can be utilized in future years in addition to the Section 382 limitation for those years. The federal net operating losses generated subsequent to the Company s initial public offering in August 2004 are currently not subject to

Table of Contents

any such limitation as there have been no ownership changes since August 2004 within the meaning of Internal Revenue Code Section 382. At December 31, 2008, the Company had research and development credits of $44.9 million that expire at various dates through 2029.

The Company has evaluated the impact of FIN 48 on its financial statements, which was effective beginning January 1, 2007. The evaluation of a tax position in accordance with FIN 48 is a two-step process. The first step is recognition: The enterprise determines whether it is more-likely-than-not that a tax position will be sustained upon examination, including resolution of any related appeals or litigation processes, based on the technical merits of the position. In evaluating whether a tax position has met the more-likely-than-not recognition threshold, the enterprise should presume that the position will be examined by the appropriate taxing authority that would have full knowledge of all relevant information. The second step is measurement: A tax position that meets the more-likely-than-not recognition threshold is measured to determine the amount of benefit to recognize in the financial statements. The tax position is measured at the largest amount of benefit that is greater than 50 percent likely of being realized upon ultimate settlement. Tax positions that previously failed to meet the more-likely-than-not recognition threshold should be recognized in the first subsequent financial reporting period in which that threshold is met. Previously recognized tax positions that no longer meet the more-likely-than-not recognition threshold should be derecognized in the first subsequent financial reporting period in which that threshold is no longer met. The Company believes that its income tax filing positions and deductions will be sustained on audit and does not anticipate any adjustments that will result in a material change to its financial position. Therefore, no reserves for uncertain income tax positions have been recorded pursuant to FIN 48. The cumulative effect, if any, of applying FIN 48 is to be reported as an adjustment to the opening balance of retained earnings in the year of adoption. The Company did not record a cumulative effect adjustment related to the adoption of FIN 48. Tax years since 1992 remain subject to examination by the major tax jurisdictions in which the Company is subject to tax.

15. Related party transactions

During the year ended December 31, 2006 the principal stockholder purchased 5,750,000 shares of common stock at $17.42 per share in the Company s December 2006 equity offering on terms identical to other purchasers resulting in proceeds of approximately $100.1 million to the Company. In connection with the equity offering the Company paid $280,000 in filing fees related to the principal stockholder s filings made pursuant to the Hart-Scott-Rodino Antitrust Improvement Act of 1976. During the year ended December 31, 2006, the Company borrowed $70.0 million from its principal stockholder under the loan arrangement described in Note 7. On December 12, 2006, in connection with the completion of their equity and convertible debt offerings, the Company paid principal and interest of $70.0 million and $1.6 million, respectively, under the loan arrangement.

The Company issued 8,550,446 shares of its common stock to its principal stockholder during the year ended December 31, 2005 for proceeds of approximately $87.3 million. In connection with this issuance, the board of directors approved the issuance of warrants to purchase 1,710,091 shares of the Company s common stock at $12.228 per share, which expire on August 2, 2010. The issuance of shares and warrants to the principal stockholder was on terms identical to the other purchasers in the private placement, as approved by the Company s board of directors.

On October 2, 2007, the Company sold 15.9 million shares of the Company s common stock to its principal stockholder at a price per share of $9.41 and 11.1 million shares of common stock to other investors at a price per share of $9.03. The sales of common stock resulted in aggregate net proceeds to the Company of approximately $249.8 million after deducting offering expenses. Also, on October 2, 2007, the Company entered into a new loan arrangement with its principal stockholder to borrow up to a total of $350.0 million before January 1, 2010. This new arrangement replaced the existing loan arrangement with its principal stockholder to borrow up to $150.0 million through August 1, 2008. On December 29, 2008, the Company borrowed $30.0 million under this agreement and had accrued interest of $12,000 for the year ended December 31, 2008. See Note 7 Related-Party Loan Arrangement.

Alfred E. Mann, who is the Company s principal stockholder and chief executive officer, has established the Alfred Mann Institute for Biomedical Development at the Technion (AMI-Technion) to expedite the translation of intellectual property and technology of the Technion into commercial medical products for the public benefit. Over a period of several years, Mr. Mann will establish a $100 million endowment for AMI-Technion. Mr. Mann does not directly or indirectly have any interest in TRDF (see Note 12 Commitments and Contingencies Licensing

Arrangement).

In connection with certain meetings of the Company s board of directors and on other occasions when the Company s business necessitated air travel for the Company s principal stockholder and other Company employees, the Company utilized the principal stockholder s private aircraft, and the Company paid the charter company that manages the aircraft on behalf of the Company s majority stockholder approximately $212,000, $105,090, and $130,000, respectively, for the years ended December 31, 2006, 2007

Table of Contents

and 2008 on the basis of the corresponding cost of commercial airfare. These payments were approved by the audit committee of the board of directors.

Heather Hay Murren, a member of our board of directors in 2008, is the Cofounder, Chair and Chief Executive Officer of Nevada Cancer Institute, a nonprofit organization. Nevada Cancer Institute is currently conducting a clinical trial for the Company through a clinical research organization and was paid approximately $10,000 and $288,000 for the years ended December 31, 2007 and 2008, respectively, by the clinical research organization.

The Company has entered into indemnification agreements with each of its directors and executive officers, in addition to the indemnification provided for in its amended and restated certificate of incorporation and amended and restated bylaws (see Note 12 Commitments and Contingencies Guarantees and Indemnifications).

16. Selected quarterly financial data (unaudited)

	March 31	June 30	September 30	December 31
	(In thousands, except per share data)			
2007				
Net loss	$ (73,141)	$ (71,989)	$ (73,047)	$ (75,013)
Net loss applicable to common stockholders	$ (73,141)	$ (71,989)	$ (73,047)	$ (75,013)
Net loss per share applicable to common stockholders basic and diluted	$ (1.00)	$ (0.98)	$ (0.99)	$ (0.75)
Weighted average common shares used to compute basic and diluted net loss per share applicable to common stockholders	73,388	73,421	73,520	99,605

	March 31	June 30	September 30	December 31
	(In thousands, except per share data)			
2008				
Net loss	$ (71,421)	$ (79,826)	$ (68,496)	$ (83,295)
Net loss applicable to common stockholders	$ (71,421)	$ (79,826)	$ (68,496)	$ (83,295)
Net loss per share applicable to common stockholders basic and diluted	$ (0.70)	$ (0.79)	$ (0.67)	$ (0.82)
Weighted average common shares used to compute basic and diluted net loss per share applicable to common stockholders	101,409	101,427	101,647	101,758