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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, DC 20549**

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**Form 10-K**

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(Mark One)

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

For the fiscal year ended December 31, 2011

or

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

For the transition period from

to

Commission file number: 001-33185

**MEDICINOVA, INC.**

(Exact Name of Registrant as Specified in its Charter)

Delaware

(State or Other Jurisdiction of Incorporation  
or Organization)

33-0927979

(I.R.S. Employer Identification No.)

4350 La Jolla Village Drive, Suite 950, San Diego, CA

(Address of Principal Executive Offices)

92122

(Zip Code)

(858) 373-1500

(Registrant's Telephone Number, Including Area Code)

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

Title of Each Class	Name of Each Exchange on Which Registered
Common Stock, par value \$0.001 per share	The NASDAQ Stock Market LLC

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

**Series A Participating Preferred Stock Purchase Rights**

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

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

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). [X] Yes [ ] No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the 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. [X]

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 definitions of "large accelerated filer", "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer [ ] Accelerated filer [ ] Non-accelerated filer [ ] Smaller reporting company [X]

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Securities Exchange Act of 1934). Yes [ ] No [X]

The aggregate market value of the registrant's common stock held by non-affiliates of the registrant was approximately \$41,116,072 based on the closing price of the registrant's common stock on the Nasdaq Global Market of \$2.69 per share on June 30, 2011. Shares of common stock held by each executive officer and director and each person who beneficially owns 10% or more of the outstanding common stock have been excluded from this calculation. This determination of affiliate status may not be conclusive for other purposes.

The number of outstanding shares of the registrant's common stock, par value \$0.001 per share, as of March 27, 2012 was 16,088,015.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the registrant's proxy statement to be filed with the Securities and Exchange Commission pursuant to Regulation 14A in connection with the registrant's 2012 Annual Meeting of Stockholders, which will be filed subsequent to the date hereof, are incorporated by reference into Part III of this Form 10-K. Such proxy statement will be filed with the Securities and Exchange Commission not later than 120 days following the end of the registrant's fiscal year ended December 31, 2011.

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**For the Fiscal Year Ended December 31, 2011**  
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The MediciNova logo is a registered trademark of MediciNova, Inc. All other product and company names are registered trademarks or trademarks of their respective companies.

**PART I**

**Forward-Looking Statements**

*This Annual Report on Form 10-K includes forward-looking statements that involve a number of risks and uncertainties, many of which are beyond our control. Our actual results may differ from those anticipated or expressed in these forward-looking statements as a result of various factors, including those set forth below under the caption “Item 1A. Risk Factors,” and the differences may be material. Forward-looking statements discuss matters that are not historical facts. Forward-looking statements include discussions regarding our operating strategy, growth strategy, licensing and acquisition strategy, cost savings initiatives, industry and economic conditions, market factors, financial condition, liquidity and capital resources, results of operations, expected progress of the development of our product candidates, potential licensing, collaboration and partnering plans, anticipated trends and challenges in our business and the markets in which we operate, competitive position, intellectual property protection, critical accounting policies and the impact of recent accounting pronouncements. In this report, for example, we make forward-looking statements regarding the potential for our product candidates to receive regulatory approval for one or more indications on a timely basis or at all; the progress and results of pending clinical trials for certain of our product candidates, including any delays in commencing or completing enrollment for our ongoing or planned clinical trials; plans for future clinical trials and regulatory submissions; unexpected adverse side effects or inadequate therapeutic efficacy of certain of our product candidates that could delay or prevent regulatory approval or commercialization or that could result in product liability claims; other difficulties or delays in development, testing, manufacturing and marketing of and obtaining regulatory approval for our product candidates; the scope and validity of patent protection for our product candidates; the market potential for our target markets and our ability to compete; the potential to attract and maintain relationships with one or more strategic partners and terms of any related transactions; intense competition if any of our product candidates are ever commercialized; our ability to realize the anticipated strategic and financial benefits of our acquisition of Avigen, Inc., or Avigen; our ability to integrate Avigen’s ibudilast development program with ours; the potential impact of uncertainties in the credit and capital markets or a future deterioration of these markets on our investment portfolio; and our ability to raise sufficient capital or debt financing when needed, or at all. Such forward-looking statements include statements preceded by, followed by or that otherwise include the words “may,” “might,” “will,” “intend,” “should,” “could,” “can,” “would,” “expect,” “believe,” “estimate,” “anticipate,” “predict,” “potential,” “plan” or similar words. For all forward-looking statements, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995. You should not rely unduly on these forward-looking statements, which speak only as of the date on which they are made. We undertake no obligation to revise or update publicly any forward-looking statements, whether as a result of new information, future events or otherwise, unless required by law.*

**Item 1. Business**

**Overview**

We are a development stage biopharmaceutical company focused on acquiring and developing novel, small molecule therapeutics for the treatment of serious diseases with unmet medical needs with a specific focus on the U.S. market. Through strategic alliances, primarily with Japanese pharmaceutical companies, we hold rights to a diversified portfolio of clinical and preclinical product candidates which we believe provide significant commercial opportunity for the Company. In December 2009 we acquired Avigen Inc., or Avigen, a biopharmaceutical company that focused on identifying and developing differentiated products to treat patients with serious disorders, whose potential product candidate is a macrophage migration inhibitory and a glial attenuator for central nervous system, or CNS, disorders such as neuropathic pain, opioid addiction and withdrawal and methamphetamine addiction.

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We believe that our ability to gain access to and acquire potentially high-value product candidates from Japanese and European pharmaceutical companies is largely attributable to the established relationships and broad industry experience of our management team. In particular, we believe our relationships with Japanese pharmaceutical companies and their executives provide us with a competitive advantage in opportunistically sourcing product candidates from Japanese pharmaceutical companies at attractive terms. Since our inception, we have established relationships with a number of pharmaceutical companies, including Kissei Pharmaceutical Co., Ltd., or Kissei Pharmaceutical, Kyorin Pharmaceutical Co., Ltd., or Kyorin Pharmaceutical, Mitsubishi Tanabe Pharma Corporation and Meiji Seika Kaisha, Ltd., or Meiji Seika Kaisha, in Japan and Angiogene Pharmaceuticals, Ltd., or Angiogene Pharmaceuticals, in the United Kingdom, pursuant to which we have obtained rights to develop and commercialize our current product candidates.

Since our inception, we have acquired licenses to eight compounds for the development of ten product candidates which include clinical development for the treatment of acute exacerbations of asthma, multiple sclerosis (MS) and other central nervous system (CNS) disorders, bronchial asthma, interstitial cystitis (IC), solid tumor cancers, generalized anxiety disorders/insomnia, preterm labor and urinary incontinence. Two of such compounds have been in preclinical development for the treatment of thrombotic disorders. In addition, we have expanded our development program for MN-221 for the treatment of chronic obstructive pulmonary disease (COPD) exacerbations.

At present, we are focusing our resources on the following prioritized product development programs:

<b>Product Candidate</b>	<b>Disease/Indication</b>	<b>Phase of Development</b>	<b>Licensor</b>	<b>Licensed Territory</b>
MN-221	Acute exacerbations of asthma and COPD exacerbations	<p>Phase 2 clinical trial in emergency rooms at planned escalating doses in patients with severe, acute exacerbations of asthma completed in the second quarter of 2009</p> <p>Phase 2 clinical trial (CL-007) in emergency rooms to evaluate safety and efficacy in patients with acute exacerbations of asthma initiated in the first quarter of 2009. On March 21, 2012 we announced completion of the 176 patient enrollment of the Phase 2 MN-221-CL-007 clinical trial. We expect trial results in the second quarter of 2012.</p> <p>Phase 1b clinical trial to evaluate the safety and efficacy in patients with stable, moderate to severe COPD completed in the first quarter of 2010.</p>	Kissei Pharmaceutical	Worldwide, except Japan*

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<u>Product Candidate</u>	<u>Disease/Indication</u>	<u>Phase of Development</u>	<u>Licensors</u>	<u>Licensed Territory</u>
MN-166	CNS disorders**	<p>Encouraging safety and efficacy data for the -007 trial was reported via press release in the first quarter of 2010 and at the CHEST Society meeting later in 2010. In the first quarter of 2012 we initiated an additional Phase 1b COPD clinical trial that has commenced enrollment and has an anticipated trial completion around the end of the second quarter of 2012.</p> <p>Phase 2 clinical trial completed in the second quarter of 2008.</p> <p>Prototype once-per-day oral formulation developed for future clinical trials</p> <p>Phase 1b/2a clinical trial in diabetic neuropathic pain completed in the fourth quarter of 2007</p> <p>Phase 1b National Institute on Drug Abuse, or NIDA, funded clinical trial in methamphetamine-dependent volunteers initiated in the fourth quarter of 2010</p> <p>Phase 1b/2a NIDA funded clinical trial to evaluate safety and efficacy in heroin-dependent volunteers completed in the fourth quarter of 2010</p> <p>Investigator initiated Phase 2 clinical trial collaboration with a headache and pain specialist in Australia initiated in the third quarter of 2011</p>	Kyorin Pharmaceutical (MN-166)	Worldwide, except Japan, China, Taiwan and South Korea (MN-166)

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- \* Pursuant to our license agreement with Kissei Pharmaceutical, Kissei has the right to co-promote licensed products in our territory on terms to be agreed upon by the parties. We entered into an agreement to form a joint venture company with Zhejiang Medicine Co., Ltd. and Beijing Make-Friend Medicine Technology Co., Ltd. effective September 27, 2011. The joint venture agreement provides for the joint venture company to develop and commercialize MN-221 in China. A sublicense under which the joint venture company will license MN-221 from us will be required, which sublicense will require the consent of Kissei. We have not entered into the sublicense of MN-221 with the joint venture company as of the date of this report. There is no assurance the sublicense will be executed and there is no assurance that the joint venture company will be able to proceed with the development of MN-221 in China.
  - \*\* Other CNS disorders encompass MS, neuropathic pain, opioid addiction and withdrawal and methamphetamine addiction.

Upon completion of proof-of-concept Phase 2 clinical trials, we intend to enter into strategic alliances with leading pharmaceutical or biotech companies to support further clinical development if we are unable to raise additional capital to conduct Phase 3 trials. Depending on the results of our the MN-221 Phase 2 trial that completed enrollment in March 2012 and our ability to raise additional capital and/or to enter into a collaboration with a leading pharmaceutical or biotech company, we intend to define a Phase 3 trial and other development plans for MN-221 for the treatment of acute exacerbations of asthma and conduct one or more Phase 3 trials, and we intend to pursue the development of this drug candidate for the treatment of COPD. We also intend to enter into strategic alliances with leading pharmaceutical or biotech companies to support further clinical development of MN-166. We may also pursue potential partners and potential acquirers of license rights to our programs in markets outside the U.S. In addition, we continue to limit development activities for the balance of our existing product development programs in order to focus on our prioritized product development programs. For each of these remaining product candidates, we plan to conduct development activities only to the extent deemed necessary to maintain our license rights or maximize their value while pursuing a variety of initiatives to monetize such development programs. We cannot assure you that we will be successful in monetizing these programs on attractive terms, or at all. See “*Risk Factors.*”

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Our eight non-prioritized product development programs consist of the following:

<u>Product Candidate</u>	<u>Disease/Indication</u>	<u>Phase of Development</u>	<u>Licensors</u>	<u>Licensed Territory</u>
MN-001*	Bronchial asthma	Phase 3 clinical trial initiated in the fourth quarter of 2006 and terminated in the second quarter of 2007; Once-per-day oral dosing formulation prototypes developed	Kyorin Pharmaceutical	Worldwide, except Japan, China, Taiwan and South Korea
MN-001	Interstitial cystitis	Phase 2 clinical trial completed in the first quarter of 2007†	Kyorin Pharmaceutical	Worldwide, except Japan, China, Taiwan and South Korea
MN-029	Solid tumors	Phase 1 clinical trial completed in the second quarter of 2006; Second Phase 1 clinical trial completed in the fourth quarter of 2007	Angiogene Pharmaceuticals	Worldwide
MN-305	Generalized anxiety disorder/ Insomnia	Phase 2 clinical trial completed in generalized anxiety disorder in the second quarter of 2006†; Phase 2 clinical trial in insomnia completed in the fourth quarter of 2007††	Mitsubishi Tanabe Pharma Corporation	Worldwide, except Japan and certain other countries in Asia
MN-221	Preterm labor	Phase 1 clinical trial completed in the second quarter of 2007	Kissei Pharmaceutical	Worldwide, except Japan
MN-246	Urinary incontinence	Phase 1 clinical trial completed in the fourth quarter of 2006; Phase 1 food effects study completed in the first quarter of 2007	Mitsubishi Tanabe Pharma Corporation	Worldwide, except Japan and certain other countries in Asia
MN-447	Thrombotic disorders	Preclinical	Meiji Seika Kaisha	Worldwide, except Japan and certain other countries in Asia
MN-462	Thrombotic disorders	Preclinical	Meiji Seika Kaisha	Worldwide, except Japan and certain other countries in Asia

\* Our rights to MN-001 licensed from Kyorin Pharmaceutical exclude ophthalmic solution formulations.

† Although positive signs of efficacy were obtained in the clinical trials conducted on MN-001 in interstitial cystitis and MN-305 in generalized anxiety disorder, the predefined primary statistical endpoints of the clinical trials were not achieved; therefore, we would not anticipate submitting either clinical trial as a pivotal trial supporting a New Drug Application, or NDA, to the U.S. Food and Drug Administration, or the FDA.

†† In the Phase 2 clinical trial conducted on MN-305 in insomnia, the predefined statistical endpoint of the clinical trial was not achieved; therefore, we terminated any further development of MN-305 for the treatment of insomnia.

## Our Strategy

Our goal is to build a sustainable biopharmaceutical business through the successful acquisition, development and commercialization of differentiated products for the treatment of serious diseases with unmet medical needs in high-value therapeutic areas. Our focus is on the U.S. market. Key elements of our strategy are as follows:

- *Concentrate our resources on our two prioritized product development programs, MN-221 and MN-166.* Depending on the results of our the MN-221 Phase 2 trial that completed enrollment in March 2012 and our ability to raise additional capital and/or to enter into a collaboration with a leading pharmaceutical or biotech company to fund development costs, we intend to define a Phase 3 trial and other development plans for MN-221 for the treatment of acute exacerbations of asthma and conduct one or more Phase 3 trials, and we intend to pursue the development of this drug candidate for the treatment of COPD. We also intend to enter into strategic alliances with leading pharmaceutical or biotech companies to support further clinical development of MN-166. We may also decide to pursue potential partners and potential acquirers of license rights to our programs in markets outside the U.S.
- *Pursue additional indications and commercial opportunities for our prioritized product candidates.* We will seek to maximize the value of MN-221 and MN-166 by pursuing other potential indications and commercial opportunities for such product candidates. For example, we have rights to develop and commercialize MN-221 for any disease or indication. In addition to the ongoing evaluation of MN-221 for the treatment of acute exacerbations of asthma, we expanded our development program for MN-221 to evaluate MN-221 for the treatment of COPD exacerbations utilizing our existing Investigational New Drug Application, or IND for MN-221.
- *Maximize the value of the remainder of our diversified pipeline of existing product candidates.* We will conduct development activities strategically on the remainder of our existing product candidates, to the extent that we deem any further activities necessary to maintain our license rights or maximize their value, while aggressively pursuing a variety of initiatives to monetize these product candidates on appropriate terms.
- *Opportunistically in-license additional product candidates through our global industry relationships.* Over the long term, we intend to expand our pipeline of in-licensed product candidates by continuing to cultivate and strengthen our business relationships with pharmaceutical companies in Japan and other markets. We believe our ability leverage industry relationships to acquire product candidates with high potential and existing preclinical or early clinical data from Japanese pharmaceutical companies provides us with a competitive advantage over other drug development companies in the U.S. market. We believe that additional diversification and expansion of our pipeline of product candidates will help maximize the commercial opportunity and mitigate the risks inherent in drug discovery and development.
- *Strategically partner with pharmaceutical companies who are leaders in their fields to complete late stage product development and successfully commercialize our products.* We develop and maintain business development relationships with pharmaceutical therapeutic area leaders who seek late stage product candidates to complete development and commercialization. We intend to select partners with demonstrated ability to complete late stage development and successfully commercialize product candidates. To ensure our ability to build a sustainable business, we may selectively add commercial capabilities to our management team to support our evolution into a commercial entity as our product development programs mature.

## Product Development Programs

Our product development programs address diseases that we believe are not well served by currently available therapies and represent significant commercial opportunities. We believe that our product candidates offer innovative therapeutic approaches that may provide significant advantages relative to current therapies.



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Our product acquisitions have focused primarily on product candidates with significant preclinical and early clinical testing data that have been developed by the licensors outside of the U.S. We utilize the existing data in preparing Investigational New Drug Applications, or INDs, or their foreign equivalents, and in designing and implementing additional preclinical or clinical trials to advance the regulatory approval process in the U.S. or abroad. Following are details of our product development programs:

### *Prioritized Product Candidates*

The current state of the development program for each of our two prioritized product candidates is described below.

#### *MN-221 for Acute Exacerbations of Asthma*

*Indication Overview and Market Opportunity.* An acute exacerbation of asthma is an acute asthma symptom episode such as shortness of breath, wheezing and chest tightness due to constricted airways. Severe acute exacerbations of asthma is an emergency situation that can lead to emergency department treatment and, in some cases, hospital admission or, more rarely, death. Inhaled short acting beta-agonist agents are the mainstays of acute treatment for these types of asthma attacks and are included in the recommended standard of care according to the National Guideline Clearinghouse from the U.S. Department of Health and Human Services, or DHSS, for patients suffering from acute exacerbations of asthma.

Data from the National Center for Health Statistics show that in the U.S., annual visits to emergency departments for asthma was approximately 1.75 million, and there were approximately 456,000 hospitalizations and approximately 3,447 deaths due to asthma in 2007. According to the National Heart, Lung and Blood Institute, the direct costs associated with hospital care due to asthma were estimated at \$5.5 billion in the U.S. in 2010. Despite significant improvement in the long-term control treatment for asthma, we believe that the number of patients presenting to emergency departments with asthma exacerbations who do not respond to initial standard of care for asthma exacerbations and which may be admitted to the hospital for further care are very similar to these prior figures. Hence we believe that there remains an unmet medical need for a safe and effective treatment for acute exacerbations of asthma that could prevent some of these hospitalizations.

*Overview of MN-221 in Acute Exacerbations of Asthma.* MN-221 is a novel, highly selective  $\beta_2$ -adrenergic receptor agonist being developed for the treatment of acute exacerbations of asthma and COPD. We licensed MN-221 from Kissei Pharmaceutical in February 2004. Preclinical studies conducted *in vitro* and *in vivo* showed MN-221 to be highly selective for the  $\beta_2$ -adrenergic receptor. In these studies, the  $\beta_1$ -adrenergic receptor stimulating activity of MN-221 was less than that of other  $\beta_2$ -adrenergic receptor agonists in isolated rat atrium and *in vivo* cardiac function tests in rats, dogs and sheep, thereby suggesting that the stimulating action of older, less selective  $\beta_2$ -adrenergic receptor agonists on the heart via  $\beta_1$ -adrenergic receptors may be reduced with MN-221. *Some in vitro* studies also suggested that MN-221 may act as only a partial  $\beta_1$ -adrenergic receptor agonist in cardiac tissue, while acting as a full  $\beta_2$ -adrenergic receptor in lung tissue. In addition, a preclinical drug interaction study in dogs completed during 2008 demonstrated that, while each of albuterol and MN-221 induced an increase in heart rate independently, the addition of MN-221 by intravenous administration in combination with inhaled albuterol did not add to the heart rate increase associated with inhaled albuterol alone. We believe that this improved receptor binding and functional selectivity provides good pharmacological specificity and may result in fewer cardiovascular side effects than are commonly observed with other  $\beta_2$ -adrenergic receptor agonists used to treat this condition. We have developed and studied an intravenous formulation of MN-221 appropriate for hospital use.

*Clinical Results of MN-221 in Acute Exacerbations of Asthma.* We completed a randomized, double-blind, placebo-controlled, dose escalation, multi-center Phase 2 clinical trial of MN-221 in 23 stable mild-to-moderate asthmatics, in August 2007. At each dose level in the escalation, patients were randomized to receive either a 15-minute intravenous infusion of MN-221 or placebo. This clinical trial achieved statistical significance in its

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primary endpoint of mean change in forced expiratory volume in one second, or FEV<sub>1</sub>, from baseline to measurement at 15 minutes (the end of the infusion) at doses of 10, 16, 30 and 60 micrograms per minute of MN-221 (p-value less than or equal to 0.0006) compared to placebo. MN-221 produced a significant linear, dose-related increase in mean change in post-infusion FEV<sub>1</sub> from baseline (p-value less than or equal to 0.0001) following a 15-minute intravenous infusion of MN-221. Significant improvements in mean change in post-infusion (15 minute) FEV<sub>1</sub> from baseline were observed at doses of 10, 16, 30 and 60 micrograms per minute (p-value less than or equal to 0.0006) and at the dose of 3.5 micrograms per minute (p-value=0.0106) compared to placebo. In the protocol correct population for this clinical trial, which consisted of 21 patients, the dose-related increases in FEV<sub>1</sub> were maintained for four hours (p-value=0.0393) and at eight hours (p-value=0.0424) following the 15-minute infusion of MN-221. MN-221 was well tolerated in this Phase 2 clinical trial, with only the expected  $\beta_2$ -adrenergic receptor pharmacology noted in some patients (*e.g.*, fall in serum potassium, elevation in plasma glucose, mild headache and mild tremors). There were no clinically significant cardiovascular, electrocardiogram, or ECG, or vital sign changes observed at any dose tested. In addition, no serious adverse effects were observed in this clinical trial.

We completed a randomized, open-label, placebo-controlled Phase 2a clinical trial to evaluate the safety and efficacy of MN-221 in patients with moderate to severe, but stable asthma, which involved 17 patients in two dose cohorts, in September 2008. In one dosing cohort, each patient received MN-221 at a dose of 1,125 micrograms or placebo over one hour by a continuous intravenous infusion. In the other dosing cohort, each patient received MN-221 at a dose of 1,080 micrograms or placebo over two hours by a continuous intravenous infusion. Both infusion rates of MN-221 produced a marked and clinically significant improvement in FEV<sub>1</sub>. FEV<sub>1</sub> results were expressed as “percent predicted” based on standard reference equations accounting for an individual’s race, gender, age and height. At the end of the one-hour infusion, FEV<sub>1</sub> increased by 17.5 percent predicted for MN-221 compared to an increase of three percent predicted for placebo. At the end of the two-hour infusion, FEV<sub>1</sub> increased by an average of 12.1 percent predicted for MN-221 compared to an increase of 1.4 percent predicted for placebo. In accordance with the study protocol, no inferential statistical testing was performed. MN-221 was well tolerated by the patients who received either infusion rate of MN-221. There were no clinically significant safety concerns noted among adverse events, ECG data, vital sign data or laboratory assessments collected throughout this clinical trial.

We completed a randomized, modified single-blind, placebo-controlled, dose escalation Phase 2 clinical trial to evaluate MN-221 in patients with severe, acute exacerbations of asthma in emergency departments, which included 29 patients (13 treated with standard care only and 16 treated with MN-221 plus standard care) at planned escalating doses of 240 to 1,080 micrograms, in April 2009. All patients received standardized care consisting of inhaled albuterol, ipratropium and oral steroid treatment. No safety concerns with adding MN-221 to standardized care were identified following review of ECG laboratory and adverse experience data. The hospitalization rate among patients treated with standardized care only was 46 percent (six of 13), which was the anticipated rate, compared to a hospitalization rate of 25 percent (four of 16) among patients receiving MN-221 plus standardized care. Improvement in FEV<sub>1</sub> values generally appeared to be greater for patients receiving MN-221 in addition to standardized treatment. As specified in the protocol for this clinical trial, no inferential statistics (*e.g.*, p-values) were calculated for this study.

*Development Plan of MN-221 in Acute Exacerbations of Asthma.* In March 2012 we completed enrollment of a randomized, double-blind, placebo-controlled Phase 2 clinical trial designed to evaluate the safety and efficacy of MN-221 in patients with severe, acute exacerbations of asthma in emergency departments, which involved 176 patients. The trial was designed to compare standardized care to standardized care plus MN-221 at a dose of 1,200 micrograms administered intravenously over one hour. Once a patient has received the initial standardized care treatment regimen, the patient will be assessed for response to that treatment. If the patient’s FEV<sub>1</sub> is less than or equal to 50 percent of predicted and the patient meets all other study entry criteria, the patient will be randomized to receive either MN-221 or placebo. Patients enrolled in the clinical trial will continue to receive standardized care as needed. The primary efficacy endpoint will be improvement in FEV<sub>1</sub>. We expect trial results in the second quarter of 2012. Should we have acceptable findings, we intend to define a

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Phase 3 trial and other development plans and request an End-of-Phase 2 meeting with the FDA. Depending on the results of our the MN-221 Phase 2 trial and our ability to raise additional capital and/or to enter into a collaboration with a leading pharmaceutical or biotech company, we intend to initiate our Phase 3 program.

We entered into an agreement to form a joint venture company with Zhejiang Medicine Co., Ltd. and Beijing Make-Friend Medicine Technology Co., Ltd. effective September 27, 2011. The joint venture agreement provides for the joint venture company to develop and commercialize MN-221 in China. A sublicense under which the joint venture company will license MN-221 from us will be required, which sublicense will require the consent of Kissei. We have not entered into the sublicense of MN-221 with the joint venture company as of the date of this report. There is no assurance the sublicense will be executed and there is no assurance that the joint venture company will be able to proceed with the development of MN-221 in China.

### *MN-221 for Chronic Obstructive Pulmonary Disease Exacerbations*

*Indication Overview and Market Opportunity.* A COPD exacerbation is a sustained worsening of the patient's condition, from the stable state and beyond normal day-to-day variations, that is acute in onset and necessitates a change in regular medication in a patient with underlying COPD. Exacerbations are associated with a significant increase in mortality, hospitalization and healthcare utilization. According to data from the National Heart, Lung, and Blood Institute, an estimated 12.1 million adults had a diagnosis of COPD in the U.S. in the year 2001 and about 24 million adults have evidence of impaired lung function indicating that COPD is under diagnosed. According to data from the National Heart, Lung, and Blood Institute, in the year 2000, there were 119,000 deaths, 726,000 hospitalizations, and 1.5 million hospital emergency department visits due to COPD in the U.S. The age-adjusted death rate for COPD increased more than 30 percent since 1980, according to a 2010 report on COPD from the American Lung Association, which used data from the Centers for Disease Control and Prevention. In 2002, according to the National Heart, Lung, and Blood Institute, direct costs for COPD were \$18.0 billion and indirect costs were \$14.1 billion in the U.S. In 2010, according to the American Lung Association, the direct costs for COPD were approximately \$29.5 billion and indirect costs were approximately \$20.4 billion in the U.S. We believe there remains an unmet medical need for a safe and effective treatment for COPD exacerbations that could relieve bronchospasm and prevent some of these hospitalizations.

*Overview of MN-221 in COPD Exacerbations.* In July 2009, we announced our plan to evaluate MN-221 for the treatment of COPD exacerbations. Inhaled  $\beta_2$ -adrenergic receptor agonists, which are the current standard of care, are often inadequate to control the symptoms of COPD exacerbations. We believe that MN-221 may offer an immediate intravenous delivery for this life-threatening condition for patients who cannot get the full benefit from treatment with inhaled  $\beta_2$ -adrenergic receptor agonists due to severe bronchoconstriction. In addition, we believe that MN-221 may offer the potential for fewer cardiovascular side effects than older  $\beta_2$ -adrenergic receptor agonists due to its greater selectivity for the  $\beta_2$ -adrenergic receptor. This could be very significant due to the relative older age population seen in COPD patients who tend to have more underlying heart disease. On October 13, 2011, we entered into an agreement with Kissei to expand research and development services pertaining to the use of MN-221, including MN-221 for the treatment of COPD exacerbations. The current CL-012 trial, wherein enrollment is expected to be completed around the end of the second quarter of 2012, is a component of that agreement.

*Clinical Results of MN-221 in COPD Exacerbations.* We completed a randomized, double-blind, placebo-controlled Phase 1b study involving 48 moderate-to-severe COPD patients who received a one hour intravenous infusion of MN-221 at three different escalating dose levels (300 micrograms, 600 micrograms, or 1200 micrograms) or placebo in the first quarter of 2010. In March 2010, based on preliminary findings, we announced that all doses of MN-221 produced a clinically significant improvement in FEV<sub>1</sub> (L) as compared to the baseline and placebo. At the end of the one hour infusion, FEV<sub>1</sub> (L) increased as compared to baseline by an average of 21.5 percent (p=0.0025) for the 1200 micrograms dose, 16.2 percent (p=0.020) for the 600 micrograms dose, and

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9.2 percent (p=NS) for the 300 micrograms dose compared to a decrease of 4.0 percent for the placebo. MN-221 at doses of 600 micrograms and 1200 micrograms appeared to have an effect for at least six hours as compared to placebo. MN-221 was well tolerated by all patients who received infusions of MN-221.

*Development Plans of MN-221 in COPD Exacerbations.* In the first quarter of 2012 we initiated a Phase 1b/2a clinical trial in severe to moderate COPD patients which addresses a number of important goals in developing MN-221 in this indication. The trial design includes enrollment of approximately 20 patients with co-morbidities and concomitant medications that typify patients that might present in Emergency Departments with exacerbations. In addition, we will be exploring the safety, tolerability, pharmacokinetics, and preliminary efficacy of repeat-administration placebo or MN-221 (1.2 mg) over a few days of residence in a clinical trial unit. Finally, we are assessing the correlation and potential future clinical trial utility of certain breathing function testing devices. The protocol has received FDA and IRB review and we anticipate completing this trial by the end of the second quarter of 2012.

### *Ibuprofen (MN-166)*

The Ibuprofen portfolio, which includes the Phase 2-staged lead drug compound and proprietary analogs, represents novel, first-in-class, non-opioid drugs for the treatment of several large pain and drug addiction indications. Ibuprofen is a relatively potent and selective inhibitor of macrophage migration inhibitory factor (MIF) and phosphodiesterases (PDEs)-4 and -10. It is a first-in-class, orally bioavailable small molecule, a glial attenuator that suppresses pro-inflammatory cytokines IL-1 $\beta$ , TNF- $\alpha$ , and IL-6, and may increase the release of the anti-inflammatory cytokine IL-10 and neuroprotective growth factors (e.g. GDNF). It has additionally been shown to be a toll-like receptor 4 (TLR4) functional antagonist that may contribute to its attenuation of neuroinflammation. While considered a New Molecular Entity, or NME, in the U.S. and Europe, it involves redirection of an approved drug, ibuprofen, which was first approved in Japan more than 20 years ago. Ibuprofen has been prescribed to over one million patients for a different indication and has a good post-marketing safety profile as reported in nearly 15,000 patients studied at the prescribed doses.

Based on our research, we have filed for patents protecting multiple uses of ibuprofen in neurological conditions, as well as for patents on analogs which we believe have the potential to be effective second generation molecules. Some of the patent estate has received allowance in the U.S. and foreign countries. As NMEs, MN-166 and its analogs would be entitled to five years of marketing exclusivity from first approval in the U.S. and up to 10 years of exclusivity in the European Union

*Neuropathic pain:* MIF activity and glial activation in the brain and spinal cord contribute to the establishment and amplification of the chronic pain state. As part of Avigen's program investigating glial attenuation as a novel approach to the treatment of neuropathic pain, Avigen conceived and demonstrated that ibuprofen was efficacious in preclinical models of neuropathic pain and may be effective in a wide range of neuropathic pain syndromes including neuropathy, post-herpetic neuralgia, HIV neuropathy, radiculopathy, spinal cord injury and chemotherapy-induced neuropathy. While ibuprofen was initially developed as a non-selective phosphodiesterase (PDE) inhibitor for the treatment of bronchial asthma, its efficacy in some neuropathic pain models appears to be independent of this activity and yet still linked to glial attenuation.

Ibuprofen has advanced through multiple Phase 1 and 2a clinical trials in both healthy volunteers and patients for neuropathic pain, inclusive of a Phase 1b/2a clinical trial in diabetic neuropathic pain. The program, under current FDA standards, is able to enter Phase 2 development for neuropathic pain in the U.S. based on completed Avigen preclinical and clinical development. A Phase 2 investigator-sponsored trial of ibuprofen in the treatment of chronic medication overuse headache (MOH) pain is also ongoing in Australia and involves placebo or ibuprofen administration for up to two months.

*Opioid withdrawal:* A Phase 1b/2a clinical trial in opioid withdrawal and analgesia, or OWA, was completed and funded by NIDA and conducted at Columbia University by leading specialists in the study and

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treatment of substance abuse. MN-166 and analogs have been shown in preclinical models of opioid (morphine or oxycodone) withdrawal to significantly reduce withdrawal symptoms. Moreover, MN-166 attenuates both behavioral and neurochemical markers of opioid reward. MN-166 and analogs are differentiated from other drug candidates in clinical trials that may demonstrate similar effects, in that MN-166 and analogs are not narcotics and do not, themselves, provide reward or “reinforcement” in behavioral models of dependence. Thus, while current therapies involve substitution of one opioid for another (e.g. methadone for heroin), MN-166 represents a novel, non-opioid, approach for the treatment of opioid withdrawal and dependence. Results from the recently-completed OWA trial indicated dose-related attenuation of the opioid withdrawal syndrome ( $p < 0.05$  for 80 mg/d treatment arm relative to placebo control on the Subjective Opioid Withdrawal Scale (SOWS) endpoint) and enhanced opioid analgesia ( $p < 0.05$  for the McGill Pain Questionnaire endpoint for the 80 mg/d treatment arm vs. placebo control). Other measures of withdrawal (Clinicians Opioid Withdrawal Scale) or analgesia (quantitative time endpoints for cold pressor test) were not significantly attenuated.

*Methamphetamine addiction:* In collaborative studies with NIDA, MN-166 has demonstrated utility in methamphetamine relapse in animals which translated into a NIDA-funded exploratory Phase 1b methamphetamine interaction clinical trial with investigators at the University of California – Los Angeles. The trial is currently enrolling patients.

*Development Plans of Ibudilast for Neuropathic Pain and Drug Addiction.* We are not planning to undertake Phase 2b clinical development of ibudilast for pain or drug addiction indications until such time as we are successful in entering into a strategic collaboration and/or funding arrangement to support further clinical development of our combined MN-166 ibudilast-based programs. We are actively pursuing potential partners for such purpose.

### *Ibudilast (MN-166) for Progressive Multiple Sclerosis*

*Indication Overview and Market Opportunity.* MS is an inflammatory disease of the CNS in which the body’s immune system attacks the protective sheath surrounding nerve fibers. According to the National Multiple Sclerosis Society, MS affects approximately 400,000 people in the U.S. and approximately 2.5 million people worldwide. In addition, according to the National Multiple Sclerosis Society, approximately 200 people are diagnosed with MS in the U.S. each week. The most obvious effect of MS is its destruction of nerve fibers leading to the loss of muscle control. However, MS also affects multiple CNS functions. Currently, there is no known cure for the disease. According to the National Multiple Sclerosis Society, relapsing-remitting MS, or RRMS, is the most common type of the disease, and 85 percent of people with MS are initially diagnosed with RRMS. Approximately 50% of RRMS patients progress to secondary progressive MS (SPMS). The most severe type of MS, primary progressive MS (PPMS), represents about 10% of all MS. According to sales data included in the most recent annual reports of leading MS drug companies, including Biogen Idec Inc., Merck Serono S.A., Teva Pharmaceuticals Industries Ltd. And Bayer Shering Pharma AG, worldwide sales of drugs to treat MS exceeded \$11 billion in 2010.

The aim of treatment is to relieve symptoms of acute attacks by reducing the frequency of relapses and limiting the disabling effects of relapses and to minimize disability caused by disease progression. Steroids are used in treating MS to decrease the severity and shorten the duration of the attacks, but they do not change the course of the disease. Corticosteroid use is normally limited to the short-term treatment of MS, perhaps over a period of one to three weeks, as it generally is believed that the side effects and safety risks of long-term corticosteroid therapy outweigh clinical benefits in extended MS treatment. More recently, immunosuppressive agents and techniques have been introduced for the treatment of MS. However, these treatments are only partially effective and certain side effects may preclude their widespread use. These treatments may slow the course of disease progression and mitigate its effects temporarily, but additional drugs are often required to address the various CNS dysfunctions caused by the disease. Progressive MS (PPMS and SPMS) represents a particularly unmet pharmacotherapy need as there are little or no clearly effective, safe, and well-tolerated drugs approved.

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*Overview of MN-166 for Progressive Multiple Sclerosis.* We licensed MN-166 from Kyorin Pharmaceutical in October 2004. MN-166 has been marketed in Japan and Korea since 1989 to treat cerebrovascular disorders and bronchial asthma. In preclinical *in vivo* and *in vitro* studies, MN-166 inhibited leukotriene activity, phosphodiesterases and nitric oxide synthase, all of which are inflammatory mechanisms known to be involved in MS. These studies also suggested that MN-166 may suppress the production of pro-inflammatory cytokines (IL-1 $\beta$ , TNF- $\alpha$ ) and enhance the production of the anti-inflammatory cytokines (IL-4, IL-10). Based on the potential mechanisms of action of MN-166, its clinical safety history in Japan, the results of pilot studies conducted by Kyorin Pharmaceutical in MS patients and the issuance of a U.S. patent covering the method of using MN-166 to treat the disease, we decided to pursue development of MN-166 as a novel, oral agent for the treatment of MS.

*Clinical Results of MN-166 for Progressive Multiple Sclerosis.* Based on its anti-inflammatory activity and safety profile, MN-166 was evaluated for potential activity in MS in two pilot clinical trials sponsored by academic investigators in Japan. In one open-label pilot clinical trial, the investigators studied the effects of MN-166 on relapse rates in six MS patients who had a mean of four relapses per year. Following 12 to 20 months of treatment with MN-166, the average relapse rate was reduced. Over this time frame, there was no significant change in the mean Expanded Disability Status Score, or EDSS, a measure of MS drug efficacy and disease progression. No side effects of MN-166 were reported in this clinical trial. In a second pilot trial involving 12 MS patients receiving MN-166 for four weeks, MN-166 tended to normalize the levels of several chemical mediators of inflammation, including TNF- $\alpha$  and interferon gamma.

We completed a two-year Phase 2 multi-center, randomized, double-blind, placebo-controlled clinical trial of MN-166 for the treatment of patients with relapsing MS in April 2008. This clinical trial involved 297 patients with relapsing MS in several countries in Eastern Europe. Patients received either 30 mg of MN-166 per day, 60 mg of MN-166 per day or a placebo.

In the second year of the study, all patients received active drugs. Patients who received 30 or 60 mg of MN-166 per day during the first year of the study remained on the assigned dose for the second 12 months of the study; patients who received placebo during the first 12 months of the study were randomized to receive either 30 or 60 mg of MN-166 per day (double-blind maintained) during the second 12 months of the study. Clinical and radiological outcomes were evaluated. MN-166 treatment resulted in positive findings on three independent measures indicative of a potential disease-progression modifying effect. First, sustained disability progression was significantly less likely (by approximately 50 percent) in those patients receiving MN-166 at either 30 or 60 mg per day for 24 months than in those patients receiving the drug for 12 months ( $p=0.026$ ). Sustained disability progression was measured as a greater than or equal to 1.0 point increase from baseline in the EDSS score for four consecutive months. Second, the significant reduction in brain volume loss ( $p=0.035$ ), as measured by cranial MRI scans, observed after 12 months in patients treated with 60 mg per day of MN-166 compared to placebo was again demonstrated in year two of the study. Brain volume loss was significantly less ( $p=0.030$ ) in patients receiving 60 mg per day of MN-166 for 24 months compared to the other treatment groups. Third, MN-166 treatment at 60 mg per day significantly reduced the relative risk for conversion of new inflammatory lesions identified at month two to PBHs eight months later at month ten by 37 percent ( $p=0.011$ ); such lesions that remain unchanged for eight months are considered PBHs as compared to transient inflammatory lesions that are more closely associated with relapses. MN-166 treatment at 30 mg per day resulted in a trend toward reducing evolution to PBH ( $p=0.074$ ). MN-166 was well tolerated at all doses over the two years of this clinical trial, with the most common adverse events possibly related to MN-166 involving mild, transient gastrointestinal disturbances and depression. Of the 297 patients enrolled in this clinical trial, 245 patients completed the full two years of treatment. In September 2008, data from this completed two-year clinical trial was presented at the World Congress for Treatment and Research in MS.

*Development Plans of MN-166 for Progressive Multiple Sclerosis.* Based on some of our prior Phase 2 RRMS trial outcomes and opinions provided by multiple sclerosis experts and advisors, MN-166 may be best positioned as a therapy for progressive MS. Combined with the recent USPTO "allowance" of our method of use

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patent providing exclusivity for ibudilast in treating progressive MS, including SPMS, we are formulating development plans. It is our intent to advance MN-166 into a Phase 2 proof-of-concept trial in progressive MS and to fund that development via strategic collaboration with a corporate partner and/or funding agency(ies). There can be no assurance that we will be able to successfully secure such strategic collaborations or fundraising activities.

### *MN-001 for Asthma*

*Indication Overview and Market Opportunity.* Asthma is a chronic inflammatory disease of the airways in which symptom control is the key to effective disease management. Alleviation of acute asthmatic symptoms and blocking of late phase inflammation are both important to asthma therapy. According to the CDC and the Global Initiative for Asthma, there are approximately 24.6 million asthma patients in the U.S. and over 300 million asthma patients worldwide.

*Overview of MN-001 in Asthma.* MN-001 is a novel, orally bioavailable compound being developed for the treatment of bronchial asthma. We licensed MN-001 from Kyorin Pharmaceutical in March 2002. In *in vivo* preclinical studies conducted by Kyorin Pharmaceutical and us, MN-001 combined the positive attributes of the leukotriene antagonists and inhaled steroids, while maintaining an acceptable safety profile.

In preclinical pharmacology studies, MN-001 inhibited airway hyper-reactivity through a reduction of airway inflammation. *In vitro* studies and animal studies also suggested that MN-001 may affect many of the downstream mechanisms activated by mast cell degranulation, which is the release of chemicals that cause inflammation. MN-001 also demonstrated that it is a potent inhibitor of pro-inflammatory enzymes *in vitro* (e.g., 5-lipoxygenase and phosphodiesterase 4), as it prevented migration of inflammatory cells to the lungs of rodents in these studies. In addition, in guinea pig asthma models, MN-001 was more selective than steroids in affecting cells involved in the inflammatory process and not those involved in cellular immunity.

*Clinical Results of MN-001 for Asthma.* MN-001 has proven to be well tolerated in early clinical testing. Treatment-related adverse effects, primarily consisting of gastrointestinal discomfort such as diarrhea, loose stools, nausea and upper abdominal pain, were mild, transient and reversible. These adverse effects were consistent with findings in preclinical studies.

We conducted a randomized, double-blind, placebo-controlled, multi-center Phase 2 clinical trial in patients with mild-to-moderate asthma, which was completed in the fourth quarter of 2005. In this clinical trial, 147 patients were randomly assigned to receive placebo or MN-001 tablets in one of three oral dosing regimens for four weeks. The primary endpoint of the trial was achieved with a statistically significant improvement in FEV<sub>1</sub> after four weeks of treatment with 500 mg of MN-001 at three times daily dosage, or TID, compared to placebo (p-value=0.021; intent-to-treat, observed cases). A similar trend was observed for the 750 mg two times daily dosage, or BID, of MN-001 (p-value=0.058). Positive trends in secondary outcome measures were also observed in the 500 mg TID treatment group, including serial spirometry, morning and evening peak flow rates, and provocative concentration causing a 20 percent fall in FEV<sub>1</sub>, or PC20, values in a methacholine challenge test, each of which is a common measure of respiratory function. MN-001 was well tolerated in this clinical trial with 89 percent of patients completing four weeks of treatment. There was no apparent difference between placebo and any of the active treatment groups in adverse events leading to discontinuation or in adverse events attributable to treatment.

### *MN-001 for Interstitial Cystitis*

*Indication Overview and Market Opportunity.* Interstitial Cystitis (IC) is a chronic disease of the bladder characterized by urinary frequency and urgency, nighttime urination and pelvic and bladder pain. It is widely believed that IC is due to an altered or defective bladder lining and an increased number of activated bladder mast cells, which are specialized cells that release biochemicals and cause inflammation. According to the



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National Kidney and Urologic Diseases Information Clearinghouse, which is a division of the National Institutes of Health, at least 1.3 million patients suffer from IC in the U.S., and more than one million of them are women. We believe that IC is currently under diagnosed and that the market for drugs that treat IC will likely expand with the introduction of effective new treatments.

*Overview of MN-001 for Interstitial Cystitis.* MN-001 is a novel, orally bioavailable, anti-inflammatory compound being developed for the treatment of IC. Data that we collected in connection with the development of MN-001 for bronchial asthma and data collected by Kyorin Pharmaceutical provided us with a strong scientific rationale for evaluating MN-001 as an oral treatment for IC. MN-001 has been shown to block a number of the inflammatory mechanisms activated by mast cell degranulation that are important in the pathogenesis of inflammatory disorders, including IC and asthma (*e.g.*, leukotriene receptor antagonism and inhibition of phosphodiesterases III and IV, 5-lipoxygenase, phospholipase C and thromboxane A2). In addition, MN-001 produced anti-inflammatory effects in a variety of rodent models of IC and asthma; in these models, MN-001 reduced bladder hyper-reactivity much in the same way that it reduced airway hyper-reactivity in the lung.

*Clinical Results of MN-001 for Interstitial Cystitis.* We conducted a randomized, double-blind, placebo-controlled multi-center Phase 2 clinical trial in patients with moderate-to-severe IC, which was completed in the first quarter of 2007. This clinical trial involved 305 patients at 37 clinical sites in the U.S. Results from this clinical trial indicated that, while well-tolerated, MN-001 did not show a statistically significant clinical benefit compared to placebo on the primary endpoint (to be much or very much improved overall on a patient-rated global response assessment) at the doses tested in this clinical trial (500 mg once or twice a day for eight weeks). Results from this clinical trial also indicated that IC patients were more than twice as likely to respond on 500 mg of MN-001 administered twice a day compared to placebo (25 percent compared to 12 percent,  $p$ -value=0.04) after four weeks of treatment. This difference, however, was not observed at eight weeks due to continued improvement among placebo-treated patients. The response rate of patients treated with 500 mg of MN-001 once a day did not significantly differ from placebo at either four or eight weeks.

### *MN-029 for Solid Tumors*

*Indication Overview and Market Opportunity.* The American Cancer Society estimates that more than 1.5 million Americans were diagnosed with cancer in 2010, of which more than 750,000 patients were diagnosed with lung, prostate, colon, rectum or breast solid tumor cancers. The American Cancer Society also estimates that approximately 569,000 patients were ultimately to die from cancer in 2010. According to IMS Health, the global market for oncology products exceeded \$48.0 billion in 2008.

Tumor blood vessels are a promising target for cancer therapy. Compounds that act to deprive tumors of their blood supply fall into two classes: angiogenesis inhibitors and vascular disrupting agents, or VDAs. Angiogenesis inhibitors block the formation of new blood vessels formed in response to tumor growth, whereas VDAs disrupt blood flow through existing tumor blood vessels. We believe that VDAs have a potential advantage over angiogenesis inhibitors because VDAs work on existing tumor blood vessels and can kill hundreds of cancer cells that depend on that blood supply with even a brief interruption in blood flow, rather than simply slowing tumor growth by blocking new blood vessel formation.

*Overview of MN-029.* MN-029 is a novel, small molecule VDA being developed for the treatment of solid tumors. We licensed MN-029 from Angiogene Pharmaceuticals in June 2002. Several preclinical pharmacology studies conducted by Angiogene Pharmaceuticals and us have assessed the mechanism of action and anti-tumor activity of MN-029 *in vivo* in rodent models of breast adenocarcinoma, colon carcinoma, lung carcinoma and KHT sarcoma. In these studies, MN-029 damaged poorly formed tumor blood vessels by weakening tumor blood vessel walls and causing leakage, clotting and eventual vascular shutdown within the tumor. These studies suggest that MN-029 acts quickly and is rapidly cleared from the body, which may reduce the potential for some adverse effects commonly associated with chemotherapy. Shutdown of tumor blood flow in tumor models was confirmed through the use of dynamic contrast-enhanced magnetic resonance imaging, or DCE-MRI.



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*Clinical Results of MN-029 for Solid Tumors.* To date, we have conducted two Phase 1 clinical trials of MN-029 for the treatment of solid tumors, which completed in 2006 and 2007, respectively.

In the first Phase 1 clinical trial, MN-029 was administered as an intravenous infusion once every three weeks. Results from this clinical trial showed that MN-029 was well tolerated at doses that reduced tumor blood flow. A maximum tolerated dose of 180 mg/m<sup>2</sup> per dose was established in this clinical trial. The most common side effects of MN-029 were characteristic of other VDAs and included nausea, vomiting, fatigue and diarrhea. Nine of 34 patients with advanced solid tumors for whom no standard therapy was available had stable disease after three cycles of treatment. Six patients had prolonged (greater than six months) stable disease. Although no patients showed objective responses based on Response Evaluation Criteria in Solid Tumors, or RECIST criteria, which is tumor length on computed tomography, or CT, or MRI scans, semi-automated measurements of tumor volumes from CT scans showed a measureable reduction in tumor burden in the subject with the largest reduction in tumor blood flow (Ktrans -40 percent). Tumor blood flow reduction assessed by dynamic contrast-enhanced magnetic resonance imaging, or DCE-MRI, was recorded at doses greater than or equal to 120 mg/m<sup>2</sup>.

In the second Phase 1 clinical trial, MN-029 was administered as an intravenous infusion every seven days (days 1, 8, 15) followed by a 13-day recovery period (one cycle). Results from this clinical trial showed that MN-029 was well tolerated. The maximum dose was limited to 180 mg/m<sup>2</sup> per dose based on the results of the other Phase 1 trial that employed a less aggressive dosing schedule. The most common side effects of MN-029 in this clinical trial included nausea, vomiting, arthralgia and headache. Eleven of 20 patients with advanced solid tumors for whom no standard therapy was available had stable disease after two cycles of treatment. Four subjects continued on extended cycles of MN-029 treatment. Based on RECIST criteria, one patient with metastatic pancreatic cancer had an overall partial response with a duration of 74 days. Seven patients had stable disease with a median duration of 83 days.

### *MN-305 for Generalized Anxiety Disorder/Insomnia*

*Indication Overview and Market Opportunity.* The essential characteristic of generalized anxiety disorder is excessive, uncontrollable worry about everyday events. This constant worry affects daily functioning and can cause severe physical symptoms. Generalized anxiety disorder can occur with other anxiety disorders, depressive disorders or substance abuse. Generalized anxiety disorder is often difficult to diagnose because it is not triggered by a specific object or situation. The intensity, duration and frequency of the worry are disproportionate to the issue. As a result, generalized anxiety disorder tends to interfere with the patient's performance of tasks and ability to concentrate. According to the National Institute of Mental Health, anxiety disorders affect approximately 40 million American adults, of whom approximately 6.8 million suffer from generalized anxiety disorder. Anxiety disorders are the most prevalent of neuropsychiatric conditions, yet are generally considered to be under-diagnosed and therefore undertreated. Therefore, we believe that there is a significant opportunity for the introduction of new anxiety reducing drugs.

A variety of pharmacologic agents are used to manage patients with anxiety disorders. Benzodiazepines have been the mainstay of the treatment of acute anxiety since the late 1960s. However, their efficacy as a treatment has been limited by problems faced in chronic use due to their sedative effects. In the late 1980s, buspirone was introduced and widely used even though it takes effect slowly. Buspirone was well tolerated and relatively safe. During the late 1990s, newer anti-depressants, notably the specific serotonin reuptake inhibitors, or SSRIs, were increasingly used to treat anxiety as well. While effective, the use of SSRIs may result in a variety of undesirable side effects, including agitation and sexual dysfunction. Also, SSRIs may take weeks to exert their beneficial effects.

*Overview of MN-305 for Generalized Anxiety Disorder/Insomnia.* MN-305 is a serotonin receptor agonist with high affinity and selectivity for the serotonin 5-HT<sub>1A</sub> receptor subtype. Drugs that act through this mechanism, such as buspirone, have been proven to be clinically effective in treating generalized anxiety disorder. We licensed MN-305 from Mitsubishi Pharma Corporation, now Mitsubishi Tanabe Pharma

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Corporation, in April 2004. MN-305 has been shown to be more potent than buspirone and to exhibit anti-anxiety efficacy in a wide range of preclinical rodent models. For example, in a social interaction test, MN-305 prolonged the duration of social interaction in rats. Preclinical and clinical studies conducted by Mitsubishi Tanabe Pharma Corporation and us also suggest that MN-305 may have a more rapid onset of action than buspirone.

*Clinical Results of MN-305 for Generalized Anxiety Disorder/Insomnia.* Preliminary evidence of anti-anxiety efficacy was provided by a six-week, open-label, fixed-flexible dose Phase 2 clinical trial conducted by Mitsubishi Tanabe Pharma Corporation in Japan in 61 patients with neurotic disorders. The neurotic disorders included generalized anxiety disorder, panic disorder, agoraphobia, mixed anxiety and depressive disorder and dysthymia. MN-305 was well tolerated, with headaches being the most common side effect in this clinical trial. At the end of the clinical trial, the mean Hamilton Rating Scale for Anxiety score, or HAM-A score, which is a scale used to measure the intensity of anxiety symptoms, was reduced compared to the pre-treatment value. Similarly, a majority of the patients were rated “Moderately Improved” or better following treatment with MN-305. In addition, MN-305 was well tolerated in several clinical trials conducted by Mitsubishi Tanabe Pharma Corporation in healthy volunteers and patients with anxiety disorders and Major Depressive Disorder. These studies did not evaluate the reduction of anxiety symptoms in patients that were not treated with MN-305.

The IND for MN-305 was transferred to us from Mitsubishi Tanabe Pharma Corporation, which enabled us to conduct a Phase 2 randomized, double-blind, placebo-controlled clinical trial in 416 patients with generalized anxiety disorder, which was completed in the second quarter of 2006. The results revealed trends for improvement in all efficacy outcome measures. Statistically significant improvements in the total HAM-A score and in anxious mood, which is item 1 of the HAM-A score and was a secondary endpoint in this clinical trial, were observed through eight weeks of treatment. However, statistical significance on change from baseline of the total HAM-A score after ten weeks of treatment, which was the primary outcome measure of this clinical trial, was not achieved. MN-305 was well tolerated at all doses in this clinical trial, and we believe the findings were sufficiently positive to warrant further clinical evaluation of this product candidate.

We analyzed the results from our Phase 2 clinical trial of MN-305 in generalized anxiety disorder and performed in-depth analyses of subgroups that showed statistically significant improvement in certain aspects of the HAM-A score (*e.g.*, insomnia). Based on these analyses, we initiated a Phase 2 proof-of-concept clinical trial of MN-305 for the treatment of insomnia in the first quarter of 2007 to assess the effects of three dosages of MN-305 (1 mg, 3 mg and 6 mg) and placebo, all administered orally approximately 60 minutes before bedtime. This clinical trial, which involved 74 subjects at ten study centers in the U.S., was completed in the fourth quarter of 2007. This clinical trial failed to achieve statistical significance in its primary endpoint of reducing Wake (time) After Sleep Onset, or WASO. MN-305 was well tolerated in this clinical trial with no clinically significant adverse events observed at any dose tested, and there was no evidence of any decrements in psychomotor performance, as assessed in digit symbol substitution and symbol copying tests, in patients treated with MN-305. Based upon the results of this clinical trial, we decided to terminate the evaluation of MN-305 for the treatment of insomnia.

### *MN-221 for Preterm Labor*

*Indication Overview and Market Opportunity.* Preterm labor is caused by the onset of uterine contractions before term. According to a November 2002 publication in *Obstetrics & Gynecology*, preterm labor is the leading cause of neonatal mortality and a substantial portion of all birth-related short and long-term morbidity. Successful inhibition of premature birth is known to reduce the risk of complications. Despite extensive research into preterm labor during the past several decades, the rate of premature births has not decreased. According to the National Vital Statistics Reports issued by the U.S. Department of Health and Human Services, or DHHS, there were 4.3 million births in the U.S. in 2007. The 2007 preterm birth rate was 12.7 percent. The DHHS estimates that the costs associated with preterm births are over \$26 billion annually. According to the World Health Organization, six percent to seven percent of all births in Europe occur before term.

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Currently, therapy for preterm labor remains targeted at uterine contractions.  $\beta_2$ -adrenergic receptor agonists are generally used as first-line treatments for premature labor. The only FDA-approved treatment for preterm labor is ritodrine, a  $\beta_2$  agonist. However, ritodrine has not been available for sale in the U.S. market since 1999. The more widely used treatment for preterm labor is another  $\beta_2$  agonist, terbutaline; however, this drug is not approved by the FDA for preterm labor. Atosiban, an oxytocin antagonist, is available in Europe, but was denied regulatory approval in the U.S. The usefulness of these  $\beta_2$ -adrenergic receptor agonists is often limited by the adverse reactions they produce, which include cardiovascular side effects such as heart palpitations. As a result, we believe that there is a need for treatments with better safety and tolerability profiles that are effective in reducing the premature birth rate and/or providing for longer gestation.

*Overview of MN-221 for Preterm Labor.* MN-221 is highly-selective  $\beta_2$ -adrenergic receptor agonist being developed for the treatment of preterm labor. We licensed MN-221 from Kissei Pharmaceutical in February 2004. Preclinical testing *in vitro* and *in vivo* showed MN-221 to be more selective for the  $\beta_2$ -adrenergic receptor than other  $\beta_2$ -adrenergic receptor agonists currently used to treat preterm labor. Moreover, *in vitro* studies also suggested that MN-221 may act as only a partial  $\beta_1$ -adrenergic receptor agonist in cardiac tissue, while acting as a full  $\beta_2$ -adrenergic receptor in the uterus. This improved receptor binding and functional selectivity may result in fewer cardiovascular side effects than are commonly observed with other  $\beta_2$ -adrenergic receptor agonists used to treat this condition. In preclinical pharmacology studies in pregnant rats and sheep conducted by Kissei Pharmaceutical, MN-221 reduced the number of spontaneous or drug-induced uterine contractions. Furthermore, in these studies, MN-221 delayed both normal and preterm labor in rats and caused a marked increase in the bodyweight of rat pups as a result of prevention of premature birth. In rat and sheep studies which compared MN-221 to ritodrine and/or terbutaline, the potency of MN-221 was greater than those  $\beta_2$ -adrenergic receptor agonists.

*Clinical Results of MN-221 for Preterm Labor.* To date, pharmacokinetic and safety data has been generated from human experience with MN-221 through Phase 1 clinical studies in healthy male and non-pregnant female volunteers conducted by Kissei Pharmaceutical in Japan and the United Kingdom and a Phase 1 clinical trial in the U.S. conducted by us. A total of 244 healthy subjects received intravenous infusions of either MN-221 or a placebo. MN-221 was generally well tolerated. A pilot double-blind, placebo-controlled Phase 2 clinical trial of MN-221 was completed in 2004 by Kissei Pharmaceutical in seven women in preterm labor in the United Kingdom. A trend towards a reduction in the number of uterine contractions was observed in MN-221-treated women and, as a result, only limited conclusions could be drawn from this clinical trial. No serious adverse events related to MN-221 were observed in this clinical trial.

We initiated a Phase 1 clinical trial in healthy pregnant women in the third quarter of 2006. Ten healthy, pregnant volunteers who were not in labor participated in this clinical trial, which was completed in the second quarter of 2007. The volunteers received a single-dose intravenous infusion regimen of MN-221, consisting of two consecutive rounds of a 15-minute priming and a 105-minute maintenance infusion to deliver 294 micrograms of MN-221 over four hours. The primary objectives of this clinical trial were to determine the pharmacokinetics, safety and tolerability of this infusion regimen of MN-221 in pregnant women. No significant safety concerns with MN-221 were identified in this clinical trial.

### *MN-246 for Urinary Incontinence*

*Indication Overview and Market Opportunity.* Urinary incontinence occurs when normal regulation of bladder function is lost. According to the DHHS, there are over 13 million adults in the U.S. suffering from urinary incontinence.

The market for drugs to treat urinary incontinence is expected to grow substantially as more patients seek treatment and as newer drugs are introduced to the market. According to GlobalData, the global market for urinary incontinence was \$2.5 billion in 2009 and is projected to grow to \$3.4 billion by 2017. The current marketplace is dominated by anti-cholinergic drugs that are modestly effective and produce treatment-limiting

side effects such as dry mouth. According to Pfizer Inc.'s 2009 annual report, sales of its Detrol® were approximately \$1.2 billion in 2009.

*Overview of MN-246 for Urinary Incontinence.* MN-246 is a novel  $\beta_3$ -adrenergic receptor agonist being developed for the treatment of urinary incontinence. We licensed MN-246 from Mitsubishi Pharma Corporation, now Mitsubishi Tanabe Pharma Corporation, in December 2004. We believe that MN-246 represents a new approach to treating urinary incontinence and may have advantages over existing therapies, including potential improvements in efficacy through increases in bladder volume with decreases in involuntary bladder contractions and the absence of anti-cholinergic side effects, such as dry mouth. In preclinical studies in rats conducted by Mitsubishi Tanabe Pharma Corporation, MN-246 was more potent and active than oxybutynin and propiverine in increasing bladder volume. In addition, the studies showed that MN-246 produced little or no increase in residual urine volume and no anti-cholinergic side effects in rats. MN-246 also increased bladder volume in preclinical studies conducted on dogs and monkeys.

*Clinical Results of MN-246 for Urinary Incontinence.* We completed a double-blind, randomized, placebo-controlled, single escalating dose Phase 1 clinical trial of MN-246 for the treatment of urinary incontinence in healthy volunteers to evaluate the safety, tolerability and pharmacokinetics of MN-246 in the fourth quarter of 2006. We also conducted a Phase 1 food effects study in healthy volunteers, which was completed in the first quarter of 2007. MN-246 was tolerated in both clinical trials.

#### *MN-447 and MN-462 for Thrombotic Disorders*

*Indication Overview and Market Opportunity.* Despite advances in the treatment of cardiovascular disease, or CVD, more than 616,000 people died of heart disease in 2007, according to the CDC's National Vital Statistics Reports. Heart disease causes approximately 25% of deaths in the U.S. According to the American Heart Association, there are 80 million individuals in the U.S. that currently live with some form of CVD, which can include high blood pressure, coronary heart disease, stroke, angina (chest pain), myocardial infarction (heart attack) and congenital heart defects. According to Datamonitor, worldwide sales of antithrombotic drugs are forecasted to reach approximately \$22 billion in 2017. We believe that there remains an unmet medical need for safe and effective treatments for thrombotic conditions, including acute coronary syndrome, myocardial infarction, peripheral arterial disease and percutaneous coronary interventions.

According to the CDC, CVD remains the leading cause of death in the U.S. for both men and women. Given the high mortality and morbidity rates associated with CVD. We believe there is an urgent need for more targeted therapies that can intervene in known molecular pathways and minimize damage to the heart and related tissues.

*Overview of MN-447 and MN-462 for Thrombotic Disorders.* MN-447 and MN-462 are novel, small molecule antithrombotic agents being developed for the treatment of various thrombotic disorders. We licensed MN-447 and MN-462 from Meiji Seika Kaisha in November 2006.

MN-447 is a cardioprotective, anti-platelet agent that acts as a dual antagonist of glycoprotein, or GP, IIb/IIIa and integrin  $\alpha_v\beta_3$ , receptors that play key roles in blood clot formation and various cell behaviors and functions such as leukocyte adhesion. Preclinical studies have demonstrated that MN-447 acts downstream by inhibiting the final common pathway of platelet aggregation—the cross-linking of platelets via fibrinogen bridges to GP IIb/IIIa receptors. Inhibition of integrin  $\alpha_v\beta_3$  receptors has been linked to an inhibition of leukocyte adhesion to endothelium (the layer of cells lining blood vessels), reduction of hyperplasia (abnormal cellular proliferation) and lumen stenosis (blood vessel constriction) in response to vascular injury. In animal models of myocardial infarction and unstable angina, the dual inhibitory activity of MN-447 produced superior cardioprotective efficacy, such as reduction in infarct size after reperfusion (restoration of blood flow) compared to inhibition of the GP IIb/IIIa receptor alone, and showed a low risk of bleeding.

MN-462 is a selective inhibitor of a key enzyme in the intrinsic antifibrinolytic mechanism, plasma carboxypeptidase B, or CPB, and also called activated thrombin-activatable fibrinolysis inhibitor, or TAFIa,

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which inhibits physiological fibrinolysis, or the lysis or dissolving of blood clots. By enhancing intrinsic fibrinolysis through plasma CPB inhibition, MN-462 has the potential to reduce and prevent thrombus or blood clot formation, as well as dissolve formed thrombus. In preclinical studies, MN-462 demonstrated significant fibrinolytic-enhancing and anti-thrombotic activities as monotherapy in several thrombosis models, as well as activities when used as an adjunct to fibrinolytics such as tissue plasminogen activator, or t-PA. The effect of MN-462 in enhancing the intrinsic fibrinolytic process was also observed to result in a low risk of bleeding.

### **Sales and Marketing**

We currently have no marketing and sales capabilities and we expect to rely on a strategic partner to complete late stage product development and successfully commercialize our products.

### **Manufacturing**

We rely on third parties to manufacture bulk active pharmaceutical ingredients, or API, and finished investigational products for research, development, preclinical and clinical trials. We expect to continue to rely on third-party manufacturers for the manufacture of the API and finished products for our clinical and any future commercial production requirements. We believe that there are several manufacturing sources available at commercially reasonable terms to meet our clinical requirements and any future commercial production requirements for the API of our products and the finished drug products.

Pursuant to the terms of our license agreement with Kissei Pharmaceutical for MN-221, Kissei Pharmaceutical has the exclusive right to manufacture the commercial supply of the API for MN-221. If we enter into a supply agreement with Kissei Pharmaceutical, we will purchase from Kissei Pharmaceutical all API that we require for the commercial supply of MN-221, if such product candidate is approved for commercial sale by the FDA or other regulatory authorities. In September 2011, we entered into a letter agreement with Kissei pursuant to which among, other provisions, we agreed upon a new price for clinical supplies of API.

In March 2009, we entered into an agreement with Hospira Worldwide, Inc., or Hospira, for the completion of pre-commercialization manufacturing development activities and the manufacture of commercial supplies of finished product for MN-221 utilizing Hospira's proprietary ADD-Vantage drug delivery system, if such product candidate is approved for commercial sale by the FDA or other regulatory authorities. Pursuant to the terms of the agreement with Hospira, Hospira will receive development fees from us upon completion of specified development activities, which we will expense as the costs are incurred. We are also obligated under the agreement to purchase a minimum number of units each year following regulatory approval, which number will be based on our forecasts submitted to Hospira on a rolling basis. In addition to the agreement with Hospira, we anticipate entering into a commercial supply agreement with a contract manufacturer for finished product of MN-221 in standard vials. However, at present, we do not have any agreement established regarding the commercial supply of MN-221 in standard vials or for the API or finished product of any of our product candidates.

For the ibudilast development program, we have sourced and imported delayed-release ibudilast capsules, marketed in Japan as Pinatos<sup>®</sup>, from Taisho-Teva Pharmaceuticals. We are not currently developing our own formulation and will determine our long-term drug supply strategy in tandem with significant development progress in our program.

### **Intellectual Property and License Agreements**

Since our inception in September 2000, we have entered into eight license agreements with pharmaceutical companies which cover our current product candidates. We have also entered into license agreements with universities, including the University of Colorado and the University of Adelaide, which cover additional intellectual property related to our product candidates. In general, we seek to procure patent protection for our

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anticipated products, or obtain such protection from the relevant patents owned by our licensors. To date, we have obtained licensed rights under 14 issued U.S. patents. We also have obtained licensed rights to 170 issued and pending foreign patents and applications corresponding to these U.S. patents and patent applications. In addition to these licensed rights, we hold 13 issued U.S. patents and have filed 15 additional U.S. patent applications. We also hold 59 issued and pending foreign patents and applications corresponding to these U.S. patents and patent applications. We are not aware of any third-party infringement of the patents owned or licensed by us and are not party to any material claims by third parties of infringement by us of such third parties' intellectual property rights. The following is a description of our existing license agreements and intellectual property rights for each of our product candidates.

### *MN-221*

On February 25, 2004, we entered into an exclusive license agreement with Kissei Pharmaceutical for the development and commercialization of MN-221. Kissei Pharmaceutical is a fully integrated Japanese pharmaceutical company and is listed on the First Section of the Tokyo Stock Exchange. We obtained an exclusive, worldwide (excluding Japan), sub-licensable license to various patent rights and know-how related to MN-221 and other compounds disclosed or included in, or covered by, these patent rights, for all indications. This license includes an exclusive license under one U.S. patent and certain corresponding patents and patent applications in foreign countries and is sub-licensable upon receipt of the written consent of Kissei Pharmaceutical. The U.S. patent for MN-221 has composition of matter and method of use claims. The U.S. composition of matter patent underlying the license issued on October 17, 2000 and is set to expire no earlier than February 18, 2017. Corresponding composition of matter patents in various other countries are set to expire no earlier than February 18, 2017. In addition to the licensed patents, we have filed patent applications in the U.S. and certain foreign countries regarding additional uses and formulations of MN-221.

The license agreement may be terminated by either party following an uncured breach of any material provision in the agreement by the other party, and we may terminate the agreement for scientific or commercial reasons upon 100 days' prior written notice to Kissei Pharmaceutical during the development phase and 180 days' prior written notice to Kissei Pharmaceutical during the commercialization phase.

The term of the agreement is determined on a country-by-country basis and extends until the expiration of the last Kissei Pharmaceutical patent (or equivalent) under license to expire or in the event that a valid claim does not exist or, if a valid claim expired more than ten years from the date of first commercial sale, ten years from the date of first commercial sale. In either case, the term of the agreement would not extend for any particular country past the date on which generic competition exists in such country.

Under the license agreement, we have paid Kissei Pharmaceutical \$1.0 million to date, and are obligated to make payments of up to \$17.0 million based on the achievement of certain clinical and regulatory milestones. We are also obligated to pay a royalty on net sales of the licensed products. Under the terms of the letter agreement we entered into with Kissei in September 2011, we agree to renegotiate in good faith with Kissei the existing levels of the milestone payment amounts and royalty rates.

### *MN-166*

On October 22, 2004, we entered into an exclusive license agreement with Kyorin Pharmaceutical for the development and commercialization of MN-166. Kyorin Pharmaceutical is a fully integrated Japanese pharmaceutical company and is listed on the First Section of the Tokyo Stock Exchange. We obtained an exclusive, worldwide (excluding Japan, China, South Korea and Taiwan), sub-licensable license to the patent rights and know-how related to MN-166 for the treatment of MS, except for ophthalmic solution formulations. MN-166 is not covered by a composition of matter patent. The U.S. method of use patent for MN-166 in MS underlying the license is set to expire on August 10, 2018. Corresponding method of use patents in certain foreign countries are set to expire on August 10, 2018. Under the terms of the agreement, we granted to Kyorin

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Pharmaceutical an exclusive, royalty-free, sub-licensable license to use the preclinical, clinical and regulatory databases to develop ophthalmic products incorporating the MN-166 compound anywhere in the world and non-ophthalmic products incorporating the MN-166 compound outside of our territory.

The license agreement may be terminated by either party following an uncured breach of any material provision in the agreement by the other party. We may terminate the agreement for any reason with 90 days' written notice to Kyorin Pharmaceutical or, in the event that a third party claims that MN-166 infringes upon such third party's intellectual property rights, with 30 days' written notice.

The term of this agreement is determined on a country-by-country basis and extends until the later of the expiration of the obligation to make payments under the agreement or the last date on which the manufacture, use or sale of the product would infringe a valid patent claim held by Kyorin Pharmaceutical but for the license granted by the agreement or the last date of the applicable market exclusivity period. In the absence of a valid patent claim and generic competition in a particular country, the agreement will expire on the earlier of five years from the date of the first commercial sale of the product by us or the end of the second consecutive calendar quarter in which generic competition exists in such country.

Under the license agreement, we have paid Kyorin Pharmaceutical \$700,000 to date, and we are obligated to make payments of up to \$5.0 million based on the achievement of certain clinical and regulatory milestones. We are also obligated to pay a royalty on net sales of the licensed products.

In addition, we own, co-own or hold licenses to five issued U.S. patents and nine pending U.S. patent applications as well as corresponding pending foreign patent applications. These patents and patent applications are primarily related to our development portfolio of small molecule-based products and are currently directed to methods of treating various indications using ibudilast and analogs.

We have received a Notice of Allowance from the U.S. Patent and Trademark Office for a pending patent application which covers the use of ibudilast (MN-166) for the treatment of progressive forms of multiple sclerosis. A patent maturing from this allowed patent application is expected to expire no earlier than early 2029 and covers a method of treating primary progressive multiple sclerosis (PPMS) or secondary progressive MS (SPMS) by administering ibudilast either alone or in combination with other drugs. We are pursuing counterparts of this patent application in certain foreign jurisdictions. We have received an additional Notice of Allowance for a pending patent application which covers the use of ibudilast (MN-166) for the treatment of neuropathic pain in Japan.

### *MN-001*

On March 14, 2002, we entered into an exclusive license agreement with Kyorin Pharmaceutical for the development and commercialization of MN-001. We obtained an exclusive, worldwide (excluding Japan, China, South Korea and Taiwan) sub-licensable license to the patent rights and know-how related to MN-001 and its active metabolite, MN-002, disclosed and included in, or covered by, these patents, in all indications, except for ophthalmic solution formulations. This license includes an exclusive, sub-licensable license under one U.S. patent and certain corresponding patents and patent applications in foreign countries. The U.S. composition of matter patent for MN-001 underlying the license expired on February 23, 2009, and the U.S. composition of matter patent for MN-002 underlying the license expired on December 30, 2011. Foreign composition of matter patents for MN-001 and MN-002 have also expired. We intend to rely upon the applicable period of post-approval exclusivity, in addition to any patents that may issue from our own patent applications. Under the terms of the agreement, we granted to Kyorin Pharmaceutical an exclusive, royalty-free, sub-licensable license to use the preclinical, clinical and regulatory databases to develop ophthalmic products incorporating the MN-001 compound anywhere in the world and non-ophthalmic products incorporating the MN-001 compound outside of our territory.

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The license agreement may be terminated by either party following an uncured breach of any material provision in the agreement by the other party, and we may terminate the agreement for any reason with 90 days' written notice to Kyorin Pharmaceutical or, in the event that a third party claims that the licensed patent rights or know-how infringe upon such third party's intellectual property rights, with 30 days' written notice.

The term of this agreement is determined on a country-by-country basis and extends until the later of the expiration of the obligation to make payments under the agreement or the last date on which the manufacture, use or sale of the product would infringe a valid patent claim held by Kyorin Pharmaceutical but for the license granted by the agreement or the last date of the applicable market exclusivity period. In the absence of a valid patent claim and generic competition in a particular country, the agreement will expire on the earlier of five years from the date of the first commercial sale of the product by us or the end of the second consecutive calendar quarter in which generic competition exists in such country.

Under the license agreement, we have paid Kyorin Pharmaceutical \$4.0 million to date, and we are obligated to make payments of up to \$5.0 million based on the achievement of certain clinical and regulatory milestones. We are also obligated to pay a royalty on net sales of the licensed products.

We filed and the U.S. Patent and Trademark Office issued eight U.S. patents covering certain compositions, uses and manufacturing processes associated with MN-001 and its metabolite, MN-002. Patent applications corresponding to these U.S. patents were filed in certain foreign countries and some of the foreign patents have issued.

### *MN-029*

On June 19, 2002, we entered into an exclusive license agreement with Angiogene Pharmaceuticals for the development and commercialization of the ANG-600 series of compounds. Angiogene Pharmaceuticals is a privately held, British drug discovery company. We obtained an exclusive, worldwide, sub-licensable license to the patent rights and know-how related to the ANG-600 series of compounds disclosed in and included or covered by these patents for all indications. MN-029 is one of the ANG-600 series compounds covered by this license. This license includes an exclusive, sub-licensable license under -four U.S. patents and certain corresponding patents and patent applications in foreign countries. The U.S. composition of matter patent for MN-029, which issued on November 11, 2003, is set to expire on January 14, 2020. Patent applications corresponding to this U.S. patent were filed in certain foreign countries. The U.S. patent covering methods of treating solid cancer tumors by administering MN-029, which issued on July 25, 2006, is set to expire on January 14, 2020.

The license agreement may be terminated by either party following an uncured breach of any material provision in the agreement by the other party, and we may terminate the agreement at any time by giving 30 days' advance written notice to Angiogene Pharmaceuticals.

The term of this agreement is determined on a country-by-country basis and extends until the earlier of the expiration of the last Angiogene Pharmaceuticals patent (or equivalent) under license which has a valid claim to expire or 15 years from the date of first commercial sale.

Under the license agreement, we have paid Angiogene Pharmaceuticals \$1.4 million to date and are obligated to make payments of up to \$16.5 million based on the achievement of certain clinical and regulatory milestones. We are also obligated to pay a royalty on net sales of the licensed products.

### *MN-305*

On April 27, 2004, we entered into an exclusive license agreement with Mitsubishi Pharma Corporation, the predecessor to Mitsubishi Tanabe Pharma Corporation, for the development and commercialization of MN-305.



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Mitsubishi Tanabe Pharma Corporation is a fully integrated Japanese pharmaceutical company and is listed on the First Section of the Tokyo Stock Exchange. We obtained an exclusive, worldwide (excluding Japan, Singapore, Brunei, Thailand, Malaysia, Indonesia, the Philippines, Vietnam, Bangladesh, Pakistan, South Korea, China and Taiwan), sub-licensable license to the patent rights and know-how related to MN-305 and its active metabolite disclosed and included or covered by these patents for all indications. The license is sub-licensable upon receipt of the written consent of Mitsubishi Tanabe Pharma Corporation. This license includes an exclusive, sub-licensable license under five U.S. patents and certain corresponding patents and patent applications in foreign countries. The U.S. composition of matter patent for MN-305, which issued on December 1, 1992, expired on March 14, 2011. Patent applications corresponding to this U.S. patent were filed in certain foreign countries, and these foreign counterparts expired on or before March 14, 2011. The U.S. patent covering the use of MN-305 to treat anxiety, which issued on August 10, 1993, expired on March 14, 2011.

Under the terms of the agreement, we granted to Mitsubishi Tanabe Pharma Corporation a license to use our know-how and patents relating to MN-305 to develop products incorporating the MN-305 compound outside of our territory. Mitsubishi Tanabe Pharma Corporation also has the right to co-promote licensed products in our territory on terms to be agreed upon by the parties.

The license agreement may be terminated by either party following an uncured breach of any material provision in the agreement by the other party. We may terminate the agreement if, in our reasonable opinion, the safety, patient tolerability, efficacy, profile or commercial viability of MN-305 does not justify continued development with 90 days' written notice to Mitsubishi Tanabe Pharma Corporation or, in the event that a third party claims that the licensed intellectual property related to MN-305 infringes such third party's intellectual property rights, with 30 days' written notice.

The term of this agreement is determined on a country-by-country basis and extends until the later of ten years from the date of first commercial sale in a specific country or the expiration of a valid patent claim in such country. In the event that we enter into a sublicense with a third party, the term of the agreement will extend for as long as we receive royalty payments from such third party.

Under the license agreement, we have paid Mitsubishi Tanabe Pharma Corporation \$1.0 million to date, and we are obligated to make payments of up to \$18.8 million based on the achievement of certain clinical, regulatory and sales milestones. We are also obligated to pay a royalty on net sales of the licensed products.

### *MN-246*

On December 8, 2004, we entered into an exclusive license agreement with Mitsubishi Pharma Corporation, the predecessor to Mitsubishi Tanabe Pharma Corporation, for the development and commercialization of MN-246. We obtained an exclusive, worldwide (excluding Japan, Singapore, Brunei, Thailand, Malaysia, Indonesia, the Philippines, Vietnam, Bangladesh, Pakistan, South Korea, China and Taiwan), sub-licensable license to the intellectual property surrounding MN-246, its derivatives and any other compounds disclosed or claimed in the licensed Mitsubishi Tanabe Pharma Corporation patent assets. The license is sub-licensable upon receipt of the written consent of Mitsubishi Tanabe Pharma Corporation and includes an exclusive license under one U.S. patent and certain corresponding patents in foreign countries. The U.S. patent covering MN-246 and methods of making and using MN-246, which issued on May 30, 2000, is set to expire on October 24, 2016. Patent applications corresponding to this U.S. patent were filed in certain foreign countries, and these foreign counterparts are set to expire no earlier than October 24, 2016.

The issued U.S. patent covers generic phenylethanolamines encompassed by a given chemical formula, including MN-246, processes for the production of such phenylethanolamines, a pharmaceutical composition of such phenylethanolamines and methods of use for such phenylethanolamines for the treatment of a variety of human or animal ailments, including accelerated or spasmodic gastrointestinal motility, dysuria, pollakisuria, urinary incontinence, obesity and diabetes. This U.S. patent is set to expire on October 24, 2016. Foreign

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counterparts have been patented in other countries and are also set to expire no earlier than October 24, 2016. Under the terms of the agreement, we granted to Mitsubishi Tanabe Pharma Corporation a license to use our know-how and patents relating to MN-246 to develop products incorporating the MN-246 compound outside of our territory. Mitsubishi Tanabe Pharma Corporation also has the right to co-promote licensed products in our territory on terms to be agreed upon by the parties.

The license agreement may be terminated by either party following an uncured breach of any material provision in the agreement by the other party. We may terminate the agreement if, in our reasonable opinion, the safety, patient tolerability, efficacy, profile or commercial viability of MN-246 does not justify continued development with 90 days' written notice to Mitsubishi Tanabe Pharma Corporation or in the event that a third party claims that the licensed intellectual property related to MN-246 infringes such third party's intellectual property rights with 30 days' written notice.

The term of this agreement is determined on a country-by-country basis and extends until the later of ten years from the date of first commercial sale in a specific country or the expiration of a valid patent claim in such country. In the event that we enter into a sublicense with a third party, the term of the agreement will extend for as long as we receive royalty payments from such third party.

Under the license agreement, we have paid Mitsubishi Tanabe Pharma Corporation \$750,000 to date, and we are obligated to make payments of up to \$14.5 million based on the achievement of certain clinical, regulatory and sales milestones. We are also obligated to pay a royalty on net sales of the licensed products.

### *MN-447*

On November 1, 2006, we entered into an exclusive license agreement with Meiji Seika Kaisha for the development and commercialization of MN-447. Meiji Seika Kaisha is a fully integrated Japanese pharmaceutical company and is listed on the First Section of the Tokyo Stock Exchange. We obtained an exclusive, worldwide (excluding Japan, Bangladesh, Brunei, Cambodia, People's Republic of China, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, South Korea, Taiwan, Thailand and Vietnam), sub-licensable license from Meiji Seika Kaisha for MN-447 (and any other compound claimed or covered by U.S. patent 6,420,558) for any human use. This license includes an exclusive sub-licensable license under one U.S. patent and certain corresponding patents in foreign countries. The U.S. patent covering MN-447 and methods of treating an integrin  $\alpha v\beta 3$ -mediated disease, platelet thrombosis, aggregation and related disorders, which issued on July 16, 2002, is set to expire on April 9, 2019. Patent applications corresponding to this U.S. patent were granted in certain foreign countries. Under the terms of the license, we granted a license to Meiji Seika Kaisha to use our know-how and patents relating to MN-447 to develop products incorporating the MN-447 compound outside of our territory.

This license agreement may be terminated by either party following an uncured breach of any material provision of the agreement by the other party upon 90 days' written notice or the inability or delay in performing under the agreement due to a force majeure event which lasts longer than 12 months. We also have the right to terminate the agreement in the event of third party intellectual property claims which are not timely remedied by us and Meiji Seika Kaisha or if, in our reasonable opinion, the safety, patient tolerability, efficacy, profile or commercial viability of MN-447 does not justify continued development. Meiji Seika Kaisha also has the right to terminate the agreement in the event that we cease development of MN-447 for a period of one year or longer.

The term of the agreement is determined on a country-by-country basis and extends until the expiration of the last Meiji Seika Kaisha patent (or equivalent) under license to expire or in the event that a valid claim does not exist or, if a valid claim expired more than 15 years from the date of first commercial sale, 15 years from the date of first commercial sale.

Under the license agreement, we have paid Meiji Seika Kaisha \$400,000 to date, and we are obligated to make payments of up to \$8.7 million based on the achievement of certain clinical and regulatory milestones. We are also obligated to pay a royalty on net sales of the licensed products.

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### *MN-462*

On November 1, 2006, we entered into an exclusive license agreement with Meiji Seika Kaisha for the development and commercialization of MN-462. We obtained an exclusive, worldwide (excluding Japan, Bangladesh, Brunei, Cambodia, People's Republic of China, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, South Korea, Taiwan, Thailand and Vietnam), sub-licensable license from Meiji Seika Kaisha for MN-462 (and any other compound claimed or covered by U.S. patent 6,576,627) for any human use. This license includes an exclusive sub-licensable license under certain corresponding patents in foreign countries. The U.S. patent covering MN-462 medicament compositions containing MN-462, and methods of therapeutic treatment or preventive treatment of thrombotic disease, which issued on June 10, 2003, is set to expire on September 13, 2020. Patent applications corresponding to this U.S. patent were granted in certain foreign countries. Under the terms of the license, we granted a license to Meiji Seika Kaisha to use our know-how and patents relating to MN-462 to develop products incorporating the MN-462 compound outside of our territory.

This license agreement may be terminated by either party following an uncured breach of any material provision of the agreement by the other party upon 90 days' written notice or the inability or delay in performing under the agreement due to a force majeure event which lasts longer than 12 months. We also have the right to terminate the agreement in the event of third party intellectual property claims which are not timely remedied by us and Meiji Seika Kaisha or if, in our reasonable opinion, the safety, patient tolerability, efficacy, profile or commercial viability of MN-462 does not justify continued development. Meiji Seika Kaisha also has the right to terminate the agreement in the event that we cease development of MN-462 for a period of one year or longer.

The term of the agreement is determined on a country-by-country basis and extends until the expiration of the last Meiji Seika Kaisha patent (or equivalent) under license to expire or in the event that a valid claim does not exist or, if a valid claim expired more than 15 years from the date of first commercial sale, 15 years from the date of first commercial sale.

Under this license agreement, we have paid Meiji Seika Kaisha \$400,000 to date, and we are obligated to make payments of up to \$8.7 million based on the achievement of certain clinical and regulatory milestones. We are also obligated to pay a royalty on net sales of the licensed products.

### *General*

Our proposed commercial activities may conflict with patents which have been or may be granted to competitors, universities and/or others. Third parties could bring legal action against us, our licensors or our sub-licensees claiming patent infringement and could seek damages or enjoin manufacturing and marketing of the affected product or its use or the use of a process for the manufacturing of such products. If any such actions were to be successful, in addition to any potential liability for indemnification, damages and attorneys' fees in certain cases, we could be required to obtain a license, which may not be available on commercially reasonable terms or at all, in order to continue to manufacture, use or market the affected product. We also rely upon unpatented proprietary technology because, in some cases, our interests would be better served by reliance on trade secrets or confidentiality agreements than by patents. However, others may independently develop substantially equivalent proprietary information and techniques or gain access to or disclose such proprietary technology. We may not be able to meaningfully protect our rights in such unpatented proprietary technology. We may also conduct research on other pharmaceutical compounds or technologies, the rights to which may be held by, or be subject to patent rights of, third parties. Accordingly, if products based on such research are commercialized, such commercial activities may infringe patents or other rights, which may require us to obtain a license to such patents or other rights. We are not aware of any third-party infringements of patents we hold or licenses and have not received any material claims by third parties of infringement by us of such parties' intellectual property rights.

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There can be no assurance that patent applications filed by us or others, in which we have an interest as assignee, licensee or prospective licensee, will result in patents being issued or that, if issued, any of such patents will afford protection against competitors with similar technology or products or could not be circumvented or challenged. For example, we have U.S. patents covering the method of using MN-166 to treat MS and the method of using MN-166 to treat neuropathic pain, but we do not have any composition of matter patent claims for MN-166. As a result, unrelated third parties may develop products with the same API as MN-166 so long as such parties do not infringe our method of use patent, other patents we have exclusive rights to through our licensor or any patents we may obtain for MN-166.

In addition, if we develop certain products that are not covered by any patents, we will be dependent on obtaining market exclusivity under the data exclusivity provisions of Hatch-Waxman Act for such products. If we are unable to obtain strong proprietary rights protection for our products after obtaining regulatory approval, competitors may be able to market competing generic products by taking advantage of an abbreviated procedure for obtaining regulatory clearance, including the ability to demonstrate bioequivalency to our product(s) without being required to conduct lengthy clinical trials. Certain of our license agreements provide for reduced royalties or, in some cases, foregone royalties in the event of generic competition.

### **Competition**

The development and commercialization of new drugs is extremely competitive and characterized by extensive research efforts and rapid technological progress. Competition in our industry occurs on a variety of fronts, including developing and bringing new products to market before others, developing new products to provide the same benefits as existing products at lower cost and developing new products to provide benefits superior to those of existing products. We face competition from pharmaceutical and biotechnology companies, as well as numerous academic and research institutions and governmental agencies, in the U.S. and abroad. Some of these competitors have products or are pursuing the development of drugs that target the same diseases and conditions that are the focus of our product development programs. Many of our competitors have products that have been approved or are in advanced development and may succeed in developing drugs that are more effective, safer and more affordable or more easily administered than ours or that achieve patent protection or commercialization sooner than our products. Our competitors may also develop alternative therapies that could further limit the market for any products that we are able to obtain approval for, if at all.

In many of our target disease areas, potential competitors are working to develop new compounds with different mechanisms of action and attractive efficacy and safety profiles. Many of our competitors have substantially greater financial, research and development resources (including personnel and technology), clinical trial experience, manufacturing, sales and marketing capabilities and production facilities than we do. Smaller companies also may prove to be significant competitors, particularly through proprietary research discoveries and collaboration arrangements with large pharmaceutical and established biotechnology companies.

#### *MN-221 for Acute Exacerbations of Asthma*

Our MN-221 product candidate is being developed for the treatment of acute exacerbations of asthma in the emergency room setting. The current standard of care for acute exacerbations of asthma is inhaled albuterol (a  $\beta_2$ -adrenergic receptor agonist), inhaled ipratropium (an anticholinergic) and oral or injected corticosteroids. In addition, subcutaneously administered terbutaline (a  $\beta_2$ -adrenergic receptor agonist) is sometimes used to treat this condition, particularly in pediatric patients. Certain oral anti-inflammatory asthma drugs are being investigated in an intravenous form for the treatment of acute exacerbations of asthma.

#### *MN-221 for Chronic Obstructive Pulmonary Disease Exacerbations*

Our MN-221 product candidate is also being developed for the treatment of COPD exacerbations. The standard of care for COPD exacerbations is similar to that of acute exacerbations of asthma in that inhaled

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bronchodilators and anticholinergics are administered; however, antibiotics are also administered and parenteral terbutaline is excluded because of the exclusively adult patient population. A greater percentage of patients diagnosed with COPD exacerbations are hospitalized than patients diagnosed with asthma exacerbations, and such patients continue the same treatment paradigm as in the emergency department.

### *MN-166 for Multiple Sclerosis*

Our MN-166 product candidate is pending development for the treatment of progressive MS. Only one drug, mitoxantrone, is approved for treating this disease.

### *MN-166 for Other Central Nervous System Disorders*

Our MN-166 product candidate has been in development for treatment of neuropathic pain and opioid withdrawal and methamphetamine addiction. Current treatments for neuropathic pain include anti-epileptics such as Pfizer Inc.'s Neurontin® (gabapentin) and Lyrica® (pregabalin), and antidepressants, including Eli Lilly & Co.'s Cymbalta® (duloxetine). We are aware of additional compounds for chronic neuropathic pain that are currently in development at numerous companies including GlaxoSmithKline plc, Pfizer Inc., Cognetix, Inc., GW Pharmaceuticals plc, Endo Pharmaceuticals Holdings Inc., Avanir Pharmaceuticals, Pain Therapeutics, Inc., and Xenoport, Inc.

Current treatments for withdrawal symptoms include narcotics such as generic methadone and Reckitt Benckiser Pharmaceuticals, Inc.'s Suboxone® (buprenorphine) and Subutex® (buprenorphine + the narcotic antagonist naloxone). Limited non-narcotic drug candidates for withdrawal symptoms exist. Britannia Pharmaceuticals Limited's BritLofex® (Lofexidine), licensed for development in U.S. clinical trials to US WorldMeds LLC, is an alpha adrenoceptor agonist like clonidine which may have somewhat less orthostatic hypotension limitations. Vigabatrin (Sabril®), a re-directed anti-epileptic drug, is in Phase 2 development for cocaine and methamphetamine dependence by Catalyst Pharmaceutical Partners.

### *MN-001 for Bronchial Asthma*

Our MN-001 product candidate has been in development for the treatment of bronchial asthma. There are two currently marketed leukotriene inhibitors, Merck & Co. Inc.'s Singulair® (montelukast) and AstraZeneca PLC's Accolate® (zafirlukast).

### *MN-001 for Interstitial Cystitis*

Our MN-001 product candidate has been in development for the treatment of IC. There are two currently marketed products, Ortho-McNeil-Janssen Pharmaceuticals, Inc.'s/Teva Pharmaceuticals Industries Ltd.'s Elmiron® and Bioniche Pharma USA LLC's RIMSO-50®. Urigen Pharmaceuticals, Inc.'s URG101 for the treatment of painful bladder syndrome/interstitial cystitis is in Phase 2 clinical testing.

### *MN-029 for Solid Tumors*

Our MN-029 product candidate has been in development for the treatment of solid tumors. There are a number of compounds in clinical development with a mechanism similar to MN-029, including Oxigene Inc.'s ZYBRESTAT™ (fosbretabulin) and Sanofi-Aventis' AVE 8062 (ombrabulin), which are in Phase 3 clinical testing.

### *MN-305 for General Anxiety Disorder*

Our MN-305 product candidate has been in development for the treatment of General Anxiety Disorder. There are a number of approved products to treat generalized anxiety disorder, including Eli Lilly and Company's Cymbalta® (duloxetine).

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### *MN-221 for Preterm Labor*

Our MN-221 product candidate has been in development for the treatment of preterm labor. An oxytocin antagonist on the market is Tractocile (atosiban). GlaxoSmithKline's retosiban is an oxytocin antagonist in Phase 2 development.

### *MN-246 for Urinary Incontinence*

Our MN-246 product candidate has been in development for the treatment of urinary incontinence. There are a number of compounds in various stages of clinical development to treat urinary incontinence. Pfizer Inc.'s Detrol/Detrol LA® (tolterodine tartrate) is a market leader, and other marketed drugs include Astellas Pharma Inc.'s VESicare® (solifenacin succinate) and Novartis AG's Enablex® (darifenacin), both of which are anti-cholinergic agents. Ono Pharmaceutical Co., Ltd. and Kyorin Pharmaceutical have received approval for Staybla® (muscarinic antagonist). Pfizer Inc.'s Toviaz® (fesoterodine fumarate), another muscarinic antagonist, has also been approved. Astellas Pharma Inc. also has a  $\beta_3$ -adrenergic receptor agonist in development for the treatment of this indication (mirabegron).

### *MN-447 and MN-462 for Thrombotic Disorders*

Our MN-447 and MN-462 product candidates have been in development for the treatment of thrombotic disorders. Both product candidates are currently in preclinical development; therefore, we have not identified the particular thrombotic disorders that we intend to target upon reaching the clinical development stage for these product candidates. Consequently, we cannot accurately evaluate the competition we will face. Currently, the market leaders for anti-thrombotic drugs are Bristol-Myers Squibb Company's and Sanofi-Aventis' Plavix® (clopidogrel) and Sanofi-Aventis' Lovenox® (enoxaparin).

## **Government Regulation**

Government authorities in the U.S. and other countries extensively regulate the research, development, testing, manufacture, labeling, promotion, advertising, distribution, sampling, marketing and import and export of pharmaceutical products and biologics such as those we are developing. In the U.S., the FDA, under the Federal Food, Drug and Cosmetic Act, as amended, and other federal statutes and regulations, subjects pharmaceutical products to extensive and rigorous review. Any failure to comply with applicable requirements, both before and after approval, may subject us, our third-party manufacturers, contractors, suppliers and partners to administrative and judicial sanctions, such as a delay in approving or refusal to approve pending applications, fines, warning letters, product recalls, product seizures, total or partial suspension of manufacturing or marketing, injunctions and/or criminal prosecution.

### *U.S. Regulatory Approval*

*Overview.* In the U.S., drugs and drug testing are regulated by the FDA under the Federal Food, Drug and Cosmetic Act, as well as state and local government authorities. All of our product candidates in development will require regulatory approval by government agencies prior to commercialization. To obtain approval of a new product from the FDA, we must, among other requirements, submit data supporting safety and efficacy, as well as detailed information on the manufacture and composition of the product and proposed labeling. Our product candidates are in the early stages of testing and none has been approved. The steps required before a drug can be approved generally involve the following:

- completion of preclinical laboratory and animal tests;
- submission of an Investigational New Drug Application, or IND, which must become effective before human clinical trials may begin in the U.S.;

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- completion of adequate and well-controlled human clinical trials to establish the safety and efficacy of the product candidate for each indication for which approval is sought;
- submission to the FDA of an NDA accompanied by a substantial user fee;
- development of manufacturing processes which conform to FDA-mandated commercial good manufacturing practices, or cGMPs, and satisfactory completion of FDA inspections to assess cGMP compliance and clinical investigator compliance with good clinical practices; and
- FDA review and approval of an NDA, which process may involve input from advisory committees to the FDA and may include post-approval commitments for further clinical studies and distribution restrictions intended to mitigate drug risks.

The testing, collection of data, preparation of necessary applications and approval process requires substantial time, effort and financial resources. Additionally, statutes, rules, regulations and policies may change and new regulations may be issued that could delay such approvals. The FDA may not act quickly or favorably in reviewing our applications, and we may encounter significant difficulties and costs in our efforts to obtain FDA approvals that could delay or preclude us from marketing our products.

*Preclinical Tests.* Preclinical tests include laboratory evaluation of the product candidate, its chemistry, toxicity, formulation and stability, as well as animal studies to assess the potential safety and efficacy of the product candidate. The results of the preclinical tests, together with manufacturing information, analytical data and other available information about the product candidate, are submitted to the FDA as part of an IND. Preclinical tests and studies can take several years to complete and, despite completion of those tests and studies, the FDA may not permit clinical testing to begin.

*The IND Process.* An IND must be effective to administer an investigational drug to humans. The IND will automatically become effective 30 days after its receipt by the FDA unless the FDA, before that time, places the IND on clinical hold. At any time thereafter, the FDA may raise concerns or questions about the conduct of the trials as outlined in the IND and impose a clinical hold if the FDA deems it appropriate. In such case, the IND sponsor and the FDA must resolve any outstanding concerns before clinical trials can begin or continue. The IND application process may become extremely costly and substantially delay development of our products. Moreover, positive results in preclinical tests or prior human studies do not necessarily predict positive results in subsequent clinical trials.

*Clinical Trials.* Human clinical trials are typically conducted in three sequential phases that may overlap:

- Phase 1: The drug is initially introduced into a small number of human subjects or patients and tested for safety, dosage tolerance, absorption, distribution, excretion and metabolism.
- Phase 2: The drug is introduced into a limited patient population to assess the efficacy of the drug in specific, targeted indications, assess dosage tolerance and optimal dosage, and identify possible adverse effects and safety risks.
- Phase 3: The drug is introduced into an expanded patient population at geographically dispersed clinical trial sites to further evaluate clinical efficacy and safety.

Prior to initiation of each clinical trial, an independent Institutional Review Board, or IRB, for each medical site proposing to conduct the clinical trials must review and approve the study protocol and study subjects must provide informed consent for participation in the study.

We cannot be certain that we will successfully complete Phase 1, 2 or 3 testing of our drug candidates within any specific time period, if at all. Clinical trials must be conducted in accordance with the FDA's good clinical practices requirements. The FDA may order the partial, temporary or permanent discontinuation of a

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clinical trial at any time or impose other sanctions if it believes that the clinical trial is not being conducted in accordance with FDA requirements or presents an unacceptable risk to the clinical trial patients. The IRB may also require the clinical trial at that site to be halted, either temporarily or permanently, for failure to comply with the IRB's requirements, or may impose other conditions.

*The NDA Process.* If clinical trials are successful, the next step in the drug regulatory approval process is the preparation and submission to the FDA of a NDA. The NDA is the vehicle through which drug sponsors formally propose that the FDA approve a new pharmaceutical product for marketing and sale in the U.S. The NDA must contain a description of the manufacturing process and quality control methods, as well as results of preclinical tests, toxicology studies, clinical trials and proposed labeling, among other things. A substantial user fee must also be paid with the submission of the NDA, unless an exemption applies.

Upon submission of the NDA, the FDA will make a threshold determination as to whether the application is sufficiently complete to permit review and, if not, will issue a refuse to file letter. If the submission is accepted for filing, the FDA begins an in-depth review of the NDA and will attempt to review and take action on the application in accordance with performance goals established in connection with the user fee laws. Among the conditions for a NDA approval is the requirement that the prospective manufacturer's quality control and manufacturing procedures conform on an ongoing basis with cGMPs.

If the FDA's evaluations of the NDA and the clinical and manufacturing procedures and facilities cGMPs are favorable, the FDA may issue either an approval letter or a complete response letter, which contains guidance on the conditions that must be met in order to secure approval of the NDA. If and when those conditions have been met to the FDA's satisfaction, the FDA will issue an approval letter, authorizing commercial marketing of the drug for certain indications. The FDA may also grant approval with requirements to complete post-marketing studies, referred to as Phase 4 clinical trials, or restrictive product labeling, or may impose other restrictions on marketing or distribution, such as the adoption of a Risk Evaluation and Mitigation Strategy, or REMS. The FDA may deny or delay approval of applications that do not meet applicable regulatory criteria or if the FDA determines that the clinical data do not adequately establish the safety and efficacy of the drug.

*The Hatch-Waxman Act.* Under the Hatch-Waxman Act, certain newly approved drugs and indications benefit from a statutory period of non-patent marketing exclusivity. The Hatch-Waxman Act provides five-year marketing exclusivity to the first applicant to gain approval of an NDA for a new chemical entity, meaning that the FDA has not previously approved any other new drug containing the same active moiety. The Hatch-Waxman Act also provides three years of marketing exclusivity for the approval of new and supplemental NDAs for, among other things, new indications, dosages or strengths of an existing drug, if new clinical investigations that were conducted or sponsored by the applicant are essential to the approval of the application. Pediatric exclusivity of six months may also be available if agreement is reached with the FDA and qualifying studies of product candidates in pediatric populations are conducted.

*Manufacturing and Other Regulatory Requirements.* Both before and after approval, we and our third-party manufacturers must comply with a number of regulatory requirements. For example, if we seek to make certain changes to an approved product, such as promoting or labeling a product for a new indication, manufacturing changes or additional labeling claims, we will need FDA review and approval. Advertising and other promotional materials must comply with FDA requirements and established requirements applicable to drug samples. In addition, we may not label or promote the product for an indication that has not been approved by the FDA. Securing FDA approval for new indications or product enhancements and, in some cases, for new labeling claims, is generally a time-consuming and expensive process that may require us to conduct clinical trials under the FDA's IND regulations. Even if such studies are conducted, the FDA may not approve any change in a timely fashion, or at all. In addition, adverse experiences associated with use of the products must be reported to the FDA, and FDA rules govern how we can label, advertise or otherwise commercialize our products.



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The NDA holders and manufacturers of approved products will be subject to continual review and periodic inspections by the FDA and other authorities, where applicable, and must comply with ongoing requirements, including the FDA's cGMP requirements. Manufacturers must provide certain safety and efficacy information and make certain other required reports. To comply with cGMP requirements, manufacturers must continue to spend time, money and effort to meet requirements relating to personnel, facilities, equipment, production and process, labeling and packaging, quality control, record-keeping and other requirements. The FDA periodically inspects drug manufacturing facilities to evaluate compliance with cGMP requirements. Product approvals may be withdrawn if compliance with regulatory requirements is not maintained or if problems concerning safety or efficacy of the product occur following approval. Because we intend to contract with third parties for manufacturing of our products, our ability to control third-party compliance with FDA requirements will be limited to contractual remedies and rights of inspection.

In addition to FDA restrictions on marketing of pharmaceutical products, several other state and federal laws have been applied to restrict certain sales and marketing practices in the pharmaceutical industry in recent years. These laws include licensing requirements, compliance program requirements, annual certificates and disclosures, anti-kickback statutes and false claims statutes. The federal Anti-Kickback Statute, prohibits knowingly and willfully offering, paying, soliciting or receiving remuneration to induce or in return for purchasing, leasing, ordering or arranging for the purchase, lease or order of any health care item or service reimbursable under Medicare, Medicaid or other federally financed health care programs. This statute has been interpreted to apply to arrangements between pharmaceutical manufacturers on the one hand and prescribers, purchasers and formulary managers on the other. Violations of the Anti-Kickback Statute are punishable by imprisonment, criminal fines, civil monetary penalties and exclusion from participation in federal health care programs. Although there are a number of statutory exemptions and regulatory safe harbors protecting certain common activities from prosecution or other regulatory sanctions, the exemptions and safe harbors are drawn narrowly, and practices that involve remuneration intended to induce prescribing, purchases or recommendations may be subject to scrutiny if they do not qualify for an exemption or safe harbor.

Federal false claims laws prohibit any person from knowingly presenting, or causing to be presented, a false claim for payment to the federal government, or knowingly making, or causing to be made, a false statement to have a false claim paid. Several pharmaceutical and other health care companies have been prosecuted under these laws for allegedly promoting their products for off-label uses, which in turn led to claims being submitted to and paid by the Medicare and Medicaid programs. The majority of states also have statutes or regulations similar to the Anti-Kickback Statute and false claims laws, which apply to items and services reimbursed under Medicaid and other state programs, or, in several states, apply regardless of the payor.

We are also subject to various laws and regulations regarding laboratory practices, the experimental use of animals and the use and disposal of hazardous or potentially hazardous substances in connection with our research.

### *Foreign Regulatory Approval*

We will have to complete approval processes, similar or related to the U.S. approval processes, in virtually every foreign market for our products in order to conduct clinical or preclinical research and to commercialize our drug candidates in those countries. The approval procedures and the time required for approvals vary from country to country and may involve additional testing. In addition, regulatory approval of prices is required in most countries other than the U.S. We face the risk that the resulting prices would be insufficient to generate an acceptable return to us or our collaborators.

Similar to the U.S. regulatory framework, the various phases of preclinical and clinical research are subject to significant regulatory controls within the European Union. Variations among national regimes exist. However, most jurisdictions require regulatory and ethics committees approval of interventional clinical trials. Most European regulators also require the submission of adverse event reports during a study and a copy of the final study report.

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Under European Union regulatory systems, marketing authorizations may be submitted either under a centralized or decentralized procedure. The centralized procedure is currently mandatory for products developed by means of a biotechnological process and optional for new active substances and other “innovative medicinal products with novel characteristics.” It 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 procedure, the holder of a national marketing authorization may submit applications in other European Union member states, requesting them to mutually recognize the marketing authorization already granted. Within 90 days of receiving the applications and assessment report, each member state must decide whether to recognize the existing approval.

Where possible, we will strive to choose the European regulatory filing route that will most rapidly enable us to obtain the needed 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.

### **Employees**

We have assembled an experienced and cohesive management and support team, with core competencies in general management, clinical development, regulatory affairs and corporate development. As of March 27, 2012, we had 14 full-time employees, following a reduction in force which took place in January 2011, wherein we down-sized the company to save costs. We believe that our relations with our employees are good, and we have no history of work stoppages.

### **Recent Developments**

#### *Joint Venture*

We entered into an agreement to form a joint venture company with Zhejiang Medicine Co., Ltd. and Beijing Make-Friend Medicine Technology Co., Ltd. effective September 27, 2011. The joint venture agreement provides for the joint venture company to develop and commercialize MN-221 in China. A sublicense under which the joint venture company will license MN-221 from us will be required, which sublicense will require the consent of Kissei. In accordance with the joint venture agreement, on March 16, 2012, we paid \$650,000 for our 30% interest in the joint venture company. The other parties to the joint venture agreement are responsible for providing their initial funding in the joint venture company for their combined 70% interest, and for future funding for the joint venture company’s activities. We have not entered into the sublicense of MN-221 with the joint venture company as of the date of this report. There is no assurance the sublicense will be executed and there is no assurance that the joint venture company will be able to proceed with the development of MN-221 in China.

### **Company Information**

We were originally incorporated in the State of Delaware in September 2000. Our principal executive offices are located at 4350 La Jolla Village Drive, Suite 950, San Diego, CA 92122. Our telephone number is (858) 373 – 1500. Our website is [www.medicinova.com](http://www.medicinova.com), which includes links to reports we have filed with the Securities and Exchange Commission, or SEC. The information contained in, or that can be accessed through, our website is not part of, and is not incorporated into, this Annual Report on Form 10-K.

## Item 1A. Risk Factors

*We operate in a dynamic and rapidly changing environment that involves numerous risks and uncertainties. Certain factors may have a material adverse effect on our business, financial condition and results of operations, and you should carefully consider them. Accordingly, in evaluating our business, we encourage you to consider the following discussion of risk factors, in its entirety, in addition to other information contained in this Annual Report on Form 10-K and our other public filings with the SEC. Other events that we do not currently anticipate or that we currently deem immaterial may also affect our results of operations and financial condition.*

### Risks Related to Our Business and Industry

***We have incurred significant operating losses since our inception and expect that we will incur continued losses for the foreseeable future.***

We are a development stage biopharmaceutical company with a limited operating history. We have incurred significant net losses since our inception. For the year ended December 31, 2011, we had a net loss of approximately \$17.7 million and our accumulated deficit was approximately \$285.3 million. If we are successful in securing a strategic collaboration or in raising additional capital to support the expansion of our business, our annual net losses may increase over the next several years as we expand our infrastructure and incur significant costs related to the development of our product candidates.

If we have taxable income in the future, utilization of the net operating losses, or NOL, and tax credit carry-forwards will be subject to a substantial annual limitation under Section 382 and 383 of the Internal Revenue Code of 1986, and similar state provisions due to ownership change limitations that have occurred. These ownership changes will limit the amount of NOL and tax credit carry-forwards that can be utilized to offset future taxable income and tax, respectively.

We believe our existing cash and cash equivalents at December 31, 2011 will be sufficient to fund our operating requirements for at least the next 12 months.

Our cash requirements assumptions may prove to be wrong. Our future cash requirements will also depend on many factors, including:

- progress in, and the costs of, future planned clinical trials and other research and development activities;
- the scope, prioritization and number of our product development programs;
- our obligations under our license agreements, pursuant to which we may be required to make future milestone payments upon the achievement of various milestones related to clinical, regulatory or commercial events;
- our ability to establish and maintain strategic collaborations, including licensing and other arrangements, and to complete acquisitions of additional product candidates;
- the time and costs involved in obtaining regulatory approvals;
- the costs of securing manufacturing arrangements for clinical or commercial production of our product candidates;
- the costs associated with expanding our management, personnel, systems and facilities;
- the costs associated with any litigation;
- the costs associated with the operations or wind-down of any business it may acquire;
- the costs involved in filing, prosecuting, enforcing and defending patent claims and other intellectual property rights; and

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- the costs of establishing or contracting for sales and marketing capabilities and commercialization activities if we obtain regulatory approval to market our product candidates.

Based on our existing cash resources, we expect our research and development expenses to decline relative to 2011 as we completed the enrollment of our Phase 2 clinical trial of MN-221 for the treatment of acute exacerbations of asthma, as announced on March 21, 2012. If we are able to raise additional capital and/or enter into one or more strategic alliances, then we expect our research and development expenses to increase in connection with clinical trials primarily related to MN-221 for the treatment of acute exacerbations of asthma and COPD exacerbations, and any other development activities that we may initiate. In addition, our general and administrative expenses may increase in future periods as a result of several factors, including our research and development activities, our business development activities and any expansions in our infrastructure related to such activities. Our estimate of cash requirements for future operating expenses assumes that we do not commence a Phase 3 clinical trial for MN-221 and that we do not fund any further significant clinical development of MN-166 unless we are able to raise additional capital and/or enter into one or more strategic alliances. We do expect to continue to incur significant and increasing operating losses for the foreseeable future. Because of the numerous risks and uncertainties associated with developing drug products, we are unable to predict the extent of any future losses or when we will become profitable, if at all.

***If we fail to obtain the capital necessary to fund our operations, we will be unable to develop and commercialize our product candidates.***

We have consumed substantial amounts of capital since our inception. From our inception to December 31, 2011, we had an accumulated deficit of approximately \$285.3 million. Our cash and cash equivalents were approximately \$15.1 million at December 31, 2011.

Our business will continue to require us to incur substantial research and development expenses and we do not expect to be able to fund these expenses solely from upfront cash or milestones from collaborations or strategic alliances. As such we may be required to raise capital from one or more sources in the near term to continue our operations at or close to the levels currently conducted. We believe that without raising additional capital from accessible sources of financings, we will not otherwise have adequate funding to complete the development of MN-221 including pivotal clinical trials or the commercialization of any products we successfully develop. There is no guarantee that adequate funds will be available when needed from debt or equity financing, arrangements with partners, or from other sources, or on terms attractive to us. The inability to obtain sufficient additional funds when needed to fund our operations would require us to significantly delay, scale back, or eliminate some or all of our clinical or regulatory activities, further reduce general and administrative expenses and have a substantial negative effect on our results of operations and financial condition.

***We do not have any products that are approved for commercial sale and therefore do not expect to generate any revenues from product sales in the foreseeable future, if ever.***

To date, we have funded our operations primarily from sales of our securities and, to a lesser extent, debt financing. We have not received, and do not expect to receive for at least the next several years, if at all, any revenues from the commercialization of our product candidates. We anticipate that, prior to our commercialization of a product candidate, out-licensing upfront and milestone payments will be our primary source of revenue if we can enter into collaborations, strategic alliances or other agreements that would provide us with such revenues. To obtain revenues from sales of our product candidates, we must succeed, either alone or with third parties, in developing, obtaining regulatory approval for, manufacturing and marketing drugs with commercial potential. We may never succeed in these activities, and we may not generate sufficient revenues to continue our business operations or achieve and maintain profitability.

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***We are largely dependent on the success of our two prioritized product candidates, MN-221 and MN-166, and we cannot be certain that either of these product candidates will receive regulatory approval or be successfully commercialized.***

We currently have no products for sale, and we cannot guarantee that we will ever have any drug products approved for sale. The research, testing, manufacturing, labeling, approval, selling, marketing and distribution of drug products are subject to extensive regulation by the FDA and comparable regulatory authorities in other countries. We are not permitted to market any of our product candidates in the U.S. until we submit and receive approval of a New Drug Application, or NDA, for a product candidate from the FDA or its foreign equivalent from a foreign regulatory authority. Obtaining FDA approval is a lengthy, expensive and uncertain process. We currently have two prioritized product candidates, MN-221 for the treatment of acute exacerbations of asthma and COPD exacerbations and MN-166, a combined ibudilast product development program covering MS and other CNS disorders, and the success of our business currently depends on their successful development and commercialization. Neither of these product candidates has completed the clinical development process; therefore, we have not submitted an NDA or foreign equivalent or received marketing approval for either of these two prioritized product candidates. In addition, we are not currently planning to fund any further significant clinical development of MN-166 until such time that we are able to secure a strategic collaboration to advance the combined development programs, which may delay or impede the process of completing clinical trials and seeking regulatory approval for this product candidate. We also cannot assure you that we will be able to secure such a strategic collaboration on attractive financial and other terms, or at all.

The clinical development programs for MN-221 and MN-166 may not lead to commercial products for a number of reasons, including our clinical trials' failure to demonstrate to the FDA's satisfaction that these product candidates are safe and effective or our failure to obtain necessary approvals from the FDA or similar foreign regulatory authorities for any reason. We may also fail to obtain the necessary approvals if we have inadequate financial or other resources to advance our product candidates through the clinical trial process or are unable to secure a strategic collaboration or partnership with a third party. Any failure or delay in completing clinical trials or obtaining regulatory approval for either MN-221 or MN-166 in a timely manner would have a material and adverse impact on our business and our stock price.

***We will depend on the joint venture company formed in China in 2011 to develop and commercialize MN-221 in China and there is no assurance that the joint venture will be able to successful in doing so.***

We entered into an agreement to form a joint venture company with Zhejiang Medicine Co., Ltd. and Beijing Make-Friend Medicine Technology Co., Ltd. effective September 27, 2011. We have invested \$650,000 for 30% interest in the joint venture company. A sublicense under which the joint venture company will license MN-221 from us will be required, which sublicense will require the consent of Kissei. We have no assurances that the joint venture company will be successful in its efforts to conduct clinical trials necessary to gain regulatory approval in China, will be able to successfully manufacture drug candidates for the Chinese market or will receive the future funding it will require to conduct operations. We have not entered into the sublicense of MN-221 with the joint venture company as of the date of this report. There is no assurance the sublicense will be executed and there is no assurance that the joint venture company will be able to proceed with the development of MN-221 in China or that we will someday recover our investment in the joint venture company.

***We may not realize all of the anticipated benefits of the combined clinical development programs based on ibudilast.***

We may not be able to successfully secure a strategic collaboration to advance the combined ibudilast development programs. Following completion of the Phase 2 clinical trial of MN-166 for the treatment of MS in the second quarter of 2008 and the acquisition of Avigen in December 2009, we have not undertaken, nor do we plan to undertake, any further significant clinical development of MN-166 until such time that we secure a strategic collaboration to advance the combined clinical development of MN-166 ibudilast-based development program. We cannot assure you that we will be able to secure such a strategic collaboration or otherwise further advance, or recognize value from, a combined MN-166 clinical development program.

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***In order to commercialize a therapeutic drug successfully, a product candidate must receive regulatory approval after the successful completion of clinical trials, which are long, complex and costly, have a high risk of failure and can be delayed or terminated at any time.***

Our product candidates are subject to extensive government regulations related to development, clinical trials, manufacturing and commercialization. The process of obtaining FDA and other regulatory approvals is costly, time-consuming, uncertain and subject to unanticipated delays. To receive regulatory approval for the commercial sale of any of our product candidates, we must conduct, at our own expense, adequate and well-controlled clinical trials in human patients to demonstrate the efficacy and safety of the product candidate. Clinical testing is expensive, takes many years and has an uncertain outcome. To date, we have obtained regulatory authorization to conduct clinical trials for eight of our product development programs. Investigational New Drug Applications, or INDs, were approved by the FDA and are active for seven of our product candidates. We also have obtained Clinical Trial Authorizations, or CTAs, for the ongoing Phase 2 clinical trial for MN-221 in Canada, Australia and New Zealand. Through the acquisition of Avigen, we have assumed responsibility for clinical trials including one active IND for neuropathic pain and cross-reference and drug product support of the NIDA-funded opioid withdrawal investigator-initiated IND with Columbia University drug addiction clinical researchers. In the third quarter of 2010, the FDA approved a NIDA-funded investigator-initiated IND with University of California Los Angeles to proceed with an initial trial of our neurological drug candidate, ibudilast (MN-166), as a potential new pharmacotherapy for methamphetamine addiction. The study will be led by established clinical research investigators in the treatment of drug addiction.

It may take years to complete the clinical development necessary to commercialize a drug, and delays or failure can occur at any stage, which may result in our inability to market and sell any products derived from any of our product candidates that are ultimately approved by the FDA or foreign regulatory authorities. Our clinical trials may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical and/or non-clinical testing. For example, in October 2007, we announced that our Phase 2 clinical trial of MN-305 for the treatment of insomnia failed to achieve statistical significance in its primary endpoint, and, as a result, we terminated development of MN-305 for the treatment of insomnia. Of the large number of drugs in development, only a small percentage result in the submission of an NDA to the FDA and even fewer are approved for commercialization. Interim results of clinical trials do not necessarily predict final results, and success in preclinical testing and early clinical trials does not ensure that later clinical trials will be successful. A number of companies in the pharmaceutical industry have suffered significant setbacks in advanced clinical trials even after obtaining promising results in earlier clinical trials. In addition, any delays in completing clinical trials or the rejection of data from a clinical trial by a regulatory authority will result in increased development costs and could have a material adverse effect on the development of the impacted product candidate.

In connection with the conduct of clinical trials for each of our product candidates, we face many risks, including the risks that:

- the product candidate may not prove to be effective in treating the targeted indication;
- clinical trial participants and/or patients may experience serious adverse events or other undesirable drug-related side effects;
- the results may not confirm the positive results of earlier trials;
- the FDA or other regulatory authorities may not agree with our proposed development plans or accept the results of completed clinical trials; and
- our planned clinical trials and the data collected from such clinical trials may be deemed by the FDA or other regulatory authorities not to be sufficient, which would require additional development for the product candidate before it can be evaluated in late stage clinical trials or before the FDA will consider an application for marketing approval.

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If we do not complete clinical development of our product candidates successfully, we will be unable to obtain regulatory approval to market products and generate revenues from such product candidates. We may also fail to obtain the necessary regulatory approvals if we have inadequate financial or other resources to advance our product candidates through the clinical trial process. In addition, even if we believe that the preclinical and clinical data are sufficient to support regulatory approval for a product candidate, the FDA and foreign regulatory authorities may not ultimately approve such product candidate for commercial sale in any jurisdiction, which would limit our ability to generate revenues and adversely affect our business. In addition, even if our product candidates receive regulatory approval, they remain subject to ongoing FDA regulations, including obligations to conduct additional clinical trials, changes to the product label, new or revised regulatory requirements for manufacturing practices, written advisements to physicians, and/or a product recall or withdrawal.

***We are subject to stringent regulation of our product candidates, which could delay the development and commercialization of our product candidates.***

We, our third-party manufacturers, service providers, suppliers and partners, and our product candidates are subject to stringent regulation by the FDA and other regulatory agencies in the U.S. and by comparable authorities in other countries. None of our product candidates can be marketed in the U.S. until it has been approved by the FDA. None of our product candidates has been approved by the FDA to date, and we may never receive FDA approval for any of our product candidates. Obtaining FDA approval for a product takes many years of clinical development and requires substantial resources. Additionally, changes in regulatory requirements and guidance may occur or new information regarding the product candidate or the target indication may emerge, and we may need to perform additional, unanticipated non-clinical or clinical testing of our product candidates or amend clinical trial protocols to reflect these changes. Any additional unanticipated testing would add costs and could delay or result in the denial of regulatory approval for a product candidate. These regulatory requirements may limit the size of the market for the product or result in the incurrence of additional costs. Any delay or failure in obtaining required approvals could substantially reduce or negate our ability to generate revenues from the particular product candidate.

In addition, both before and after regulatory approval, we, our partners and our product candidates are subject to numerous FDA requirements, including requirements related to testing, manufacturing, quality control, labeling, advertising, promotion, distribution and export. The FDA's requirements may change and additional government regulations may be promulgated that could affect us, our partners and our product candidates. Given the number of recent high profile adverse safety events with certain drug products, the FDA may require, as a condition of approval, costly risk management programs, which may include safety surveillance, restricted distribution and use, patient education, enhanced labeling, special packaging or labeling, expedited reporting of certain adverse events, preapproval of promotional materials and restrictions on direct-to-consumer advertising. Furthermore, we cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the U.S. or abroad.

In order to market any of our products outside of the U.S., we and our strategic partners and licensees must establish and comply with numerous and varying regulatory requirements of other countries regarding safety and efficacy. Approval procedures vary among countries and can involve additional product testing and additional administrative review periods beyond the requirements of the FDA and the time required to obtain approval in other countries might differ from that required to obtain FDA approval. The regulatory approval process in other countries may include all of the risks detailed above regarding FDA approval in the U.S. Regulatory approval in one country, including FDA approval in the U.S, does not ensure regulatory approval in another. In addition, a failure or delay in obtaining regulatory approval in one country may negatively impact the regulatory process in others. A product candidate may not be approved for all indications that we request, which would limit the uses of our product and adversely impact our potential royalties and product sales, and any approval that we receive may be subject to limitations on the indicated uses for which the product may be marketed or require costly, post-marketing follow-up studies.

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If we fail to comply with applicable regulatory requirements in the U.S. or other countries, we may be subject to regulatory and other consequences, including fines and other civil penalties, delays in approving or failure to approve a product, suspension or withdrawal of regulatory approvals, product recalls, seizure of products, operating restrictions, interruption of manufacturing or clinical trials, injunctions and criminal prosecution, any of which would harm our business.

***Even if our product candidates receive regulatory approval, they may still face future development and regulatory difficulties.***

Even if U.S. regulatory approval is obtained, the FDA may still impose significant restrictions on a product's indicated uses or marketing or impose ongoing requirements for potentially costly post-approval studies, including additional research and development and clinical trials. Any of these restrictions or requirements could adversely affect our potential product revenues. For example, the label ultimately approved for MN-221 or MN-166, our other product candidates or any other product candidates that we may in-license or acquire, if any, may include a restriction on the terms of its use, or it may not include one or more of our intended indications.

Our product candidates will also be subject to ongoing FDA requirements for the labeling, packaging, storage, advertising, promotion, record-keeping and submission of safety and other post-market information on the drug. In addition, approved products, manufacturers and manufacturers' facilities are subject to continual review and periodic inspections. If a regulatory agency discovers previously unknown problems with a product, such as adverse events of unanticipated severity or frequency or problems with the facility where the product is manufactured, a regulatory agency may impose restrictions on that product or us, including requiring withdrawal of the product from the market. If our product candidates fail to comply with applicable regulatory requirements, such as commercial good manufacturing practices, or cGMPs, a regulatory agency may:

- issue warning letters or untitled letters;
- require us to enter into a consent decree, which can include imposition of various fines, reimbursements for inspection costs, required due dates for specific actions and penalties for noncompliance;
- impose other civil or criminal penalties;
- suspend regulatory approval;
- suspend any ongoing clinical trials;
- refuse to approve pending applications or supplements to approved applications filed by us;
- impose restrictions on operations, including costly new manufacturing requirements; or
- seize or detain products or require a product recall.

***If we fail to obtain and maintain approval from regulatory authorities in international markets for any of our current or future product candidates for which we have rights in international markets, our market opportunities will be limited and our business will be adversely impacted.***

Sales of our product candidates outside of the U.S. will be subject to foreign regulatory requirements governing clinical trials and marketing approval. Even if the FDA grants marketing approval for a product candidate, comparable regulatory authorities of foreign countries must also approve the manufacturing and marketing of our product candidates in those countries. Approval procedures vary among jurisdictions and can involve requirements and administrative review periods different from, and greater than, those in the U.S., including additional preclinical studies or clinical trials. In many countries outside the U.S., a product candidate must be approved for reimbursement before it can be approved for sale in that country. In some cases, the price that we intend to charge for our products is also subject to approval. Obtaining foreign regulatory approvals and



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compliance with foreign regulatory requirements could result in significant delays, difficulties and costs for us and could delay or prevent the introduction of our products in certain countries. Further, clinical trials conducted in one country may not be accepted by regulatory authorities in other countries and regulatory approval in one country does not ensure approval in any other country, while a failure or delay in obtaining regulatory approval in one country may have a negative effect on the regulatory approval process in others.

### ***The FDA may not ultimately approve our proposed trade names for our product candidates.***

Any trade names that we intend to use for our product candidates must be approved by the FDA irrespective of whether we have secured a formal trademark registration from the U.S. Patent and Trademark Office, or PTO. The FDA conducts a rigorous review of proposed product names and may reject a proposed product name for a variety of reasons, including if it believes that the name inappropriately implies medical claims or if it poses the potential for confusion with other product names. In addition, if the FDA determines that the trade names of other product candidates that are approved prior to the approval of our product candidates may present a risk of confusion with any of our proposed trade names, the FDA may not ultimately approve those proposed trade names. If the FDA does not approve any of our proposed product names prior to their applicable NDA approval dates, we may be required to launch commercial sales of such products without brand names, and our efforts to build successful brand identities for, and commercialize, such products may consequently be adversely impacted.

### ***Any product candidate that we develop may cause undesirable side effects or have other properties that could delay or prevent regulatory approval or commercialization.***

Undesirable side effects caused by any product candidate that we develop could result in the denial of regulatory approval by the FDA or other regulatory authorities for any or all targeted indications, or cause us to evaluate the future of our development programs. In addition, the FDA or other regulatory authorities may require, or we may undertake, additional clinical trials to support the safety profile of our product candidates.

In addition, if any product candidate that we may develop that receives marketing approval and we or others later identify undesirable side effects caused by the product, or there is a perception that the product is associated with undesirable side effects:

- regulatory authorities may require the addition of labeling statements, such as a “black box” warning or a contraindication;
- regulatory authorities may withdraw their approval of the product or place restrictions on the way it is prescribed; and
- we may be required to change the way the product is administered, conduct additional clinical trials or change the labeling of the product or implement a risk evaluation and mitigation strategy.

If any of these events occurred with respect to our product candidates, our ability to generate significant revenues from the sale of these products would be significantly harmed.

### ***Delays in the commencement or completion of clinical trials, or suspension or termination of our clinical trials, could result in increased costs to us and delay or limit our ability to obtain regulatory approval for our product candidates.***

If we experience delays in the commencement or completion of our clinical trials, we could incur significantly higher product development costs and our ability to obtain regulatory approvals for our product candidates could be delayed or limited. The commencement and completion of clinical trials requires us to identify and maintain a sufficient number of study sites and enroll a sufficient number of patients at such sites. We do not know whether enrollment in our future clinical trials for our product candidates will be completed on

time, or whether our additional planned and ongoing clinical trials for our product candidates will be completed on schedule, if at all.

The commencement and completion of clinical trials can be delayed for a variety of other reasons, including delays in:

- obtaining regulatory approval to commence or amend a clinical trial;
- reaching agreements on acceptable terms with prospective clinical research organizations, or CROs, and trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- recruiting and enrolling patients to participate in clinical trials;
- retaining patients who have initiated a clinical trial but who may be prone to withdraw due to the treatment protocol, lack of efficacy, personal issues or side effects from the therapy or who are lost to further follow-up;
- manufacturing sufficient quantities of a product candidate; and
- IRB approval or approval from foreign counterparts to conduct or amend a clinical trial at a prospective site.

In addition, a clinical trial may be delayed, suspended or terminated by us, the FDA or other regulatory authorities due to a number of factors, including:

- ongoing discussions with regulatory authorities regarding the scope or design of our clinical trials or requests by them for supplemental information with respect to our clinical trial results, which may result in the imposition of a clinical hold on the IND for any clinical trial, as well as the inability to resolve any outstanding concerns with the FDA so that a clinical hold already placed on the IND may be lifted and the clinical trial may begin;
- inspections of our own clinical trial operations, the operations of our CROs or our clinical trial sites by the FDA or other regulatory authorities, which may result in the imposition of a clinical hold or potentially prevent us from using some of the data generated from our clinical trials to support requests for regulatory approval of our product candidates;
- our failure or inability, or the failure or inability of our CROs, clinical trial site staff or other third party service providers involved in the clinical trial, to conduct clinical trials in accordance with regulatory requirements or our clinical protocols;
- lower than anticipated enrollment or retention rates of patients in clinical trials;
- new information suggesting unacceptable risk to subjects or unforeseen safety issues or any determination that a trial presents unacceptable health risks;
- insufficient supply or deficient quality of product candidates or other materials necessary for the conduct of our clinical trials; and
- lack of adequate funding to continue the clinical trial, including the incurrence of unforeseen costs due to enrollment delays, requirements to conduct additional trials and studies and increased expenses associated with the services of our CROs and other third parties.

If we experience delays in the completion of our clinical trials for a product candidate, the commercial prospects for such product candidate may be harmed, we may incur increased costs for development of such product candidate and our ability to obtain regulatory approval for such product candidate could be delayed or limited. Many of the factors that cause or lead to delays in the commencement or completion of clinical trials

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may also ultimately lead to the denial of regulatory approval for a product candidate. In addition, any amendment to a clinical trial protocol may require us to resubmit our clinical trial protocols to IRBs or their foreign counterparts for reexamination, which may delay or otherwise impact the costs, timing or successful completion of a clinical trial.

### ***The loss of any rights to develop and market any of our product candidates could significantly harm our business.***

We license the rights to develop and market our product candidates. Currently, we have licensed rights relating to eight compounds for the development of ten product candidates.

We are obligated to develop and commercialize certain product candidates in accordance with mutually agreed upon terms and conditions. Our ability to satisfy some or all of the terms and conditions of our license agreements is dependent on numerous factors, including some factors that are outside of our control. Any of our license agreements may be terminated if we breach our obligations under the agreement materially and fail to cure any such breach within a specified period of time.

If any of our license agreements is terminated, we would have no further rights to develop and commercialize the product candidate that is the subject of the license. The termination of the license agreements related to either of our two prioritized product candidates would significantly and adversely affect our business. The termination of any of the remainder of our license agreements could materially and adversely affect our business.

### ***If our competitors develop and market products that are more effective than our product candidates, they may reduce or eliminate our commercial opportunities.***

The biotechnology and pharmaceutical industries are subject to rapid and intense technological change. We face, and will continue to face, competition from pharmaceutical and biotechnology companies, as well as numerous academic and research institutions and governmental agencies, in the U.S. and abroad. Some of these competitors have products or are pursuing the development of drugs that target the same diseases and conditions that are the focus of our product development programs. We cannot assure you that developments by others will not render our product candidates obsolete or noncompetitive. Many of our competitors have products that have been approved or are in advanced development and may succeed in developing drugs that are more effective, safer, more affordable or more easily administered than ours, or that achieve patent protection or commercialization sooner than our products. Our competitors may also develop alternative therapies that could further limit the market for any products that we are able to obtain approval for, if at all. In addition, new developments, including the development of other drug technologies and methods of preventing the incidence of disease, occur in the pharmaceutical industry at a rapid pace. These developments may render our product candidates obsolete or noncompetitive.

In many of our target disease areas, potential competitors are working to develop new compounds with different mechanisms of action and attractive efficacy and safety profiles. Many of our competitors have substantially greater financial, research and development resources, including personnel and technology, clinical trial experience, manufacturing, sales and marketing capabilities and production facilities than we do. Smaller companies also may prove to be significant competitors, particularly through proprietary research discoveries and collaboration arrangements with large pharmaceutical and established biotechnology companies.

Our competitors may obtain regulatory approval of their products more rapidly than we are able to or may obtain patent protection or other intellectual property rights that limit our ability to develop or commercialize our product candidates. Our competitors may also develop drugs that are more effective and less costly than ours and may also be more successful than us in manufacturing and marketing their products. We also expect to face

similar competition in our efforts to identify appropriate collaborators or partners to help develop or commercialize our product candidates.

***We will depend on strategic collaborations with third parties to develop and commercialize selected product candidates and will not have control over a number of key elements relating to the development and commercialization of these product candidates if we are able to achieve such third-party arrangements.***

A key aspect of our strategy is to seek collaborations with partners, such as large pharmaceutical companies, that are willing to conduct later-stage clinical trials and further develop and commercialize selected product candidates. Following completion of the Phase 2 clinical trial for MN-166 for the treatment of MS in the second quarter of 2008 and the acquisition of Avigen in December 2009, we do not plan to undertake any further significant clinical development activities for any of our product candidates other than MN-221 for the treatment of acute exacerbations of asthma and COPD exacerbations, other than those activities deemed necessary to maximize each product candidate's value, until such time that we are successful in entering into a partnership or collaboration for further development of such product candidates. To date, we have not entered into any such collaborative arrangements, and we may not be able to enter into any collaborations or otherwise monetize these product candidates on acceptable terms, if at all.

By entering into a strategic collaboration with a partner, we may rely on the partner for financial resources and for development, regulatory and commercialization expertise. Even if we are successful in entering into a strategic collaboration for one of our product candidates, our partner may fail to develop or effectively commercialize the product candidate because such partner:

- does not have sufficient resources or decides not to devote the necessary resources due to internal constraints such as limited cash or human resources;
- decides to pursue a competitive potential product developed outside of the collaboration;
- cannot obtain the necessary regulatory approvals;
- determines that the market opportunity is not attractive; or
- cannot manufacture the necessary materials in sufficient quantities from multiple sources or at a reasonable cost.

We also face competition in our search for partners from other biotechnology and pharmaceutical companies worldwide, many of whom are larger and able to offer more attractive deals in terms of financial commitments, contribution of human resources, or development, manufacturing, regulatory or commercial expertise and support.

If we are not successful in attracting partners and entering into collaborations on acceptable terms for these product candidates or otherwise monetizing these product candidates, we may not be able to complete development of or obtain regulatory approval for such product candidates. In such event, our ability to generate revenues from such products and achieve or sustain profitability would be significantly hindered.

***The terms under which we raise additional capital or debt financing may harm our business and may significantly dilute stockholders' ownership interests.***

If we raise additional funds through collaborations or licensing arrangements with third parties, we may need to relinquish some rights to our product candidates, including commercialization rights, which may hinder our ability to generate revenues and achieve or sustain profitability. If we raise additional funds by issuing equity securities, including as part of a debt financing, stockholders may experience substantial dilution. Debt financing, if available, may involve significant cash payment obligations and restrictive covenants and other financial terms

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that may impede our ability to operate our business. Any debt financing or additional equity that we raise may contain terms that are not favorable to us or our stockholders.

***We rely on third parties to conduct our clinical trials, and we may incur additional development costs, experience delays in the commencement and completion of clinical trials, and be unable to obtain regulatory approval for or commercialize our product candidates on our anticipated timeline if these third parties do not successfully carry out their contractual duties or meet expected deadlines.***

We rely extensively on CROs, medical institutions, clinical investigators, contract laboratories and other service providers to perform important functions related to the conduct of our clinical trials, the collection and analysis of data and the preparation of regulatory submissions. Although we design and manage our current clinical trials to ensure that each clinical trial is conducted in accordance with its investigational plan and protocol, we do not have the ability to conduct all aspects of our clinical trials directly for our product candidates.

The FDA requires us and our CROs to comply with regulations and standards, commonly referred to as good clinical practices, or GCPs, for conducting, monitoring, recording and reporting the results of clinical trials to ensure that the data and results are scientifically credible and accurate and that the trial subjects are adequately informed of the potential risks of participating in clinical trials. Our reliance on CROs does not relieve us of these responsibilities and requirements. The CROs, medical institutions, clinical investigators, contract laboratories and other service providers that we employ in the conduct of our clinical trials are not our employees, and we cannot control the amount or timing of resources that they devote to our product development programs. If any of these third parties fails to devote sufficient care, time and resources to our product development programs, if its performance is substandard, or if any third party is inspected by the FDA and found not to be in compliance with GCPs, it will delay the completion of the clinical trial in which they are involved and the progress of the affected development program. The CROs with which we contract for execution of our clinical trials play a significant role in the conduct of the clinical trials and the subsequent collection and analysis of data. Any failure of the CROs to meet their obligations could adversely affect clinical development of our product candidates. Moreover, the CROs, clinical investigators and other service providers may have relationships with other commercial entities, some of which may have competitive products under development or currently marketed, and our competitive position could be harmed if they assist our competitors. If any of these third parties does not successfully carry out their contractual duties or obligations or meet expected deadlines, or if the quality or accuracy of the clinical data is compromised for any reason, our clinical trials may be extended, delayed or terminated, and we may not be able to obtain regulatory approval for our product candidates. In addition, while we believe that there are numerous alternative sources to provide these services, we might not be able to enter into replacement arrangements without delays or additional expenditures if we were to seek such alternative sources.

***We rely on third-party manufacturers to produce our product candidates, which may result in delays in our clinical trials and the commercialization of products, as well as increased costs.***

We have no manufacturing facilities, and we do not intend to develop facilities for the manufacture of our product candidates for clinical trials or commercial purposes in the foreseeable future. We contract with third-party manufacturers to produce, in collaboration with us, sufficient quantities of our product candidates for clinical trials, and we plan to contract with third-party manufacturers to produce sufficient quantities of any product candidates approved by the FDA or other regulatory authorities for commercial sale. While we believe that there are competitive sources available to manufacture our product candidates, we may not be able to enter into arrangements without delays or additional expenditures. We cannot estimate these delays or costs with certainty.

Reliance on third-party manufacturers limits our ability to control certain aspects of the manufacturing process and therefore exposes us to a variety of significant risks, including risks related to our ability to commercialize any products approved by regulatory authorities or conduct clinical trials, reliance on such third

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parties for regulatory compliance and quality assurance, and the refusal or inability of a third-party manufacturer to supply our requirements on a long-term basis. In addition, manufacturers of pharmaceutical products often encounter difficulties in production, particularly in scaling up initial production. These problems include difficulties with production costs and yields, quality control, including stability of the product candidate and quality assurance testing, shortages of qualified personnel and compliance with federal, state and foreign regulations. Also, our manufacturers may not perform as agreed. If our manufacturers were to encounter any of these difficulties, our ability to timely produce our product candidates for clinical trials and commercial sale may be interrupted, which could result in delayed clinical trials or receipt of regulatory approval and lost or delayed revenues.

We have entered into an agreement with Hospira Worldwide, Inc. for the development and supply of finished product of MN-221 for the treatment of acute exacerbations of asthma and COPD that we intend to use in clinical trials and the commercial market if MN-221 receives regulatory approval. We do not have agreements established regarding commercial supply of finished product of MN-221 in standard vials or for the active pharmaceutical ingredient, or API, or finished product for any of our product candidates. Pursuant to our license agreement with Kissei Pharmaceutical Co., Ltd., we will negotiate with them a commercial supply agreement on commercially reasonable terms, in order to manufacture the API for MN-221 on a commercial scale if MN-221 is approved by the FDA or other regulatory authorities for commercial sale. We will also need to successfully negotiate a supply agreement with a third-party manufacturer on commercially reasonable terms in order to manufacture the finished product of MN-221 in standard vials. We may not be able to establish or maintain any commercial manufacturing and supply arrangements on commercially reasonable terms that we require for purposes of commercializing a product. Any failure by us to secure or maintain any such required commercial supply agreements could result in interruption of supply and lost or delayed revenues, which would adversely affect our business. Any problems or delays we experience in preparing for commercial-scale manufacturing of a product candidate may result in a delay in FDA or other regulatory approval of the product candidate or may impair our ability to manufacture commercial quantities, which would adversely affect our business. For example, our manufacturers will need to produce specific batches of a product candidate to demonstrate acceptable stability under various conditions and for commercially viable lengths of time. We and our third-party manufacturers will need to demonstrate to the FDA and other regulatory authorities this acceptable stability data for the product candidate, as well as validate methods and manufacturing processes, in order to receive regulatory approval to commercialize such product candidate.

Our manufacturers are obligated to operate in accordance with FDA-mandated current good manufacturing practices, or cGMPs and, in some cases, International Convention on Harmonization, or ICH, standards. A failure of any of our third-party manufacturers to establish and follow cGMPs and/or ICH standards and to document their adherence to such practices may lead to significant delays in our ability to timely conduct and complete clinical trials, obtain regulatory approval of product candidates or launch of our products into the market. In addition, changing third-party manufacturers is difficult. For example, a change in third-party manufacturer for a particular product candidate requires re-validation of the manufacturing processes and procedures in accordance with cGMPs, which may be costly and time-consuming and, in some cases, our manufacturers may not provide us with adequate assistance to transfer the manufacturing processes and procedures for our product candidates to new manufacturers or may possess intellectual property rights covering parts of these processes or procedures for which we may need to obtain a license. Failure by our third-party manufacturers or us to comply with applicable regulations could result in sanctions being imposed on us, including fines, injunctions, civil penalties, delays, suspension or withdrawal of regulatory approvals, seizures or recalls of products, operating restrictions and criminal prosecutions.

***We may not be able to manufacture our product candidates in commercial quantities, which would prevent us from commercializing our product candidates.***

To date, our product candidates have been manufactured in small quantities for preclinical studies and clinical trials. If any of our product candidates is approved by the FDA or comparable regulatory authorities in

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other countries for commercial sale, we will need to manufacture such product candidate in larger quantities. We may not be able to increase successfully the manufacturing capacity for any of our product candidates in a timely or economic manner, or at all. Significant scale-up of manufacturing may require additional validation studies, which the FDA must review and approve. If we are unable to increase successfully the manufacturing capacity for a product candidate, the regulatory approval or commercial launch of that product candidate may be delayed or there may be a shortage in supply. Our product candidates require precise, high quality manufacturing. Our failure to achieve and maintain these high manufacturing standards in collaboration with our third-party manufacturers, including the incidence of manufacturing errors, could result in patient injury or death, product recalls or withdrawals, delays or failures in product testing or delivery, cost overruns or other problems that could harm our business, financial condition and results of operations.

***Materials necessary to manufacture our product candidates may not be available on commercially reasonable terms, or at all, which may delay the development and commercialization of our product candidates.***

We rely on the third-party manufacturers of our product candidates to purchase from third-party suppliers the materials necessary to produce the API and product candidates for our clinical trials, and we will rely on such manufacturers to purchase such materials to produce the API and finished product for any commercial distribution of our products if we obtain marketing approval. Suppliers may not sell these materials to our manufacturers at the time they need them in order to meet our required delivery schedule or on commercially reasonable terms, if at all. We do not have any control over the process or timing of the acquisition of these materials by our manufacturers. Moreover, we currently do not have any agreements for the production of these materials. If our manufacturers are unable to obtain these materials for our clinical trials, testing of the affected product candidate would be delayed, which may significantly impact our ability to develop the product candidate. If we or our manufacturers are unable to purchase these materials after regulatory approval has been obtained for one of our products, the commercial launch of such product would be delayed or there would be a shortage in supply of such product, which would harm our ability to generate revenues from such product and achieve or sustain profitability.

***Our product candidates, if approved for sale, may not gain acceptance among physicians, patients and the medical community, thereby limiting our potential to generate revenues.***

If one of our product candidates is approved for commercial sale by the FDA or other regulatory authorities, the degree of market acceptance of any approved product by physicians, healthcare professionals and third-party payers and our profitability and growth will depend on a number of factors, including:

- demonstration of efficacy;
- changes in the standard of care for the targeted indication;
- relative convenience and ease of administration;
- the prevalence and severity of any adverse side effects;
- availability, cost and potential advantages of alternative treatments, including less expensive generic drugs;
- pricing and cost effectiveness, which may be subject to regulatory control;
- effectiveness of our or any of our partners' sales and marketing strategies;
- the product labeling or product insert required by the FDA or regulatory authority in other countries; and
- the availability of adequate third-party insurance coverage or reimbursement.

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If any product candidate that we develop does not provide a treatment regimen that is as beneficial as, or is perceived as being as beneficial as, the current standard of care or otherwise does not provide patient benefit, that product candidate, if approved for commercial sale by the FDA or other regulatory authorities, likely will not achieve market acceptance. Our ability to effectively promote and sell any approved products will also depend on pricing and cost-effectiveness, including our ability to produce a product at a competitive price and our ability to obtain sufficient third-party coverage or reimbursement. If any product candidate is approved but does not achieve an adequate level of acceptance by physicians, patients and third-party payors, our ability to generate revenues from that product would be substantially reduced. In addition, our efforts to educate the medical community and third-party payors on the benefits of our product candidates may require significant resources and may never be successful.

***If our products are not accepted by the market or if users of our products are unable to obtain adequate coverage of and reimbursement for our products from government and other third-party payors, our revenues and profitability will suffer.***

Our ability to commercialize our products successfully will depend in significant part on pricing and cost effectiveness, including our ability to produce a product at a competitive price and our ability to obtain appropriate coverage of and reimbursement for our products and related treatments from governmental authorities, private health insurers and other organizations, such as health maintenance organizations, or HMOs. Third-party payors are increasingly challenging the prices charged for medical products and services. We cannot provide any assurances that third-party payors will consider our products cost-effective or provide coverage of and reimbursement for our products, in whole or in part.

Uncertainty exists as to the coverage and reimbursement status of newly approved medical products and services and newly approved indications for existing products. Third-party payors may conclude that our products are less safe, less clinically effective or less cost-effective than existing products, and third-party payors may not approve our products for coverage and reimbursement. If we are unable to obtain adequate coverage of and reimbursement for our products from third-party payors, physicians may limit how much or under what circumstances they will prescribe or administer them. Such reduction or limitation in the use of our products could cause our sales to suffer. Even if third-party payors make reimbursement available, payment levels may not be sufficient to make the sale of our products profitable.

Market acceptance and sales of our current or future product candidates will depend in large part on global reimbursement policies and may be affected by future healthcare reform measures, both in the U.S. and other key international markets. For example, continuing health care reform in the U.S. will control or significantly influence the purchase of medical services and products, and may result in inadequate coverage of and reimbursement for our products. Many third-party payors are pursuing various ways to reduce pharmaceutical costs, including the use of formularies. The market for our products depends on access to such formularies, which are lists of medications for which third-party payors provide reimbursement. These formularies are increasingly restricted, and pharmaceutical companies face significant competition in their efforts to place their products on formularies. This increased competition has led to a downward pricing pressure in the industry. The cost containment measures that third-party payors, including government payors, are instituting could have a material adverse effect on our ability to operate profitably.

Internationally, the success of our product candidates, if approved, will depend largely on obtaining and maintaining government reimbursement, because in many European countries patients are unlikely to use prescription drugs that are not reimbursed by their governments. Negotiating prices with governmental authorities can delay commercialization by 12 months or more. Reimbursement policies may adversely affect our ability to sell our product candidates, if approved, on a profitable basis. In many international markets, governments control the prices of prescription pharmaceuticals, including through the implementation of reference pricing, price cuts, rebates, revenue-related taxes and profit control, and expect prices of prescription pharmaceuticals to decline over the life of the product or as volumes increase. Recently, many countries in the



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European Union have increased the amount of discounts required on pharmaceutical products, which may impact the reimbursement rates and timing to launch product candidates. Such pricing practices may affect our ability to achieve profitability or expected rates of growth in revenue or results of operations, which in turn could adversely affect our business, financial condition and results of operations.

***If we fail to identify and license or acquire other product candidates, we will not be able to expand our business over the long term.***

Because we do not have internal discovery capabilities, our business over the long term is substantially dependent on our ability to license or acquire product candidates and further develop them for commercialization. The success of this strategy depends upon our ability to identify, select and acquire the right product candidates. We have limited experience identifying, negotiating and implementing economically viable product candidate acquisitions or licenses, which is a lengthy and complex process. Also, the market for licensing and acquiring product candidates is intensely competitive, and many of our competitors have greater resources than we do. We may not have the requisite capital resources to consummate product candidate acquisitions or licenses that we identify to fulfill our strategy.

Moreover, product candidate acquisitions that we do complete involve numerous risks, including:

- difficulties in integrating the development program for the acquired product candidate into our existing operations;
- diversion of financial and management resources from existing operations;
- risks of entering new markets or technologies and of receiving regulatory approval;
- inability to generate sufficient revenues to offset acquisition costs; and
- delays that may result from our having to perform unanticipated preclinical trials or other tests on the product candidate.

If we are not successful in identifying and licensing or acquiring other product candidates over the long term, we will not be able to grow our revenues with sales from new products beyond those revenues, if any, from any approved products derived from our existing product candidates, and we may fail to achieve or sustain profitability.

***We are dependent on our management team, Yuichi Iwaki, M.D., Ph.D., and experienced scientific staff, and if we are unable to retain, motivate and attract key personnel, our product development programs may be delayed and we may be unable to develop successfully or commercialize our product candidates.***

We are dependent upon the continued services of our executive officers and other key personnel, particularly Yuichi Iwaki, M.D., Ph.D., a founder of the company and our President and Chief Executive Officer, who has been instrumental in our ability to in-license product candidates from Japanese pharmaceutical companies and secure financing from Japanese institutions. The relationships that certain of our key managers have cultivated with pharmaceutical companies from whom we license product candidates and to whom we expect to out-license product candidates make us particularly dependent upon their continued services with us, whether through employment, service on our board of directors or a consulting agreement. We are also substantially dependent on the continued services of clinical development personnel because of the highly technical nature of our product development programs. We are not presently aware of any plans of our executive officers or key personnel to retire or leave employment with the company. Each of our executive officers is party to an employment agreement that continues in effect until the earliest of termination of employment by (i) consent of the parties, (ii) cause or other material breach of the agreement, (iii) death or permanent disability or (iv) three months' written notice. Following termination of employment, these individuals may engage in other businesses that may compete with us.

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If we acquire or license new product candidates, our success will depend on our ability to attract, retain and motivate highly qualified management and scientific personnel to manage the development of these new product candidates. In particular, our product development programs depend on our ability to attract and retain highly experienced clinical development and regulatory personnel. However, we face competition for experienced scientists and other technical and professional personnel from numerous companies and academic and other research institutions. Competition for qualified personnel is particularly intense in the San Diego, California area, where our corporate headquarters is located. Our short operating history and the uncertainties attendant to being a development stage biopharmaceutical company could impair our ability to attract and retain personnel and impede the achievement of our development and commercialization objectives. In addition, we have scientific and clinical advisors who assist us in our product development and clinical strategies. These third parties are not our employees and may have commitments to, or contracts with, other entities that may limit their availability to us, or may have arrangements with other companies to assist in the development of products that may compete with our product candidates.

Although we have employment agreements with key members of management, each of our employees, subject to applicable notice requirements, may terminate his or her employment at any time. We do not carry “key person” insurance covering members of senior management. If we lose any of our key management personnel, we may not be able to find suitable replacements, which would adversely affect our business.

***If we are unable to establish sales, marketing and distribution capabilities, whether independently or with third parties, we will be unable to successfully commercialize our product candidates.***

To date, we have not sold, marketed or distributed any pharmaceutical products. If we are successful in obtaining regulatory approvals for any of our product candidates or acquiring other approved products, we will need to establish sales, marketing and distribution capabilities on our own or with partners in order to commercialize an approved product. The acquisition or development of an effective sales and marketing infrastructure will require a significant amount of our financial resources and time and could negatively impact our commercialization efforts, including delay of a product launch. We may be unable to establish and manage a sufficient or effective sales force in a timely or cost-effective manner, if at all, and any sales force we do establish may not be capable of generating demand for our products, therefore hindering our ability to generate revenues and achieve or sustain profitability. In addition, if we are unable to develop internal sales capabilities, we will need to contract with third parties or establish a partnership to market and sell the product. If we are unable to establish adequate sales, marketing and distribution capabilities, whether independently or with third parties, we may not be able to generate any product revenues, may generate increased expenses and may never become profitable. In addition, although we intend to establish strategic collaborations to market any products approved for sale by regulatory authorities outside of the U.S., we may be required to market our product candidates outside of the U.S. directly if we are unable to establish such collaborations. In that event, we may need to build a corresponding international sales and marketing capability with technical expertise and with supporting distribution capabilities.

***Health care reform measures could adversely affect our business.***

The business and financial condition of pharmaceutical and biotechnology companies are affected by the efforts of governmental and third-party payors to contain or reduce the costs of health care. In the U.S. and in foreign jurisdictions, there have been, and we expect that there will continue to be, a number of legislative and regulatory proposals aimed at changing the health care system. For example, in some countries, pricing of prescription drugs is subject to government control, and we expect proposals to implement similar controls in the U.S. to continue. Another example of proposed reform that could affect our business is drug reimportation into the U.S. Moreover, the pendency or approval of such proposals could result in a decrease in our stock price or our ability to raise capital or to obtain strategic partnerships or licenses. More recently, the President signed into law the Patient Protection and Affordable Care Act, which imposes numerous provisions over a four-year period.

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We have begun to assess the impact of this Act, but, at this early stage the likely impact cannot be ascertained with any degree of certainty.

***We may be sued for product liability, which could result in substantial liabilities that exceed our available resources and damage our reputation.***

The development and commercialization of drug products entails significant product liability risks. Product liability claims may arise from use of any of our product candidates in clinical trials and the commercial sale of any approved products. If we cannot successfully defend ourselves against these claims, we will incur substantial liabilities. Regardless of merit or eventual outcome, product liability claims may result in:

- withdrawal of clinical trial participants;
- termination of clinical trial sites or entire clinical trial programs;
- decreased demand for our product candidates;
- impairment of our business reputation;
- costs of related litigation;
- substantial monetary awards to patients or other claimants;
- loss of revenues; and
- the inability to commercialize our product candidates.

We currently have insurance that covers our clinical trials. We believe our current insurance coverage is reasonably adequate at this time; however, our insurance coverage may not reimburse us or may not be sufficient to reimburse us for all expenses or losses we may suffer. In addition, we will need to increase and expand this coverage as we commence additional clinical trials, as well as larger scale clinical trials, and in the event that any of our product candidates is approved for commercial sale. This insurance may be prohibitively expensive or may not fully cover our potential liabilities. In addition, our inability to obtain sufficient insurance coverage at an acceptable cost or otherwise to protect against potential product liability claims could prevent or inhibit the regulatory approval or commercialization of products that we or one of our collaborators develop. Successful product liability claims could have a material adverse effect on our business and results of operations. Liability from such claims could exceed our total assets if we do not prevail in any lawsuit brought by a third party alleging that an injury was caused by one of our product candidates.

***We may need to increase the size of our organization, and we may encounter difficulties managing our growth, which could adversely affect our results of operations.***

We have 14 full-time employees as of the date of this report, following a reduction in force which took place in January 2011, wherein we down-sized the company to save costs. If we are successful in securing a strategic collaboration or raising additional capital, our management, personnel, systems and facilities currently in place may not be adequate to support the company's needs. For example, we may hire additional personnel in clinical development, regulatory affairs and business development to further strengthen our core competencies or choose to develop sales, marketing and distribution capabilities for certain of our product candidates. Our need to effectively manage our operations, growth and product development programs requires that we:

- manage our clinical trials effectively;
- manage our internal development efforts effectively while carrying out our contractual obligations to licensors and other third parties;
- ensure that our consultants, CROs and other service providers successfully carry out their contractual obligations, provide high quality results and meet expected deadlines; and

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- continue to improve our operational, financial and management controls, reporting systems and procedures.

We may be unable to successfully implement these tasks on a larger scale, which may impact our ability to timely achieve our development and commercialization goals, if at all.

***We expect that our results of operations will fluctuate, which may make it difficult to predict our future performance from period to period.***

Our quarterly operating results have fluctuated in the past and are likely to continue to do so in the future. Some of the factors that could cause our operating results to fluctuate from period to period include:

- the status of development of our product candidates and, in particular, the advancement or termination of activities related to our product development programs and the timing of any milestone payments payable under our licensing agreements;
- the execution of other collaboration, licensing and similar arrangements and the timing of payments we may make or receive under these arrangements;
- variations in the level of expenses related to our product development programs;
- the unpredictable effects of collaborations during these periods;
- the timing of our satisfaction of applicable regulatory requirements, if at all;
- the rate of expansion of our clinical development and other internal research and development efforts;
- the costs of any litigation;
- the effect of competing technologies and products and market developments; and
- general and industry-specific economic conditions.

We believe that quarterly or yearly comparisons of our financial results are not necessarily meaningful and should not be relied upon as indications of our future performance.

***Our management has broad discretion over the use of our cash, and we may not use our cash effectively, which could adversely affect our results of operations.***

Our management has significant flexibility in applying our cash resources and could use these resources for corporate purposes that do not increase our market value or in ways with which our stockholders may not agree. We may use our cash resources for corporate purposes that do not yield a significant return or any return at all for our stockholders, which may cause our stock price to decline.

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

As a public company, we are required to comply with the Sarbanes-Oxley Act of 2002, as well as rules and regulations implemented by the SEC, The Nasdaq Stock Market, or Nasdaq, and Japanese securities laws, and incur significant legal, accounting and other expenses as a result. These rules impose various requirements on public companies, including requiring the establishment and maintenance of effective disclosure and financial controls and appropriate corporate governance practices. Our management and other personnel have devoted and will continue to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations increase our legal and financial compliance costs and may make it more difficult and expensive for us to renew our director and officer liability insurance, and may result in imposition of reduced policy limits and coverage.

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The Sarbanes-Oxley Act requires that we maintain effective internal controls for financial reporting and disclosure controls and procedures. Our listing obligations under the Nasdaq Market (formerly the Hercules Market until its closure in 2010) of the Osaka Securities Exchange, or OSE, also require that we comply either with Section 404 of the Sarbanes-Oxley Act or equivalent regulations in Japan and we elected to comply with Section 404. As a result, we are required to perform an evaluation of our internal control over financial reporting to allow management to report on the effectiveness of those controls, as required by Section 404. We are subject to attestation by our registered public accounting firm on our report regarding internal control over financial reporting for the year ended December 31, 2011 under Japanese securities laws. Our efforts to comply with Section 404 and related regulations have required, and continue to require, the commitment of significant financial and managerial resources. We cannot be certain that a material weakness will not be identified when we test the effectiveness of our controls in the future. If a material weakness is identified, we could be subject to sanctions or investigations by Nasdaq, the SEC, the OSE or other regulatory authorities, which would require additional financial and management resources, costly litigation or a loss of public confidence in our internal controls, which could have an adverse effect on the market price of our stock.

Additionally, in July 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or the Dodd-Frank Act, was enacted. There are significant corporate governance and executive compensation related provisions in the Dodd-Frank Act that require the SEC to adopt additional rules and regulations in these areas such as “say on pay” and proxy access. To maintain high standards of corporate governance and public disclosure, we intend to invest all reasonably necessary resources to comply with such compliance programs and rules and all other evolving standards. These investments may result in increased general and administrative costs and a diversion of our management’s time and attention from strategic revenue generating and cost management activities.

### ***Our business and operations would suffer in the event of system failures.***

Despite the implementation of security measures, our internal computer systems are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. Any system failure, accident or security breach that causes interruptions in our operations could result in a material disruption of our drug development programs, including delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach results in a loss or damage to our data or applications, or inappropriate disclosure of confidential or proprietary information, we may incur liability and the further development of our product candidates may be delayed.

### ***A variety of risks associated with operating our business and marketing our products internationally could materially adversely affect our business.***

A significant amount of our business activity is outside of the United States. We face risks associated with our international operations, including possible unfavorable regulatory, pricing and reimbursement, political, tax and labor conditions, which could harm our business. We are subject to numerous risks associated with international business activities, including, but not limited to:

- compliance with differing or unexpected regulatory requirements for our products;
- difficulties in staffing and managing foreign operations;
- in certain circumstances, including with respect to the commercialization of our product candidates in Europe, increased dependence on the commercialization efforts of our distributors or strategic partners;
- foreign government taxes, regulations and permit requirements;
- U.S. and foreign government tariffs, trade restrictions, price and exchange controls and other regulatory requirements;

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- economic weakness, including inflation, natural disasters, war, events of terrorism or political instability in particular foreign countries;
- fluctuations in currency exchange rates, which could result in increased operating expenses and reduced revenues, and other obligations related to doing business in another country;
- compliance with tax, employment, immigration and labor laws, regulations and restrictions for employees living or traveling abroad;
- workforce uncertainty in countries where labor unrest is more common than in the U.S.;
- changes in diplomatic and trade relationships; and
- challenges in enforcing our contractual and intellectual property rights, especially in those foreign countries that do not respect and protect intellectual property rights to the same extent as the U.S.

These and other risks associated with our international operations may materially adversely affect our business, financial condition and results of operations.

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

#### ***Our ability to compete may decline if we do not adequately protect our proprietary rights.***

There is the risk that our patents (both those owned by us and those in-licensed) may not provide a competitive advantage, including the risk that our patents expire before we obtain regulatory and marketing approval for one or more of our product candidates, particularly our in-licensed patents. Also, our competitors may develop products similar to ours using methods and technologies that are beyond the scope of our intellectual property rights. Composition of matter patents on APIs may provide protection for pharmaceutical products without regard to formulation, method of use, or other type of limitation. We do not have compound patent protection for the API in our MN-166 and MN-001 product candidates, although we do have patent protection for a particular crystalline polymorph of MN-001 and we have composition of matter protection on ibudilast analogs. As a result, competitors that obtain the requisite regulatory approval will be able to offer products with the same API as found in our MN-166 and MN-001 product candidates so long as such competitors do not infringe any methods of use, methods of manufacture, formulation or, in the case of MN-001, specific polymorph patents that we hold or have exclusive rights to through our licensors. For example, we currently rely on method of use patents for MN-166.

It is our policy to consult with our licensors in the maintenance of granted patents we have licensed and in their pursuit of patent applications that we have licensed, but each of our licensors generally remains primarily responsible for or in control of the maintenance of the granted patents and prosecution of the applications. We have limited control, if any, over the amount or timing of resources that each licensor devotes on our behalf, and a licensor may not assign as great a priority to prosecution of these patent applications as we would if we were undertaking such prosecution ourselves. As a result of this lack of control and general uncertainties in the patent prosecution process, we cannot be sure that our licensed patents will be maintained and that any additional patents will ever mature from our licensed applications. Issued U.S. patents require the payment of maintenance fees to continue to be in force. We typically rely on our licensors to do this and their failure to do so could result in the forfeiture of patents not timely maintained. Many foreign patent offices also require the payment of periodic annuities to keep patents and patent applications in good standing. As we generally do not maintain control over the payment of annuities, we cannot be certain that our licensors will timely pay such annuities and that the granted patents and pending patent applications will not become abandoned. For example, certain annuities were not paid in a timely manner with respect to foreign patents licensed under MN-002 (the active metabolite of MN-001) and, as a result, our patent rights may be impaired in those territories. In addition, our licensors may have selected a limited amount of foreign patent protection, and therefore applications have not been filed in, and foreign patents may not have been perfected in, all commercially significant countries.

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The patent protection of our product candidates and technology involves complex legal and factual questions. Most of our license agreements give us a right, but not an obligation, to enforce our patent rights. To the extent it is necessary or advantageous for any of our licensors' cooperation in the enforcement of our patent rights, we cannot control the amount or timing of resources our licensors devote on our behalf or the priority they place on enforcing our patent rights. We may not be able to protect our intellectual property rights against third party infringement, which may be difficult to detect, especially for infringement of patent claims for methods of manufacturing. Additionally, challenges may be made to the ownership of our intellectual property rights, our ability to enforce them or our underlying licenses, which in some cases have been made under foreign laws and may provide different protections than that of U.S. law.

We cannot be certain that any of the patents or patent applications owned by us or our licensors related to our product candidates and technology will provide adequate protection from competing products. Our success will depend, in part, on whether we or our licensors can:

- obtain and maintain patents to protect our product candidates;
- obtain and maintain any required or desirable licenses to use certain technologies of third parties, which may be protected by patents;
- protect our trade secrets and know-how;
- operate without infringing the intellectual property and proprietary rights of others;
- enforce the issued patents under which we hold rights; and
- develop additional proprietary technologies that are patentable.

The degree of future protection for our proprietary rights is uncertain. For example:

- we or our licensor might not have been the first to make the inventions covered by each of our pending patent applications or issued patents;
- we or our licensor might not have been the first to file patent applications for these inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies;
- it is possible that none of our pending patent applications will result in issued patents;
- any patents under which we hold rights may not provide us with a basis for maintaining market exclusivity for commercially viable products, may not provide us with any competitive advantages or may be challenged by third parties as invalid, not infringed or unenforceable under U.S. or foreign laws; or
- any of the issued patents under which we hold rights may not be valid or enforceable or may be circumvented successfully in light of the continuing evolution of domestic and foreign patent laws.

***Confidentiality agreements with employees and others may not adequately prevent disclosure of our trade secrets and other proprietary information and may not adequately protect our intellectual property, which could limit our ability to compete.***

Because we operate in the highly technical field of research and development of small molecule drugs, we rely in part on trade secret protection in order to protect our proprietary trade secrets and unpatented know-how. However, trade secrets are difficult to protect, and we cannot be certain that others will not develop the same or similar technologies on their own. We have taken steps, including entering into confidentiality agreements with our employees, consultants, outside scientific collaborators, sponsored researchers and other advisors, to protect our trade secrets and unpatented know-how. These agreements generally require that the other party keep confidential and not disclose to third parties all confidential information developed by the party or made known

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to the party by us during the course of the party's relationship with us. We also typically obtain agreements from these parties which provide that inventions conceived by the party in the course of rendering services to us will be our exclusive property. However, these agreements may not be honored and may not effectively assign intellectual property rights to us. Further, we have limited control, if any, over the protection of trade secrets developed by our licensors. Enforcing a claim that a party illegally obtained and is using our trade secrets or know-how is difficult, expensive and time consuming, and the outcome is unpredictable. In addition, courts outside the U.S. may be less willing to protect trade secrets or know-how. The failure to obtain or maintain trade secret protection could adversely affect our competitive position.

***A dispute concerning the infringement or misappropriation of our proprietary rights or the proprietary rights of others could be time consuming and costly, and an unfavorable outcome could harm our business.***

There is significant litigation in our industry regarding patent and other intellectual property rights. While we are not currently subject to any pending intellectual property litigation, and are not aware of any such threatened litigation, we may be exposed to future litigation by third parties based on claims that our product candidates, their methods of use, manufacturing or other technologies or activities infringe the intellectual property rights of such third parties. There are many patents relating to chemical compounds and methods of use. If our compounds or their methods of use or manufacture are found to infringe any such patents, we may have to pay significant damages or seek licenses under such patents. We have not conducted comprehensive searches for unexpired patents issued to third parties relating to our product candidates. Consequently, no assurance can be given that unexpired, third-party patents containing claims covering our product candidates, their methods of use or manufacture do not exist. Moreover, because some patent applications in the U.S. may be maintained in secrecy until the patents are issued, and because patent applications in the U.S. and many foreign jurisdictions are typically not published until 18 months after filing, we cannot be certain that others have not filed patent applications that will mature into issued patents that relate to our current or future product candidates and which could have a material effect in developing and commercializing one or more of our product candidates. The owner of a patent that is arguably infringed can bring a civil action seeking to enjoin an accused infringer from importing, making, marketing, distributing, using or selling an infringing product. We may need to resort to litigation to enforce our intellectual property rights or to seek a declaratory judgment concerning the scope, validity or enforceability of third-party proprietary rights. Similarly, we may be subject to claims that we have inappropriately used or disclosed trade secrets or other proprietary information of third parties. If we become involved in litigation, it could consume a substantial portion of our managerial and financial resources, regardless of whether we win or lose. Some of our competitors may be able to sustain the costs of complex intellectual property litigation more effectively than we can because they have substantially greater resources. We may not be able to afford the costs of litigation. Any legal action against us or our collaborators could lead to:

- payment of actual damages, royalties, lost profits, potential enhanced damages and attorneys' fees, if any infringement for which we are found liable is deemed willful, or a case against us is determined by a judge to be exceptional;
- injunctive or other equitable relief that may effectively block our ability to further develop, commercialize and sell our products;
- having to enter into license arrangements that may not be available on reasonable or commercially acceptable terms; or
- significant cost and expense, as well as distraction of our management from our business.

As a result, we could lose our ability to develop and commercialize current or future product candidates.

***We may be subject to claims that our employees have wrongfully used or disclosed alleged trade secrets of their former employers.***

As is common in the biotechnology and pharmaceutical industry, we employ individuals who were previously employed at other biotechnology or pharmaceutical companies, including our competitors or potential



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competitors. Although no claims against us are currently pending, we may be subject to claims that these employees or we have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers. Litigation may be necessary to defend against these claims. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to management.

### **Risks Related to the Securities Markets and Investment in Our Common Stock**

*Our stock price may be volatile, and you may not be able to resell our shares at a profit or at all.*

Despite the listing of our common stock on the Nasdaq Global Market and the Jasdac Market of the Osaka Securities Exchange in Japan, trading volume in our securities has been light and an active trading market may not develop for our common stock. In December 2011, our average trading volume was approximately 7,000 shares per day on the Nasdaq Global Market and approximately 10,000 shares per day on the Jasdac Market.

The market prices for securities of biopharmaceutical and biotechnology companies, and early-stage drug discovery and development companies like us in particular, have historically been highly volatile and may continue to be highly volatile in the future. For example, since the date of our initial public offering in Japan on February 8, 2005 through December 31, 2011, our common stock has traded as high as approximately \$42.00 and as low as approximately \$1.40. The following factors, in addition to other risk factors described in this section, may have a significant impact on the market price of our common stock:

- the development status of our product candidates, including clinical trial results and determinations by regulatory authorities with respect to our product candidates, and particularly our prioritized product candidates;
- the initiation, termination, or reduction in the scope of any collaboration arrangements or any disputes or developments regarding such collaborations;
- FDA or foreign regulatory actions, including failure to receive regulatory approval for any of our product candidates;
- announcements of technological innovations, new commercial products or other material events by us or our competitors;
- disputes or other developments concerning our intellectual property rights;
- market conditions in the pharmaceutical and biotechnology sectors;
- actual and anticipated fluctuations in our quarterly or annual operating results;
- price and volume fluctuations in the overall stock markets;
- any potential delisting of our securities;
- changes in, or failure to meet, securities analysts' or investors' expectations of our financial performance;
- additions or departures of key personnel;
- discussions of our business, management, products, financial performance, prospects or stock price by the financial and scientific press and online investor communities;
- litigation or public concern about the safety of our potential products;
- public concern as to, and legislative action with respect to, the pricing and availability of prescription drugs or the safety of drugs and drug delivery techniques; or
- regulatory developments in the U.S. and in foreign countries.

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Broad market and industry factors, as well as economic and political factors, also may materially adversely affect the market price of our common stock.

### ***We may become involved in securities class action litigation that could divert management's attention and harm our business.***

The stock markets have from time to time experienced significant price and volume fluctuations that have affected the market prices for the common stock of biotechnology and biopharmaceutical companies. These broad market fluctuations may cause the market price of our common stock to decline. In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. This risk is especially relevant for us because biotechnology and biopharmaceutical companies have experienced significant stock price volatility in recent years. We may become involved in this type of litigation in the future. Litigation often is expensive and diverts management's attention and resources, which could adversely affect our business.

### ***Future sales of our common stock may cause our stock price to decline and may make it difficult to sell your shares.***

Sales of substantial amounts of our common stock, or the availability of such common stock for sale, could adversely affect the prevailing market prices for our common stock. If this occurs and continues, it could impair our ability to raise additional capital through the sale of securities should we desire to do so. In addition, it may be difficult, or even impossible, to find a buyer for shares of our common stock.

We have also registered all common stock that we may issue under our current employee benefits plans and upon exercise of warrants. As a result, these shares can be freely sold in the public market upon issuance, subject to the terms of the underlying agreements governing the grants and the restrictions of the securities laws. In addition, our directors and officers may in the future establish programmed selling plans under Rule 10b5-1 of the Exchange Act, for the purpose of effecting sales of our common stock. If any of these events cause a large number of our shares to be sold in the public market, the sales could reduce the trading price of our common stock and impede our ability to raise future capital.

### ***Anti-takeover provisions in our charter documents and under Delaware law may make an acquisition of us more complicated and the removal and replacement of our directors and management more difficult.***

Our restated certificate of incorporation and amended and restated bylaws contain provisions that may delay or prevent a change in control, discourage bids at a premium over the market price of our common stock or adversely affect the market price of our common stock and the voting and other rights of the holders of our common stock. These provisions may also make it difficult for stockholders to remove and replace our board of directors and management. These provisions:

- establish that members of the board of directors may be removed only for cause upon the affirmative vote of stockholders owning at least a majority of our capital stock;
- authorize the issuance of "blank check" preferred stock that could be issued by our board of directors in a discriminatory fashion designed to increase the number of outstanding shares and prevent or delay a takeover attempt;
- limit who may call a special meeting of stockholders;
- establish advance notice requirements for nominations for election to the board of directors or for proposing matters that can be acted upon at stockholder meetings;

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- prohibit our stockholders from making certain changes to our Restated Certificate of Incorporation or Amended and Restated Bylaws except with 66<sup>2/3</sup> percent stockholder approval; and
- provide for a classified board of directors with staggered terms.

We also may be subject to provisions of the Delaware corporation law that, in general, prohibit any business combination with a beneficial owner of 15 percent or more of our common stock for three years unless the holder's acquisition of our stock was approved in advance by our board of directors. Although we believe these provisions collectively provide for an opportunity to receive higher bids by requiring potential acquirers to negotiate with our board of directors, they would apply even if the offer may be considered beneficial by some stockholders. In any event, these provisions may delay or prevent a third party from acquiring us. Any such delay or prevention could cause the market price of our common stock to decline.

***We have never paid dividends on our capital stock, and we do not anticipate paying any cash dividends in the foreseeable future.***

We have paid no cash dividends on any of our classes of capital stock to date, and we currently intend to retain our future earnings, if any, to fund the development and growth of our business. We do not anticipate paying any cash dividends on our common stock in the foreseeable future. As a result, capital appreciation, if any, of our common stock will be your sole source of gain for the foreseeable future.

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

Not applicable.

### **Item 2. Properties**

We lease approximately 5,089 square feet of office space at our headquarters in San Diego, California under a lease that expires in May 2012. On March 19, 2012, we entered into a sixth amendment of our lease agreement of our headquarters which extends the lease term through February, 2013. We have no laboratory, research or manufacturing facilities, and we currently do not plan to purchase or lease any such facilities, as such services are provided to us by third-party service providers. We believe that our current facilities are adequate for our needs for the immediate future and that, should it be needed, suitable additional space will be available to accommodate expansion of our operations on commercially reasonable terms. In addition to our headquarters, we also lease approximately 1,726 square feet of office space in Tokyo, Japan under a lease that expires in May 2013.

### **Item 3. Legal Proceedings**

On March 3, 2011, we received a letter, in which certain allegations were made, from a former employee who had been terminated in January 2011 pursuant to our planned reduction-in-force. On July 8, 2011, the former employee filed a lawsuit in the Superior Court of the State of California, County of San Diego, asserting certain claims related to the Company's work environment and the employee's termination, and on December 12, 2011 the court granted our motion to compel arbitration. We have engaged legal counsel in this matter. Based on our current assessment, we do not expect its outcome to have a material adverse effect on our business, financial condition and results of operations.

We may become involved from time to time in various disputes and legal proceedings which arise in the ordinary course of business. Litigation and governmental investigations can be expensive and disruptive to normal business operations. While it is difficult to accurately predict the outcome of these matters, significant judgments or settlements in connection with legal proceedings could have a material adverse effect on our business, financial condition and results of operations.

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

Not applicable.

**PART II****Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities****Market Information**

Our common stock is traded on the J Nasdaq Market under the symbol "4875" and on the Nasdaq Global Market under the symbol "MNOV." Our stock had been traded on the Hercules Market since February 8, 2005 (through the Hercules Market's closure in 2010) and now is currently traded on the J Nasdaq Market and on the Nasdaq Global Market since December 7, 2006.

The following table sets forth the high and low sale prices per share of our common stock as reported on the Nasdaq Global Market.

	Common Stock Price	
	High	Low
<b>Fiscal year ended December 31, 2010</b>		
First quarter	\$9.00	\$6.09
Second quarter	\$7.51	\$4.75
Third quarter	\$6.40	\$4.44
Fourth quarter	\$5.95	\$4.51
<b>Fiscal year ended December 31, 2011</b>		
First quarter	\$5.90	\$2.56
Second quarter	\$2.72	\$1.94
Third quarter	\$3.08	\$1.88
Fourth quarter	\$2.44	\$1.60

 **Holders of Common Stock**

As of the date of this filing there were approximately 7,000 holders of record of our common stock.

**Dividend Policy**

We have never declared or paid any cash dividends on our capital stock, and we do not anticipate paying any cash dividends in the foreseeable future. We expect to retain our future earnings, if any, to fund the growth and development of our business.

**Use of Proceeds**

On March 23, 2011, we consummated a firm-commitment underwritten public offering of 2,750,000 units at a price to the public of \$3.00 per unit for gross proceeds of \$8.25 million. Each unit consists of one share of common stock, and a warrant to purchase one share of common stock. The shares of common stock and warrants are immediately separable and were issued separately. On March 24, 2011, the underwriter exercised 50,666 units of its 412,500 unit overallotment. The warrants are exercisable immediately upon issuance, have a five-year term and an exercise price of \$3.56 per share. The warrants are indexed to our stock and do not permit net-cash settlement. On March 29, 2011, we received net proceeds of approximately \$7.7 million, after underwriter discount and underwriter expenses and no warrants exercised. We are using and intend to continue to use the net proceeds to fund development work for MN-221 and for other research and development on MN-166. We may also use a portion of the net proceeds to acquire or invest in complementary businesses, technologies, product candidates or other intellectual property, although we have no present commitments or agreements to do so.

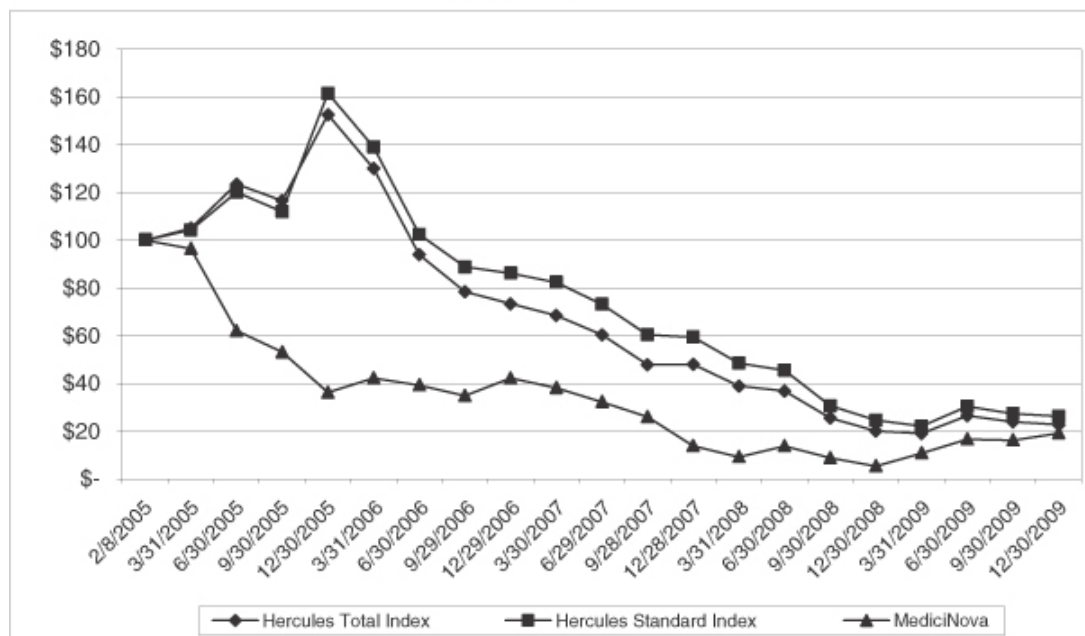
**Securities Authorized for Issuance Under Equity Compensation Plans**

Information regarding the securities authorized for issuance under our equity compensation plans can be found under Item 12 of this Annual Report on Form 10-K.

**Performance Graph**

The following graph illustrates a comparison of the total cumulative stockholder return on our common stock since February 8, 2005, which is the date our common stock first began trading on the Hercules Market of the Osaka Securities Exchange, to two indices: the Hercules Total Index and the Hercules Standard Index., through December 31, 2009. The graph assumes an initial investment of \$100 on February 8, 2005, and that all dividends were reinvested.

**Comparison of Cumulative Total Return on Investment  
Since February 8, 2005**

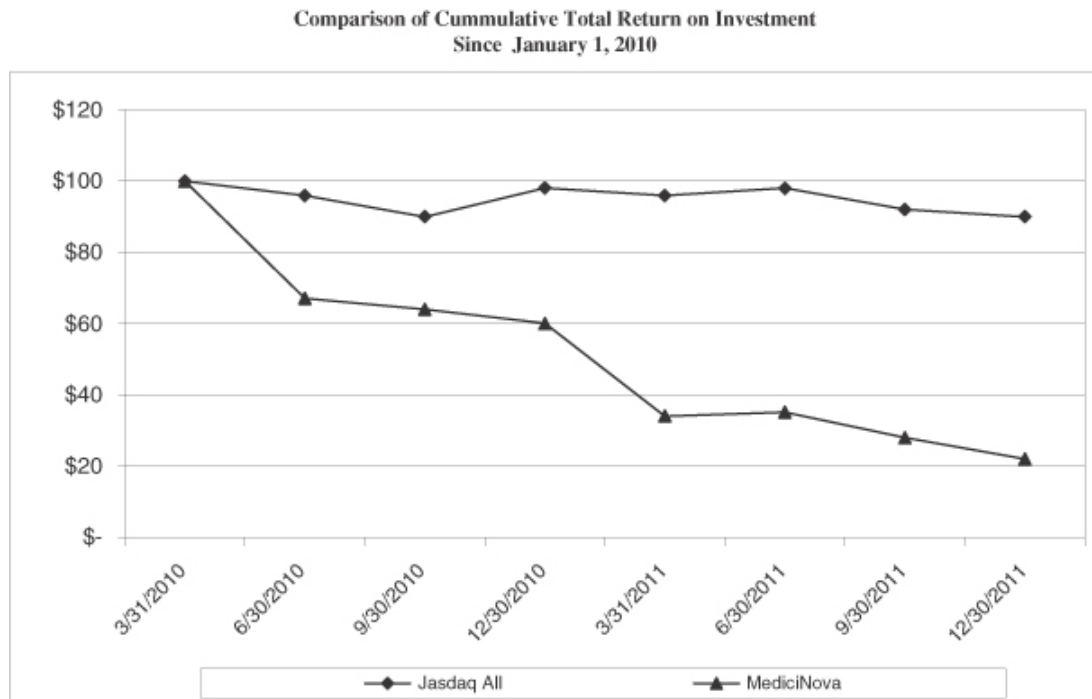


	<u>2/8/2005</u>	<u>12/30/2005</u>	<u>12/29/2006</u>	<u>12/28/2007</u>	<u>12/30/2008</u>	<u>12/30/2009</u>
MediciNova, Inc.	\$ 100	\$ 36	\$ 42	\$ 14	\$ 5	\$ 19
Hercules Total Index	\$ 100	\$ 153	\$ 73	\$ 48	\$ 20	\$ 23
Hercules Standard Index	\$ 100	\$ 162	\$ 86	\$ 59	\$ 25	\$ 26

\* No cash dividends have been declared or paid on our common stock. Stockholder returns over the indicated period should not be considered indicative of future stockholder returns.

**Performance Graph**

Due to the closure of the Hercules Market of the Osaka Securities Exchange and the inability to retrieve our stock’s performance from the Hercules Market in 2010, the following graph illustrates a comparison of the total cumulative stockholder return on our common stock since March 31, 2010, to the Jaspdaq Market (total index). The graph assumes an initial investment of \$100 on March 31, 2010, and that all dividends were reinvested.



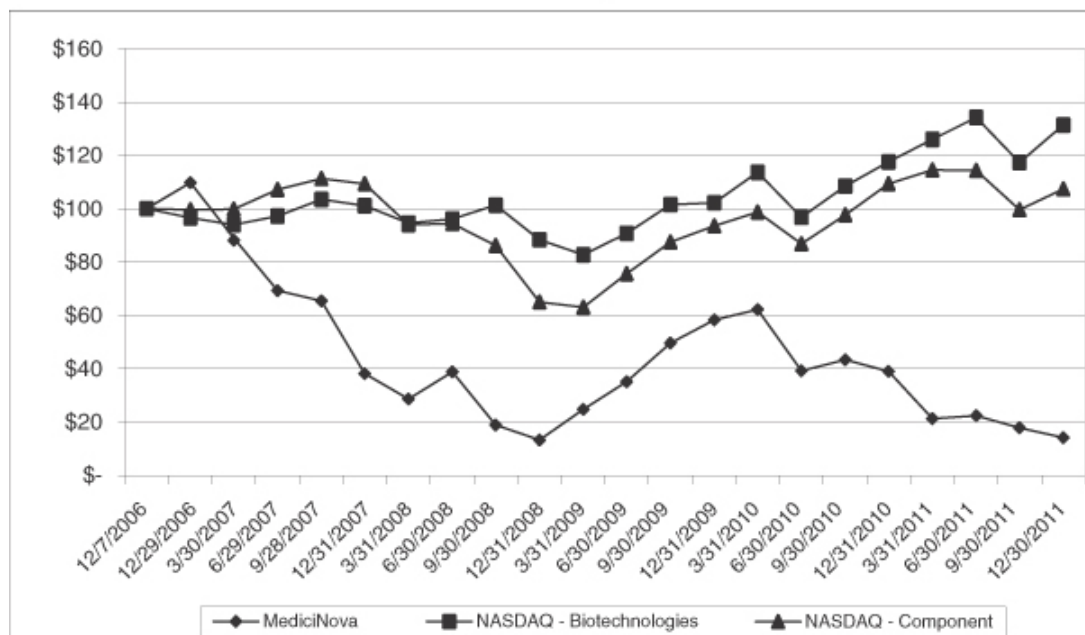
	<u>3/31/2010</u>	<u>6/30/2010</u>	<u>9/30/2010</u>	<u>12/30/2010</u>	<u>3/31/2011</u>	<u>6/30/2011</u>	<u>9/30/2011</u>	<u>12/30/2011</u>
MediciNova, Inc.	\$ 100	\$ 67	\$ 64	\$ 60	\$ 34	\$ 35	\$ 28	\$ 22
Jaspdaq Total Index	\$ 100	\$ 96	\$ 90	\$ 98	\$ 96	\$ 98	\$ 92	\$ 90

\* No cash dividends have been declared or paid on our common stock. Stockholder returns over the indicated period should not be considered indicative of future stockholder returns.

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The following graph illustrates a comparison of the total cumulative stockholder return on our common stock since December 7, 2006 which is the date our common stock first began trading on the Nasdaq Global Market, to two indices: the NASDAQ Composite Index and the NASDAQ Biotechnology Index. The graph assumes an initial investment of \$100 on December 7, 2006, and that all dividends were reinvested.

**Comparison of Cumulative Total Return on Investment  
Since December 7, 2006**



\* No cash dividends have been declared or paid on our common stock. Stockholder returns over the indicated period should not be considered indicative of future stockholder returns.

	12/7/2006	12/31/2007	12/31/2008	12/31/2009	12/31/2010	12/30/2011
MediciNova, Inc.	\$ 100	\$ 38	\$ 13	\$ 58	\$ 39	\$ 14
NASDAQ Biotechnologies Index	\$ 100	\$ 101	\$ 88	\$ 102	\$ 117	\$ 131
NASDAQ Composite Index	\$ 100	\$ 109	\$ 65	\$ 93	\$ 109	\$ 107

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**Item 6. Selected Financial Data.**

The selected financial data set forth below is derived from our audited consolidated financial statements and may not be indicative of future operating results. The following selected financial data should be read in conjunction with the Consolidated Financial Statements and notes thereto and Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” included elsewhere in this Annual Report on Form 10-K. Amounts are in thousands, except per share amounts.

	Years ended December 31,					September 26, 2000 (inception) to December 31,
	2011	2010	2009	2008	2007	2011
<b>Statements of Operations Data:</b>						
Revenues	\$ —	\$ —	\$ —	\$ —	\$ —	\$ 1,558
Operating expenses:						
Cost of revenues	—	—	—	—	—	1,258
Research and development	7,784	9,711	10,873	13,828	42,121	162,042
General and administrative	8,324	8,172	10,366	8,773	11,373	105,523
Total operating expenses	16,108	17,883	21,239	22,601	53,494	268,823
Operating loss	(16,108)	(17,883)	(21,239)	(22,601)	(53,494)	(267,265)
(Impairment charge)/gain, net on investment securities and ARS put	—	(785)	310	(1,260)	—	(1,735)
Other expense	(81)	(177)	(14)	(88)	—	(360)
Interest expense	(1,595)	(1,768)	(242)	—	—	(3,606)
Other income, net	62	439	823	2,038	4,611	19,121
Loss before income taxes	(17,722)	(20,174)	(20,362)	(21,911)	(48,883)	(253,845)
Income Taxes	(12)	(13)	(7)	(14)	(20)	(65)
Net loss	(17,734)	(20,187)	(20,369)	(21,925)	(48,903)	(253,910)
Accretion to redemption value of redeemable convertible preferred stock	—	—	—	—	—	(99)
Deemed dividend resulting from beneficial conversion on Series C redeemable convertible preferred stock	—	—	—	—	—	(31,264)
Net loss applicable to common stockholders	\$ (17,734)	\$ (20,187)	\$ (20,369)	\$ (21,925)	\$ (48,903)	\$ (285,273)
Basic and diluted net loss per share	\$ (1.20)	\$ (1.63)	\$ (1.68)	\$ (1.82)	\$ (4.16)	
Shares used to compute basic and diluted net loss per share	14,813,156	12,410,576	12,105,835	12,072,027	11,752,139	



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	As of December 31,				
	2011	2010	2009	2008	2007
<b>Balance Sheet Data:</b>					
Cash, cash equivalents and current investment securities	\$ 15,093	\$ 28,252	\$ 43,497	\$ 19,297	\$ 70,635
ARS put—current	—	—	2,557	—	—
Restricted cash, investment and letter of credit- current	—	29,313	—	—	—
Working capital	12,010	21,554	24,500	17,836	65,938
Restricted cash, investment and letter of credit- long-term	—	—	31,223	—	—
Investment-long-term	—	—	2,085	24,047	—
ARS put—long-term	—	—	—	5,793	—
Total assets	30,787	72,934	94,327	50,224	73,752
Current portion of long-term debt	—	4,952	—	—	—
Long-term debt, less current portion	—	9,484	—	—	—
ARS loan payable	—	—	17,605	—	—
Convertible notes	—	28,626	29,258	—	—
Deficit accumulated during the development stage	(285,272)	(267,538)	(247,351)	(226,982)	(205,057)
Total stockholders' equity	23,498	24,704	40,013	48,045	66,608

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

*You should read the following discussion and analysis together with "Item 6. Selected Financial Data" and the consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K. The following discussion contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those expressed or implied in any forward-looking statements as a result of various factors, including those set forth under the caption "Item 1A. Risk Factors."*

**Overview**

**Background**

We are a development stage biopharmaceutical company focused on acquiring and developing novel, small molecule therapeutics for the treatment of serious diseases with unmet medical needs with a specific focus on the U.S. market. Through strategic alliances primarily with Japanese pharmaceutical companies, we hold rights to a diversified portfolio of clinical and preclinical product candidates which we believe provide significant commercial opportunity for the Company. We were incorporated in Delaware in September 2000.

We have incurred significant net losses since our inception. At December 31, 2011, from inception, our accumulated deficit was approximately \$285.3 million, including approximately \$49.7 million of non-cash stock-based compensation charges related to employee stock-based compensation and founders' warrants. We expect to incur substantial net losses for the next several years as we continue to develop certain of our existing product development programs, primarily MN-221 for the treatment of acute exacerbations of asthma and COPD exacerbations, and over the long-term if we are successful in expanding our research and development programs and acquiring or in-licensing products, technologies or businesses that are complementary to our own. While there can be no assurances, we believe our working capital at December 31, 2011 to be sufficient to fund our operating requirements for at least through December 31, 2012.

We have acquired licenses to eight compounds for the development of ten product candidates, which include clinical development for the treatment of acute exacerbations of asthma, MS, bronchial asthma, IC, solid tumor cancers, generalized anxiety disorders/insomnia, preterm labor and urinary incontinence. Two of such compounds have been in preclinical development for the treatment of thrombotic disorders. In addition, we have expanded our development program for MN-221 for the treatment of COPD exacerbations.

We entered into an agreement to form a joint venture company with Zhejiang Medicine Co., Ltd. and Beijing Make-Friend Medicine Technology Co., Ltd. effective September 27, 2011. The joint venture agreement provides for the joint venture company to develop and commercialize MN-221 in China. A sublicense under which the joint venture company will license MN-221 from us will be required, which sublicense will require the consent of Kissei. In accordance with the joint venture agreement, on March 16, 2012, we paid \$650,000 for our 30% interest in the joint venture company. The other parties to the joint venture agreement are responsible for providing their initial funding in the joint venture company for their combined 70% interest, and for future funding for the joint venture company's activities which will include managing and operating a facility to manufacture drug candidates for the Chinese market, promoting, distributing and selling drug candidates in the Chinese market and conducting clinical trials necessary to gain regulatory approval in China. The joint venture company will initially conduct these activities with respect to MN-221, however other drug candidates may be brought within the scope of the joint venture company if the parties to the agreement unanimously agree. We have not entered into the sublicense of MN-221 with the joint venture company as of the date of this report. There is no assurance the sublicense will be executed and there is no assurance that the joint venture company will be able to proceed with the development of MN-221 in China. At December 31, 2011, we reflect a long-term asset on our consolidated balance sheet which represents our investment and a corresponding current liability which represents our required capital contribution payable to the joint venture company. We evaluated the joint

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venture company under the authoritative guidance and concluded that it is a variable interest entity for which we are not the primary beneficiary as we will not have a majority of the board seats and we will not have any power to direct or significantly influence the actions of the entity. We will therefore not consolidate the joint venture company into our financial results but will account for the activities of the joint venture company under the equity method whereby we will absorb any loss or income generated by the entity according to our percentage ownership.

At present, we are focusing our resources on the following prioritized product development programs:

- MN-221 for the treatment of acute exacerbations of asthma and COPD exacerbations, for which we initiated a Phase 2 clinical trial (MN-221-CL-007) in the first quarter of 2009 to evaluate the safety and efficacy of MN-221 in patients with acute exacerbations of asthma treated in the emergency room. This trial completed enrollment in March 2012. Depending on the results of our Phase 2 clinical trial (MN-221-CL-007) and our ability to raise additional capital and/or to enter into a collaboration with a leading pharmaceutical or biotech company, we intend to define a Phase 3 trial and other development plans for MN-221 for the treatment of acute exacerbations of asthma and conduct one or more Phase 3 trials. COPD development, which included a Phase 1b clinical trial in patients with stable, moderate to severe COPD, was completed in 2010. In the first quarter of 2012 we initiated an additional Phase 1b/2a COPD clinical trial that has commenced enrollment and has an anticipated trial completion around the end of the second quarter of 2012.
- MN-166, an ibudilast-based product development, for which we continue to pursue discussions with potential partners or other strategic collaboration(s). MN-166 has completed a Phase 2 clinical trial in MS in Eastern Europe in 2008 wherein positive safety and neuroprotective efficacy indicators were obtained, thus, directing next stage development towards a Phase 2b progressive MS indication. Limited animal safety and product manufacturing and stability work has been completed or is ongoing. In the drug addiction area, a Phase 1b/2a opioid withdrawal clinical trial funded by the National Institute on Drug Abuse, or NIDA, was completed at the end of 2010. A Phase 1b NIDA-funded clinical trial in methamphetamine-dependent volunteers with expert investigators at UCLA initiated in the fourth quarter of 2010 and is currently enrolling patients. In addition, a headache and pain specialist in Australia initiated an investigator sponsored Phase 2 clinical trial of ibudilast as a potential new pharmacotherapy for medication overuse headache that is expected to complete enrollment at the end of 2012. We intend to enter into additional strategic alliances with leading pharmaceutical or biotech companies to support further clinical development of MN-166.

Upon completion of proof-of-concept Phase 2 clinical trials, we intend to enter into strategic alliances with leading pharmaceutical or biotech companies to support further clinical development, and to keep certain commercialization rights in select markets. Depending on the outcome of the Phase 2 trial of MN-221 for the treatment of acute exacerbations of asthma, we may seek to raise additional capital and/or enter into a collaboration and conduct a Phase 3 development program. We may also pursue potential partners and potential acquirers of license rights to our programs in markets outside the U.S. In addition, we continue to limit activities for the balance of our existing product development programs in order to focus on our prioritized product development programs. For each of these remaining product development programs, we plan to conduct development activities only to the extent deemed necessary to maintain our license rights or maximize its value while pursuing a variety of initiatives to monetize such programs.

Our eight non-prioritized product development programs consist of the following:

- MN-001 for the treatment of bronchial asthma, for which we initiated a Phase 3 clinical program in the fourth quarter of 2006 that we subsequently terminated in the second quarter of 2007, and for which we developed prototypes of once-per-day oral dosing formulations;

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- MN-001 for the treatment of interstitial cystitis, for which we completed a Phase 2 clinical trial in the first quarter of 2007;
- MN-029 for the treatment of solid tumors, for which we completed one Phase 1 clinical trial in the second quarter of 2006 and one Phase 1 clinical trial in the fourth quarter of 2007;
- MN-305 for the treatment of generalized anxiety disorder/insomnia, for which we completed a Phase 2 clinical trial for the treatment of generalized anxiety disorder in the second quarter of 2006 and a Phase 2 clinical trial for the treatment of insomnia in the fourth quarter of 2007;
- MN-221 for the treatment of preterm labor, for which we completed a Phase 1 clinical trial to investigate the pharmacokinetic profile of MN-221 in healthy pregnant women not in labor in the second quarter of 2007;
- MN-246 for the treatment of urinary incontinence, for which we completed a Phase 1 clinical trial in the fourth quarter of 2006 and a Phase 1 food effects study in the first quarter of 2007;
- MN-447 for the treatment of thrombotic disorders, which remains in preclinical development; and
- MN-462 for the treatment of thrombotic disorders, which remains in preclinical development.

### ***Avigen Transaction***

On December 18, 2009, we acquired Avigen a biopharmaceutical company that focused on identifying and developing differentiated products to treat patients with serious disorders, whose potential product candidate is a microphage migration inhibitor and a glial attenuator for central nervous system, or CNS, disorders such as neuropathic pain, and opioid addiction and withdrawal and methamphetamine addiction. We continue to pursue discussions with potential partners to secure a strategic collaboration to advance clinical development of the combined development programs.

Absolute Merger, Inc., a wholly-owned subsidiary of ours, merged with and into Avigen. Under the terms of the merger, we issued approximately \$29.4 million in secured convertible notes that matured on June 18, 2011, the 18-month anniversary of the closing of the merger. Holders of these convertible notes could convert their notes into our common stock at an initial conversion price of \$6.80 per share through May 31, 2011. At the maturity of the convertible notes, the remaining holders would be paid the same per share amount as the Avigen shareholders that elected to receive cash at the merger closing plus accrued interest, approximately \$1.19 per share. As part of the merger consideration, the former Avigen shareholders were also entitled to receive approximately \$0.04 per share, which was paid in two increments in 2010, and rights under contingent payment rights, or CPR, issued as part of the merger consideration. In March 2011 we paid \$0.02 per share to former Avigen shareholders related to the management transition plan CPR. All additional CPR expired on August 18, 2011 and no payments were made related to these CPR.

Our consolidated financial statements include Avigen's operations following the completion of the Avigen merger. We accounted for the Avigen merger using the acquisition method of accounting. As a result, we recorded \$4.8 million of IPR&D related to Avigen's product candidate asset and \$9.6 million of goodwill related to the excess purchase price over the assigned values of the net assets acquired. The goodwill was primarily a result of the conversion feature related to the convertible notes issued pursuant to the merger agreement. Our annual test date for IPR&D and goodwill impairment is December 31. During the year ended December 31, 2011 and through the date of this report, there were no triggering events, market conditions or other factors (such as adverse clinical trial results) that would indicate possible or actual impairment of IPR&D or goodwill. Since we operate under one reporting segment, goodwill impairment is assessed on our overall market capitalization. We did not record goodwill impairment during the year ended December 31, 2011 since at year-end the Company's total market capitalization was in excess of the carrying value of its net assets. Based on our assessment of IPR&D using an income approach, we also did not record impairment of IPR&D during the year ended December 31, 2011.

### ***Convertible Notes***

At the closing of the Avigen merger, we and American Stock Transfer & Trust Company, LLC, as trustee, entered into an indenture. Under the terms of a separate trust agreement, or Trust Agreement, approximately \$29.4 million, which represented the First Payment Consideration less approximately \$6.0 million paid out to Avigen shareholders who elected cash payment and the initial principal amount of the convertible notes, or Convertible Notes, was deposited with a trust agent for the benefit of the holders and us.

Prior to the maturity of the convertible notes on June 18, 2011, holders of the Convertible Notes could submit irrevocable conversion notices instructing the trustee to convert such Convertible Notes into shares of our common stock at an initial conversion price of \$6.80 per share. Following each conversion date we would issue the number of whole shares of common stock issuable upon conversion and the trustee would in turn release to us the respective amount of restricted cash to cover the stock issuance. For the year ended December 31, 2011, approximately \$76,000, of Convertible Notes were converted into 11,246 shares of our common stock. All remaining Convertible Notes matured on June 18, 2011 and the principal was repaid in full.

### ***Debt***

On May 10, 2010, we entered into a loan and security agreement, or the Loan Agreement, with Oxford Finance Corporation, or Oxford, under which we borrowed \$15.0 million at a stated annual interest rate of 12.87%. The financing was used to satisfy working capital needs, including the continued clinical development of MN-221. Pursuant to the Loan Agreement, we issued to Oxford a warrant to purchase up to 198,020 shares of our common stock, par value \$0.001 per share, at an exercise price of \$6.06 per share. Based on a Black-Scholes valuation model, the relative fair value of the warrant was approximately \$859,000. We accounted for the warrant as a component of stockholders' equity as the agreement required settlement in shares and under no provision of the agreement were we required to settle the warrant in cash.

We accounted for the interest on the debt under the effective interest method wherein we treated the debt issuance costs paid directly to the lender and the relative fair value of the warrants issued to the lender as a discount on the debt (or a contra liability) and we treated the debt issuance costs paid to third parties as an asset. The amortization of the debt discount was recorded as interest expense and the amortization of the debt issuance costs paid to third parties was recorded as other expense in our consolidated statement of operations.

On April 1, 2011, we entered into an agreement with Oxford under which we made an early repayment of the loan in-full and wherein Oxford waived the prepayment penalty of approximately \$437,000.

### ***Reduction-in-Force***

In January 2011, we had a reduction-in-force, or RIF, to reduce costs. We believe that we remain adequately staffed given our research and development focus and utilization of external resources.

### ***Underwritten Firm Commitment Public Offering***

On March 23, 2011, we consummated a firm-commitment underwritten public offering of 2,750,000 units at a price to the public of \$3.00 per unit for gross proceeds of approximately \$8.25 million. Each unit consists of one share of common stock, and a warrant to purchase one share of common stock. The shares of common stock and warrants are immediately separable and were issued separately. On March 24, 2011, the underwriter exercised 50,666 units of its 412,500 unit overallocation. The warrants are exercisable immediately upon issuance, have a five-year term and an exercise price of \$3.56 per share. The warrants are indexed to our stock and do not permit net-cash settlement. On March 29, 2011, we received net proceeds of approximately \$7.7 million, after underwriter discount and underwriter expenses and no warrants exercised. In accordance with the authoritative guidance, the warrants were classified as equity instruments as they contain no provision which may require cash settlement.

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### ***At-The-Market Issuance Sales Agreement***

On May 5, 2011, we entered into an at-the-market (or ATM) issuance sales agreement, or sales agreement, with McNicoll, Lewis & Vlak LLC, or MLV, pursuant to which we could issue and sell shares of our common stock having an aggregate offering price of up to \$15.0 million from time to time through MLV as our sales agent. The issuance and sale of these shares by us under the sales agreement, if any, would be subject to the effectiveness of our shelf registration statement on Form S-3 (File No. 333-163116), initially filed with the Securities and Exchange Commission on November 13, 2009.

Effective October 23, 2011, we terminated the ATM between us and MLV. No shares of common stock were issued under the ATM.

### ***Lease Amendments***

On July 6, 2011, we entered into a fifth amendment, or the Fifth Lease Amendment, of our lease agreement with 4350 La Jolla Village LLC, the Landlord. The Fifth Lease Amendment amends the Lease of our headquarters located at 4350 La Jolla Village Drive, Suite 950, San Diego, California, 92122, and extends the Lease term with respect to 5,089 square feet, from August 31, 2011 to May 31, 2012. The Fifth Lease Amendment provides that we will pay the Landlord a monthly base rent of \$12,468 for the premises during the nine-month extension period. On March 19, 2012, we entered into a sixth amendment, the Sixth Lease Amendment, of our lease agreement with 4350 the Landlord. The Sixth Lease Amendment extends the lease term through February 28, 2013 and provides that we will pay the Landlord a monthly base rent of \$12,672 for the premises during the final nine month period

### ***Kissei Stock Purchase***

On October 13, 2011, pursuant to a stock purchase agreement by and between us and Kissei Pharmaceutical Co., Ltd., or Kissei, Kissei purchased for \$7.5 million (i) an aggregate of 800,000 shares of our common stock, par value \$0.001 per share at a price of \$2.50 per share, which approximated the fair value of our common stock at the time of the transaction, and (ii) 220,000 shares of our Series B Convertible Preferred Stock, par value \$0.01 per share, at a price of \$25.00 per share, which approximated the fair value of our preferred stock on an as converted basis at the time of the transaction. Each share of the Series B Preferred Stock is convertible into 10 shares of Common Stock. The Purchase Agreement contained customary representations, warranties and covenants and a standstill agreement from Kissei that terminates if Kissei beneficially owned less than three percent of our outstanding voting stock.

### ***Kissei Services Agreement***

On October 13, 2011, we entered into an agreement with Kissei to perform research and development services relating to MN-221 in exchange for a non-refundable upfront payment of \$2.5 million. Under the terms of the agreement, we will be responsible for all costs to be incurred in the performance of these services which are expected to be completed in 2012 and 2013. We assessed the deliverables in accordance with the authoritative guidance and concluded the existence of one deliverable, research and development services. As such, we will recognize as revenue the \$2.5 million payment as the research and development services are performed. The amount received from Kissei is recorded on the balance sheet at December 31, 2011 as deferred revenue. As of December 31, 2011, we have not recorded any revenue in 2011 relating to this agreement.

### ***Revenues and Cost of Revenues***

We recognized no revenues for each of the years in the three-year period ended December 31, 2011. We have not generated any revenues from licensing, milestones or product sales to date. Our revenues to date have been generated from providing development management services under master service agreements with Asahi

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Kasei Pharma Corporation and Argenes, Inc., pursuant to which we billed consulting fees and our pass-through clinical contract costs. The primary costs associated with our revenue were the clinical contract costs we incurred and passed-through to our customers. Our agreement with Asahi Kasei Pharma Corporation has been completed, and we terminated our agreement with Argenes, Inc., and we will not generate any further revenue from these agreements.

### **Research and Development**

Our research and development expenses consist primarily of the license fees related to our product candidates, salaries and related employee benefits, costs associated with the preclinical and clinical development of our product development programs, costs associated with non-clinical activities, such as regulatory expenses, and pre-commercialization manufacturing development activities. We use external service providers to manufacture our compounds to be used in clinical trials and for the majority of the services performed in connection with the preclinical and clinical development of our product candidates; therefore, these research and development expenses consist substantially of external costs, such as fees paid to consultants, contract research organizations, contract manufacturers and other external service providers, including professional fees and costs associated with legal services, patents and patent applications for our intellectual property. Internal research and development expenses consist of costs of compensation and other expenses for research and development personnel, supplies, materials, facility costs and depreciation. Research and development costs are expensed as incurred or accrued based on certain contractual factors such as for estimates of work performed, milestones achieved, patient enrollment and experience with similar contracts. As actual costs become known, accruals are adjusted. To date, our estimates have not differed significantly from the actual costs incurred.

The following table summarizes our research and development expenses for the periods indicated for each of our product development programs. To the extent that costs, including personnel costs, are not tracked to a specific product development program, such costs are included in the "Unallocated" category (in thousands):

<b>Product Candidate</b>	<b>Disease/Indication</b>	<b>Year ended December 31,</b>		
		<b>2011</b>	<b>2010</b>	<b>2009</b>
MN-221	Acute exacerbations of asthma and COPD	\$5,677	\$7,304	\$ 8,419
MN-166	Multiple sclerosis/other CNS disorders	804	885	635
MN-001	Bronchial asthma and Interstitial cystitis	93	49	64
MN-001	Interstitial cystitis	33	49	27
MN-029	Solid tumors	97	106	86
MN-305	Generalized anxiety disorder/Insomnia	1	9	(1)
MN-221	Preterm labor	5	7	1
MN-246	Urinary incontinence	3	(16)	15
MN-447	Thrombotic disorders	41	18	—
MN-462	Thrombotic disorders	—	—	—
Unallocated		<u>1,031</u>	<u>1,300</u>	<u>1,627</u>
Total research and development		<u>\$7,785</u>	<u>\$9,711</u>	<u>\$ 10,873</u>

In 2007 we decided to focus our resources on the development of our two prioritized product development programs, MN-221 for the treatment of acute exacerbations of asthma and MN-166 for the treatment of MS. In the third quarter of 2009, we decided to expand the development program for MN-221 to evaluate MN-221 for the treatment of COPD exacerbations. In the second quarter of 2008 we completed the Phase 2 clinical trial of MN-166 ibudilast for the treatment of MS and in December 2009. We continue to pursue discussions with potential partners, including government funding agencies, to secure a strategic collaboration. As such, we do not plan to undertake any further significant clinical development of MN-166 until such time that we secure a strategic collaboration to advance the combined ibudilast-based development program. We do expect our

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research and development expenses to increase in connection with clinical trials primarily related to MN-221 for the treatment of acute exacerbations of asthma and COPD exacerbations, and any other development activities that it may initiate.

While on March 21, 2012 we announced completion of the 176 patient enrollment of the Phase 2 MN-221-CL-007 clinical trial with expected trial results in the second quarter of 2012, due to the risks inherent in clinical trials, we are unable to estimate the acceptability or unacceptability of these results.

We will continue to limit our expenditures on the remainder of our existing product candidates to only those activities deemed necessary to maintain our license rights or maximize the value of such product candidates, if any, while pursuing a variety of initiatives to monetize such product development. As a result, we expect that research and development expenses will remain low for the remainder of our existing product candidates in future periods.

### ***General and Administrative***

Our general and administrative costs primarily consist of salaries, benefits and consulting and professional fees related to our administrative, finance, human resources, business development, legal, information systems support functions, facilities and insurance costs. General and administrative costs are expensed as incurred.

Our general and administrative expenses may increase in future periods if we are required to expand our infrastructure based on the success of our current prioritized product development programs and in raising capital to support those and other product development programs or otherwise in connection with increased business development activities related to partnering, out-licensing or product disposition.

### ***Debt Related Charge***

On May 10, 2010, we entered into a loan and security agreement, or the Loan Agreement, with Oxford Finance Corporation, or Oxford, under which we borrowed \$15.0 million. The Oxford loan had an original maturity of August 1, 2013. To preserve cash by eliminating future interest payments, on April 1, 2011 we entered into an agreement with Oxford under which we made an early repayment of the loan in-full and wherein Oxford waived the prepayment penalty of approximately \$437,000. In recording the loan repayment, we wrote off the unamortized debt discount and debt issuance costs related to the loan, which resulted in a write-off of approximately \$0.5 million recorded in our statement of operations as interest expense.

### ***Investment Securities***

Our investment securities have consisted of auction rate securities, or ARS, which principally represented insurance notes and portfolios of securities (primarily commercial paper), and had AAA ratings at the time of purchase. We have not held investment securities since July, 2010. We designated our investment securities portfolio as trading investment securities, and any change in the fair value of our investment securities was recorded as either a gain or an impairment charge in our consolidated statement of operations.

In 2008, we received the right to sell to UBS, the brokerage firm through which we purchased the majority of our investment securities, the ARS held in accounts with UBS at par value at any time during the period beginning June 30, 2010 and ending July 2, 2012 (the ARS Put). Concurrently, UBS also provided to us a no net cost loan program (the ARS Loan) whereby we could borrow up to 75 percent of the market value of our ARS that had been pledged as collateral at an interest cost that would not exceed the interest being paid on the underlying ARS investments. We valued the ARS on a Level 3 basis, as defined by ASC 820, using a discounted cash flow valuation model with subsequent increase or decrease in their fair value recorded as either a gain or an impairment charge, respectively, in our consolidated statement of operations.



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We exercised our ARS Put on June 30, 2010, and in July 2010 the UBS ARS were redeemed at par value and the associated ARS Loan was repaid, resulting in a net gain of approximately \$138,000 recorded in our consolidated statement of operations as other income.

### ***Foreign Exchange Gain/Loss***

To date, we have conducted most of our clinical trials in the U.S. However, we have had clinical sites located in Europe, Australia and New Zealand in which certain related invoices were denominated in local currencies, and, we currently have certain vendors from whom we receive invoices denominated in Japanese Yen and in British Pound. We do not hedge our foreign exchange exposure. Foreign exchange gain/loss is based on the difference between the exchange rate at the transaction date and the exchange rate at the settlement date, or the balance sheet date if the transaction has not yet been settled.

### ***Other Expense***

Other expense primarily consists of accretion related to the Convertible Notes and the amortization of debt issuance costs paid to third parties.

### ***Interest Expense***

Interest expense consists of interest charged on our ARS Loan, interest charged on our long-term debt based on the effective interest method and amortization of debt discount.

### ***Other Income***

Other income primarily consists of interest earned on our cash, cash equivalents and investments.

### **Critical Accounting Policies and Estimates**

Our management's discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the U.S. The preparation of the consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses and the related disclosure of contingent liabilities. We review our estimates on an ongoing basis, including those related to our significant accruals. We base our estimates on historical experience and on various other assumptions that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities. Actual results may differ from these estimates.

Our significant accounting policies are more fully described in Note 1 to our consolidated financial statements included elsewhere in this Annual Report on Form 10-K. Our most critical accounting estimates include our recognition of research and development expenses, which impacts operating expenses and accrued liabilities, and stock-based compensation, which impacts operating expenses. We review our estimates and assumptions periodically and reflect the effects of revisions in the period in which they are deemed to be necessary. We believe that the following accounting policies are critical to the judgments and estimates used in preparation of our consolidated financial statements.

#### ***Research and Development Expenses***

Research and development expenses consist of costs incurred to further our research and development activities and include salaries and related employee benefits, costs associated with clinical trials, costs associated with non-clinical activities such as regulatory activities, research-related overhead expenses and fees paid to external service providers who conduct certain research and development activities on our behalf. We use

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external service providers and vendors to conduct clinical trials, to manufacture product candidates to be used in clinical trials and to provide various other products and services related to our product development programs. Research and development expenses also include fees for licensed technology for which technological feasibility has not been established and there are no alternative uses. Research and development costs are expensed as incurred or accrued based on certain contractual factors such as for estimates of work performed, milestones achieved, patient enrollment and experience with similar contracts. As actual costs become known, accruals are adjusted. To date, our estimates have not differed significantly from the actual costs incurred.

### ***Stock-Based Compensation***

We grant options to purchase our common stock to our employees and directors under our Amended and Restated 2004 Stock Incentive Plan. Additionally, we have outstanding stock options that were granted under our 2000 General Stock Incentive Plan. The benefits provided under both of these plans requires stock-based compensation for an award of equity instruments, including stock options and employee stock purchase rights, issued to employees to be recognized as a cost in the consolidated financial statements. The cost of these awards is measured according to the grant date fair value of the stock award and is recognized over the period during which an employee is required to provide service in exchange for the award, which is usually the vesting period. In the absence of an observable market price for the stock award, the grant date fair value of the award would be based upon a valuation methodology that takes into consideration various factors, including the exercise price of the award, the expected term of the award, the current price of the underlying shares, the expected volatility of the underlying share price, the expected dividends on the underlying shares and the risk-free interest rate.

Valuation of our stock option grants require us to estimate certain variables, such as estimated volatility and expected life. If any of our estimations change, such changes could have a significant impact on the stock-based compensation amount we recognize.

Stock option compensation expense is recognized on a straight-line basis over the vesting period of the underlying option, generally four years.

### ***Goodwill and Purchased Intangibles***

Goodwill is recorded when the consideration paid for an acquisition exceeds the fair value of the identified net tangible and intangible assets of acquired businesses. The allocation of purchase price for acquisitions require extensive use of accounting estimates and judgments to allocate the purchase price to the identifiable tangible and intangible assets acquired and liabilities assumed based on their respective fair values. Additionally, we must determine whether an acquired entity is considered to be a business or a set of net assets as a portion of the purchase price can only be allocated to goodwill in a business combination. Goodwill and intangible assets deemed to have indefinite lives are not amortized, but are subject to annual impairment tests. The amounts and useful lives assigned to intangible assets that have finite useful lives require the use of estimates and the exercise of judgment. These judgments can significantly affect our net operating results. As of December 31, 2011 and 2010, we had goodwill and IPR&D recorded of \$9.6 million and \$4.8 million, respectively.

Our annual test date for goodwill and purchased intangibles impairment is December 31 or more frequently if we believe indicators of impairment are present. We periodically re-evaluate the original assumptions and rationale utilized in the establishment of the carrying value and estimated lives of our long-lived assets. The criteria used for these evaluations include management's estimate of the asset's continuing ability to generate income from operations and positive cash flows in future periods as well as the strategic significance of any intangible assets in our business objectives. If assets are considered to be impaired, the impairment recognized is the amount by which the carrying value of the assets exceeds the fair value of the assets.

### ***Fair Value Measurements***

We are required to measure certain assets and liabilities at fair value, either upon initial measurement or for subsequent accounting or reporting. We use fair value extensively in the initial measurement of net assets

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acquired in a business combination and when accounting for and reporting on investment securities and certain financial instruments or assets. We estimate fair value using an exit price approach, which requires, among other things, that we determine the price that would be received to sell an asset or paid to transfer a liability in an orderly market of market participants, considering the highest and best use of assets and, for liabilities, assuming the risk of non-performance will be the same before and after the transfer. Many, but not all, of our financial instruments are carried at fair value. In addition, as required under accounting rules for business combinations, the assets acquired and liabilities assumed in the Avigen transaction on December 18, 2009 have been recorded at their estimated fair values as of the acquisition date. For information on fair value for our financial instruments, see Notes to Consolidated Financial Statements—Note 3. Fair Value Measurements—Other Than Intangibles and Goodwill.

### ***Recently Issued Accounting Standards***

In September 2011, the Financial Accounting Standards Board, or FASB, issued updated guidance to simplify how entities test for goodwill impairment. The updated guidance permits an assessment of qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit in which goodwill resides is less than its carrying value. For reporting units in which this assessment concludes it is more likely than not that the fair value is more than its carrying value, the updated guidance eliminates the requirement to perform further goodwill impairment testing. This new guidance is effective for fiscal years beginning after December 15, 2011 and becomes effective for us in the first quarter of fiscal year 2012. We do not expect the adoption to have a material impact on our financial position or results of operations.

In June 2011, the FASB issued a guidance related to the Presentation of Comprehensive Income. The guidance requires an entity to present items of net income and other comprehensive income, or OCI, and total comprehensive income either in a single continuous statement of comprehensive income or two separate but continuous statements. We will no longer be allowed to present OCI in the statement of stockholders' equity. Earnings per share would continue to be based on net income. Although existing guidance related to items that must be presented in OCI has not changed, companies will be required to display reclassification adjustments for each component of OCI in both net income and OCI. Also, companies will need to present the components of other comprehensive income in their interim and annual financial statements. This guidance is required to be implemented retrospectively during interim and annual periods beginning after December 15, 2011 and becomes effective for us in the first quarter of fiscal year 2012. The adoption of this update is not expected to have a material impact on our consolidated financial statements.

In May 2011, the FASB issued updated guidance related to Fair Value Measurements and Disclosures that clarified and amended the wording used to describe many of the requirements in GAAP for measuring fair value and for disclosing information about fair value measurements. The FASB also clarified the intent of existing fair value measurement requirements. The new and revised disclosures are required to be implemented prospectively during interim and annual periods beginning after December 15, 2011 and become effective for us in the first quarter of fiscal year 2012. Early adoption is not permitted. The adoption of this update is not expected to have a material impact on our consolidated financial statements.

### **Results of Operations**

#### ***Comparison of the Years ended December 31, 2011 and 2010***

##### *Revenues*

There were no revenues for the years ended December 31, 2011 or December 31, 2010.

##### *Research and Development*

Research and development expenses for the year ended December 31, 2011 were approximately \$7.8 million, a decrease of approximately \$1.9 million compared to approximately \$9.7 million for the year

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ended December 31, 2010. This decrease was due primarily to a decrease in spending of approximately \$1.6 million on our prioritized asset MN-221 for the treatment of acute exacerbations of asthma. We had an additional decrease of approximately \$0.3 million in unallocated R&D expenses primarily due to a reduction in research and development headcount.

### *General and Administrative*

General and administrative expenses were approximately \$8.3 million for the year ended December 31, 2011, an increase of approximately \$0.1 million compared to approximately \$8.2 million for the year ended December 31, 2010. This increase in general and administrative expenses was the result of higher severance, consulting and legal fees partially offset by a reduction in compensation and stock based compensation expenses related to a reduced general and administrative headcount.

### *Impairment Charge, net, on Investment Securities and ARS Put*

The net impairment charge for the year ended December 31, 2010 of \$0.8 million was the result of writing down the fair market value of our investment securities still held to liquidation value as we planned to sell investment securities in fourth quarter of 2010, offset by the gain recorded on the redemption of the UBS ARS and ARS Put. There was no impairment charge or gain on investment securities for the year ended December 31, 2011.

### *Other Expense*

Other expense for the year ended December 31, 2011 was approximately \$0.1 million, as compared to approximately \$0.2 million for the year ended December 31, 2010. The decrease in other expenses relates to accretion on the Convertible Notes and amortization of debt issuance costs paid to third parties. Other expense was lower in 2011 as we held no debt or convertible notes in the second half of the year.

### *Interest Expense*

Interest expense consists of interest charged on our long-term debt, write off of unamortized debt discount and debt issuance costs, and interest charged on the ARS Loan which was repaid in the third quarter of 2010. Interest expense for the year ended December 31, 2011 was approximately \$1.6 million, as compared to approximately \$1.8 million for the year ended December 31, 2010. The decrease in interest expense was due to the retirement of our debt in 2011 partially offset by a lump-sum payment of deferred interest in 2011 upon repayment of our debt with Oxford in April of approximately \$0.5 million and a write off of unamortized debt discount and debt issuance costs in April of approximately \$0.5 million.

### *Other Income*

Other income for the year ended December 31, 2011 was approximately \$0.1 million, as compared to approximately \$0.4 million for the year ended December 31, 2010. The decrease is due to lower yields earned on invested balances as we converted higher yielding investment securities into cash and cash equivalents during 2010. Our investment balances are currently held in money market accounts and funds to preserve liquidity and principal.

## ***Comparison of the Years ended December 31, 2010 and 2009***

### *Revenues*

There were no revenues for the years ended December 31, 2010 or December 31, 2009.

### *Research and Development*

Research and development expenses for the year ended December 31, 2010 were approximately \$9.7 million, a decrease of approximately \$1.2 million compared to approximately \$10.9 million for the year

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ended December 31, 2009. This decrease in research and development expenses was due to a decrease of approximately \$1.1 million in spending on our prioritized asset MN-221 for the treatment of acute exacerbations of asthma, primarily due to the completion of the clinical trial evaluating MN-221 at planned escalating doses in patients with severe acute exacerbations of asthma treated in emergency departments in 2009, a decrease of approximately \$0.3 million primarily in unallocated R&D expenses due to a reduction in R&D headcount and a reduction in intellectual property legal costs related to the overall review of our patent portfolio, offset by an increase in spending of approximately \$0.2 million primarily to complete the clinical trial, principally funded by the National Institute in Drug Addiction, in our other prioritized asset MN-166 ibudilast for the treatment of opioid withdrawal.

### *General and Administrative*

General and administrative expenses were approximately \$8.2 million for the year ended December 31, 2010, a decrease of approximately \$2.2 million compared to approximately \$10.4 million for the year ended December 31, 2009. This decrease in general and administrative expenses was the result of a approximately \$1.6 million decrease in professional fees incurred due to the completion of the Avigen transaction in 2009, a decrease of approximately \$0.7 million due to the absence of bonus accruals in 2010 for company management, offset by an increase of approximately \$0.1 million in other expenses.

### *Impairment Charge/Gain, net, on Investment Securities and ARS Put*

Net impairment charge on investment securities for the year ended December 31, 2010 was approximately \$0.8 million, as compared to a net gain on investment securities of approximately \$0.3 million for year ended December 31, 2009. The net impairment charge in 2010 was a result of writing down the fair market value of our investment securities still held to liquidation value as we planned to sell investment securities in fourth quarter of 2010, offset by the gain recorded on the redemption of the UBS ARS and ARS Put. In 2009, all investment securities had been valued based on a discounted cash flow model employing liquidity discounts, which resulted in a net gain.

### *Other Expense*

Other expense for the year ended December 31, 2010 was approximately \$0.2 million, as compared to approximately \$14,000 for the year ended December 31, 2009. The increase in other expense relates to 2010 accretion on the Convertible Notes and amortization of debt issuance costs paid to third parties. We did not have long-term debt in 2009.

### *Interest Expense*

Interest expense for the year ended December 31, 2010 was approximately \$1.8 million, as compared to approximately \$0.2 million for the year ended December 31, 2009. The increase in interest expense was due to the interest charged on the long-term debt using the effective interest method, offset by a decrease in the amount of interest charged on the ARS Loan as the ARS Loan was repaid in July 2010. In 2009 interest expense was only comprised of interest charged on the ARS Loan.

### *Other Income*

Other income for the year ended December 31, 2010 was approximately \$0.4 million, as compared to approximately \$0.8 million for the year ended December 31, 2009. The decrease is due to a decrease in interest income due to a lower yield earned on invested balances as we converted higher yielding investment securities into cash, which were invested in money market funds to preserve liquidity and principal.

**Liquidity and Capital Resources**

We incurred losses of \$17.7 million, \$20.2 million and \$20.4 million for the years ended December 31, 2011, 2010, and 2009 respectively. We have an accumulated deficit of \$285.3 million as of December 31, 2011. Additionally, we have used net cash of \$13.3 million, \$17.7 million and \$17.0 million to fund our operating activities for the years ended December 31, 2011, 2010, and 2009, respectively. To date, these operating losses have been funded primarily through the private placement of our equity securities, the public sale of our common stock, long-term debt, clinical development agreements with partners and the exercise of founders' warrants, net of treasury stock repurchases.

On March 23, 2011, we announced a firm-commitment underwritten public offering of 2,750,000 units at a price to the public of \$3.00 per unit for gross proceeds of \$8.25 million. Each unit consists of one share of common stock, and a warrant to purchase one share of common stock. The shares of common stock and warrants are immediately separable and were issued separately. On March 24, 2011, the underwriter exercised 50,666 units of its 412,500 unit over-allotment.

On October 13, 2011, pursuant to a stock purchase agreement by and between us and Kissei Pharmaceutical Co., Ltd., or Kissei, Kissei purchased (i) an aggregate of 800,000 shares of our common stock, par value \$0.001 per share at a price of \$2.50 per share, and (ii) 220,000 shares of our Series B Convertible Preferred Stock, par value \$0.01 per share, at a price of \$25.00 per share. In October we received gross proceeds of approximately \$7.5 million related to this Purchase Agreement.

On October 13, 2011, we entered into an agreement with Kissei to perform research and development services relating to MN-221 in exchange for a non-refundable upfront payment of \$2.5 million. We will be responsible for all costs to be incurred in the performance of these services which are expected to be completed in 2012 and 2013. We assessed the deliverables in accordance with the authoritative guidance and concluded the existence of one deliverable, research and development services. As such, we will recognize as revenue the \$2.5 million payment as the research and development services are performed. The amount received from Kissei is recorded on the balance sheet at December 31, 2011 as deferred revenue. As of December 31, 2011, we have not recorded any revenue in 2011 relating to this agreement.

Our current cash and cash equivalents are our principal source of liquidity. We expect to utilize our cash and cash equivalents to fund our operations, including research and development of our product development candidates and clinical trials. It is our belief that we have sufficient cash to fund our operations through at least December 31, 2012. The accompanying consolidated financial statements have been prepared assuming that we will continue as a going concern. We have had, and will continue to have an ongoing need to raise additional cash from outside sources to fund our operations including the activities required to bring our future products to market. We have an established history of raising capital through equity and debt, and management plans to continue financing operations with equity issuances, debt arrangements or a combination thereof. If adequate funds are not available, we might be required to delay, reduce the scope of or terminate one or more of our product development programs and/or implement other operating cost reductions, any of which could result in the termination of license rights related to any of our product candidates.

**Other Significant Cash and Contractual Obligations**

The following summarizes our scheduled long-term contractual obligations that may affect our future liquidity as of December 31, 2011 (in thousands):

<b>Contractual Obligations</b>	<b>Payment Due By Period</b>				
	<b>Total</b>	<b>Less than 1 Year</b>	<b>1-3 Years</b>	<b>3-5 Years</b>	<b>More than 5 Years</b>
Operating leases	\$ 359	\$ 233	\$ 126	\$ —	\$ —
License obligations(1)	—	—	—	—	—
<b>Total(2)</b>	<b>\$ 359</b>	<b>\$ 233</b>	<b>\$ 126</b>	<b>\$ —</b>	<b>\$ —</b>

- (1) Under the license agreements for our product candidates, we may be required to make future payments based upon the occurrence of certain milestones related to clinical development, regulatory or commercial events. We will also be required to pay royalties on any net sales of the licensed products, if any are approved by the FDA or foreign regulatory authorities for commercial sale. These milestone payments and royalty payments under our license agreements are not included in the table above because we cannot determine when, or if, the related milestones will be achieved or the events triggering the commencement of payment obligations will occur at present.
- (2) We also enter into agreements with third parties to conduct our clinical trials, manufacture our product candidates, perform data collection and analysis and other services in connection with our product development programs. Our payment obligations under these agreements depend upon the progress of our product development programs. Therefore, we are unable at this time to estimate with certainty the future costs we will incur under these agreements.

#### **Off-Balance Sheet Arrangements**

At December 31, 2011, we did not have any relationship with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance variable interest, or special purpose entities, which would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes. In addition, we did not engage in trading activities involving non-exchange traded contracts. As a result, we are not exposed to any financing, liquidity, market or credit risk that could arise if we had engaged in such relationships. We do not have relationships and transactions with persons and entities that derive benefits from their non-independent relationship with us or our related parties except as disclosed herein.

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

Our primary exposure to market risk due to changes in interest rates relates primarily to the increase or decrease in the amount of interest income we can earn on our investment portfolio. The primary objective of our investment activities is to preserve principal. Our risk associated with fluctuating interest rates is limited to our investments in interest rate sensitive financial instruments and we do not use interest rate derivative instruments to manage exposure to interest rate changes. We mitigate default risk by investing in investment grade securities. A hypothetical 100 basis point adverse move in interest rates along the entire interest rate yield curve would not materially affect the fair value of our interest sensitive financial instruments due to their relatively short term nature.

Cash and cash equivalents as of December 31, 2011 were approximately \$15.1 million and were primarily invested in money market interest bearing accounts and money market funds. A hypothetical 10% adverse change in the average interest rate on our money market cash investments and short-term investments would have had no material effect on net income for the year ended December 31, 2011.

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



**REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

The Board of Directors and Stockholders of  
MediciNova, Inc.

We have audited the accompanying consolidated balance sheet of MediciNova, Inc. (a development stage company) as of December 31, 2011, and the related consolidated statements of operations, stockholders' equity and comprehensive loss, and cash flows for the year then ended, and for the period from September 26, 2000 (inception) through December 31, 2011. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits. The financial statements as of December 31, 2010, and for the period January 1, 2009 through December 31, 2010, were audited by other auditors whose report dated March 31, 2011 expressed an unqualified opinion on those statements. The financial statements for the period January 1, 2009 through December 31, 2010 includes total net loss of \$40.6 million. Our opinion on the statements of operations, stockholders' equity and comprehensive loss, and cash flows for the period September 26, 2000 (inception) through December 31, 2011, insofar as it relates to amounts for the period January 1, 2009 through December 31, 2010, is based solely on the report of other auditors.

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 and the report of other auditors provide a reasonable basis for our opinion.

In our opinion, based on our audits and the report of other auditors, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of MediciNova, Inc., (a development stage company) at December 31, 2011, and the consolidated results of its operations and its cash flows for the year then ended and the period from September 26, 2000 (inception) through December 31, 2011, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), MediciNova's internal control over financial reporting as of December 31, 2011, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated March 28, 2012 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

San Diego, California  
March 28, 2012

**REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

The Board of Directors and Stockholders  
MediciNova, Inc.

We have audited the accompanying consolidated balance sheets of MediciNova, Inc. and subsidiaries (a development stage company) (the Company) as of December 31, 2010, and the related consolidated statements of operations, stockholders' equity and comprehensive loss, and cash flows for each of the years in the two-year period ended December 31, 2010. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

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 the financial statements are free of material misstatement. An audit includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion. An audit 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, based on our audit, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of MediciNova, Inc. and subsidiaries (a development stage company) as of December 31, 2010, and the results of their operations and their cash flows for each of the years in the two-year period ended December 31, 2010, in conformity with U.S. generally accepted accounting principles.

/s/ KPMG LLP

San Diego, California  
March 31, 2011

**MEDICINOVA, INC.**  
**(a development stage company)**  
**CONSOLIDATED BALANCE SHEETS**

	<b>December 31,</b>	
	<b>2011</b>	<b>2010</b>
<b>Assets</b>		
Current assets:		
Cash and cash equivalents	\$ 15,093,124	\$ 28,252,204
Restricted cash	—	28,688,892
Restricted investment	—	623,751
Restricted letter of credit	—	47
Prepaid expenses and other current assets	614,540	779,103
Total current assets	15,707,664	58,343,997
Goodwill	9,600,241	9,600,241
In-process research and development	4,800,000	4,800,000
Investment in China Joint Venture	650,000	—
Property and equipment, net	29,425	65,209
Other assets	—	124,722
Total assets	<u>\$ 30,787,330</u>	<u>\$ 72,934,169</u>
<b>Liabilities and Stockholders' Equity</b>		
Current liabilities:		
Accounts payable	\$ 718,882	\$ 1,099,625
Management transition plan liability	—	623,751
Current portion of long-term debt	—	4,951,610
Convertible notes	—	28,626,296
Escrow holdback	—	47
Accrued expenses	1,509,325	1,133,273
Income taxes payable	6,490	6,847
Accrued compensation and related expenses	599,087	348,755
Current deferred revenue	863,510	—
Total current liabilities	3,697,294	36,790,204
Deferred tax liability	1,956,000	1,956,000
Long-term debt, less current portion	—	9,483,605
Long-term deferred revenue	1,636,490	—
Total liabilities	7,289,784	48,229,809
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, \$0.01 par value; 500,000 shares authorized at December 31, 2011 and December 31, 2010; 220,000 shares issued at December 31, 2011 and no shares outstanding at December 31, 2010	2,200	—
Common stock, \$0.001 par value; 30,000,000 shares authorized at December 31, 2011 and December 31, 2010; 16,127,615 and 12,482,867 shares issued at December 31, 2011 and December 31, 2010, respectively, and 16,088,015 and 12,439,132 shares outstanding at December 31, 2011 and December 31, 2010, respectively	16,128	12,484
Additional paid-in capital	309,998,251	293,483,920
Accumulated other comprehensive loss	(56,845)	(55,702)
Treasury stock, at cost; 39,600 shares at December 31, 2011 and 43,735 shares at December 31, 2010	(1,189,705)	(1,197,935)
Deficit accumulated during the development stage	(285,272,483)	(267,538,407)
Total stockholders' equity	23,497,546	24,704,360
Total liabilities and stockholders' equity	<u>\$ 30,787,330</u>	<u>\$ 72,934,169</u>

*See accompanying notes to consolidated financial statements.*

**MEDICINOVA, INC.**  
**(a development stage company)**

**CONSOLIDATED STATEMENTS OF OPERATIONS**

	Years ended December 31,			Period from
	2011	2010	2009	September 26, 2000 (inception) to December 31, 2011
Revenues	\$ —	\$ —	\$ —	\$ 1,558,227
Operating expenses:				
Cost of revenues	—	—	—	1,258,421
Research and development	7,784,719	9,710,977	10,873,169	162,041,563
General and administrative	8,323,715	8,171,811	10,366,291	105,522,524
Total operating expenses	16,108,434	17,882,788	21,239,460	268,822,508
Operating loss	(16,108,434)	(17,882,788)	(21,239,460)	(267,264,281)
(Impairment charge)/gain, net on investment securities and ARS put	—	(785,478)	310,250	(1,735,212)
Other expense	(81,292)	(176,552)	(13,622)	(359,625)
Interest expense	(1,595,093)	(1,768,354)	(242,371)	(3,605,818)
Other income	62,316	438,542	823,320	19,120,392
Loss before income taxes	(17,722,503)	(20,174,630)	(20,361,883)	(253,844,544)
Income tax expense	(11,573)	(12,678)	(7,007)	(64,817)
Net loss	(17,734,076)	(20,187,308)	(20,368,890)	(253,909,361)
Accretion to redemption value of redeemable convertible preferred stock	—	—	—	(98,445)
Deemed dividend resulting from beneficial conversion feature on Series C redeemable convertible preferred stock	—	—	—	(31,264,677)
Net loss applicable to common stockholders	\$ (17,734,076)	\$ (20,187,308)	\$ (20,368,890)	\$ (285,272,483)
Basic and diluted net loss per common share	\$ (1.20)	\$ (1.63)	\$ (1.68)	
Shares used to compute basic and diluted net loss per share	14,813,156	12,410,576	12,105,835	

*See accompanying notes to consolidated financial statements.*

**MEDICINOVA, INC.**  
**(a development stage company)**

**CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY AND COMPREHENSIVE LOSS**

	Convertible preferred stock		Common stock		Additional paid-in capital	Deferred compensation	Accumulated other comprehensive loss	Treasury stock	Deficit accumulated during the development stage	Total stockholders' equity
	Shares	Amount	Shares	Amount						
Issuance of common stock for cash to founders at \$1.00 per share in September	—	\$ —	50,000	\$ 50	\$ 49,950	\$ —	\$ —	\$ —	\$ —	\$ 50,000
Issuance of Series A convertible preferred stock at \$10 per share in October	500,000	5,000	—	—	4,995,000	—	—	—	—	5,000,000
Net loss and comprehensive loss	—	—	—	—	—	—	—	—	(201,325)	(201,325)
Balance at December 31, 2000	500,000	5,000	50,000	50	5,044,950	—	—	—	(201,325)	4,848,675
Issuance of Series A convertible preferred stock at \$10 per share in August	500,000	5,000	—	—	4,995,000	—	—	—	—	5,000,000
Net loss and comprehensive loss	—	—	—	—	—	—	—	—	(1,794,734)	(1,794,734)
Balance at December 31, 2001	1,000,000	10,000	50,000	50	10,039,950	—	—	—	(1,996,059)	8,053,941
Net loss and comprehensive loss	—	—	—	—	—	—	—	—	(6,931,476)	(6,931,476)
Balance at December 31, 2002	1,000,000	10,000	50,000	50	10,039,950	—	—	—	(8,927,535)	1,122,465
Issuance of Series B convertible preferred stock at \$100 per share, net of issuance costs of \$1,093,453, in March, April, May and December	107,500	1,075	—	—	9,655,472	—	—	—	—	9,656,547
Net loss and comprehensive loss	—	—	—	—	—	—	—	—	(6,209,130)	(6,209,130)
Balance at December 31, 2003	1,107,500	11,075	50,000	50	19,695,422	—	—	—	(15,136,665)	4,569,882
Issuance of Series B convertible preferred stock at \$100 per share, net of issuance costs of \$1,208,896, in January, February, March, April and May	183,650	1,837	—	—	17,154,267	—	—	—	—	17,156,104
Stock-based compensation related to founders' warrants	—	—	—	—	34,069,916	—	—	—	—	34,069,916
Deferred employee stock-based compensation	—	—	—	—	1,419,300	(1,419,300)	—	—	—	—
Amortization of deferred employee stock-based	—	—	—	—	—	224,579	—	—	—	224,579
Deemed dividend resulting from beneficial conversion feature on Series C redeemable convertible preferred stock	—	—	—	—	31,264,677	—	—	—	(31,264,677)	—
Accretion to redemption value of redeemable convertible preferred stock	—	—	—	—	—	—	—	—	(78,756)	(78,756)
Net loss and comprehensive loss	—	—	—	—	—	—	—	—	(48,272,603)	(48,272,603)
Balance at December 31, 2004	1,291,150	12,912	50,000	50	103,603,582	(1,194,721)	—	—	(94,752,701)	7,669,122

**MEDICINOVA, INC.**  
**(a development stage company)**

**CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY AND COMPREHENSIVE LOSS—(Continued)**

	Convertible preferred stock		Common stock		Additional paid-in capital	Deferred compensation	Accumulated other comprehensive loss	Treasury stock	Deficit accumulated during the development stage	Total stockholders' equity
	Shares	Amount	Shares	Amount						
Issuance of common stock in initial public offering at \$38.80 per share in February	—	—	3,000,000	3,000	104,483,895	—	—	—	—	104,486,895
Issuance of common stock upon partial exercise of over-allotment option at \$38.80 per share in March	—	—	157,300	157	5,557,616	—	—	—	—	5,557,773
Issuance costs for registration statement filed on behalf of restricted stockholders	—	—	—	—	(165,476)	—	—	—	—	(165,476)
Conversion of redeemable convertible preferred stock into common stock in February	—	—	2,766,785	2,767	43,499,998	—	—	—	—	43,502,765
Conversion of convertible preferred stock into common stock in February	(1,291,150)	(12,912)	3,911,500	3,911	9,001	—	—	—	—	—
Stock-based compensation related to acceleration of option vesting upon employee termination and subsequent reissuance of a fully vested option	—	—	—	—	127,875	—	—	—	—	127,875
Amortization of deferred employee stock-based compensation, net of cancellations	—	—	—	—	—	311,282	—	—	—	311,282
Cancellation of stock options issued to employees and related deferred compensation	—	—	—	—	(84,000)	84,000	—	—	—	—
Accretion to redemption value of redeemable convertible preferred stock	—	—	—	—	—	—	—	—	(19,689)	(19,689)
Purchase of treasury stock at \$11.10 per share in December	—	—	—	—	—	—	—	(55,445)	—	(55,445)
Comprehensive loss:										
Net loss	—	—	—	—	—	—	—	—	(25,692,135)	(25,692,135)
Accumulated other comprehensive loss	—	—	—	—	—	—	(15,188)	—	—	(15,188)
Total comprehensive loss	—	—	—	—	—	—	—	—	—	(25,707,323)
Balance at December 31, 2005	—	—	9,885,585	9,885	257,032,491	(799,439)	(15,188)	(55,445)	(120,464,525)	135,707,779

**MEDICINOVA, INC.**  
**(a development stage company)**

**CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY AND COMPREHENSIVE LOSS—(Continued)**

	Convertible preferred stock		Common stock		Additional paid-in capital	Deferred compensation	Accumulated other comprehensive loss	Treasury stock	Deficit accumulated during the development stage	Total stockholders' equity
	Shares	Amount	Shares	Amount						
Cashless warrant exercises of 260,000 in February, April and August	—	—	260,000	260	(260)	—	—	—	—	—
Warrant exercises of 275,000 shares at \$1.00 per share in March and August	—	—	275,000	275	274,725	—	—	—	—	275,000
Write off balance of deferred employee stock-based compensation as of 12/31/05	—	—	—	—	(799,439)	799,439	—	—	—	—
Option exercises of 1,400 shares at \$10.00 per share in May and August	—	—	1,400	2	13,998	—	—	—	—	14,000
Amortization of deferred employee stock-based compensation	—	—	—	—	2,090,182	—	—	—	—	2,090,182
Purchase of treasury stock from \$10.30—\$13.10 per share in February, March, May, June, July, September and October	—	—	—	—	—	—	—	(1,382,425)	—	(1,382,425)
Comprehensive loss:										
Net loss	—	—	—	—	—	—	—	—	(35,689,611)	(35,689,611)
Accumulated other comprehensive loss	—	—	—	—	—	—	(34,017)	—	—	(34,017)
Total Comprehensive loss	—	—	—	—	—	—	—	—	—	(35,723,628)
Balance at December 31, 2006	—	—	10,421,985	10,422	258,611,697	—	(49,205)	(1,437,870)	(156,154,136)	100,980,908
Cashless warrant exercises of 650,047 in January and September	—	—	650,047	650	(650)	—	—	—	—	—
Issuance of common stock in a public offering at \$12.00 per share in February	—	—	1,000,000	1,000	10,638,600	—	—	—	—	10,639,600
Employee stock-based compensation	—	—	—	—	3,939,416	—	—	—	—	3,939,416
Issuance of shares under an employee stock purchase plan at \$6.72	—	—	—	—	—	—	—	33,782	—	33,782
Comprehensive loss:										
Net loss	—	—	(5)	—	—	—	—	—	(48,903,244)	(48,903,244)
Accumulated other comprehensive loss	—	—	—	—	—	—	(82,261)	—	—	(82,261)
Total comprehensive loss	—	—	—	—	—	—	—	—	—	(48,985,505)
Balance at December 31, 2007	—	—	12,072,027	12,072	273,189,063	—	(131,466)	(1,404,088)	(205,057,380)	66,608,201

**MEDICINOVA, INC.**  
(a development stage company)

**CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY AND COMPREHENSIVE LOSS—(Continued)**

	Convertible preferred stock		Common stock		Additional paid-in capital	Deferred compensation	Accumulated other comprehensive loss	Treasury stock	Deficit accumulated during the development stage	Total stockholders' equity
	Shares	Amount	Shares	Amount						
Employee stock-based compensation	—	—	—	—	3,172,712	—	—	—	—	3,172,712
Issuance of shares under an employee stock purchase plan at \$2.33 average	—	—	—	—	—	—	86,726	—	—	86,726
Comprehensive loss:										
Net loss	—	—	—	—	—	—	—	—	(21,924,829)	(21,924,829)
Accumulated other comprehensive income	—	—	—	—	—	—	101,722	—	—	101,722
Total comprehensive loss	—	—	—	—	—	—	—	—	—	(21,823,107)
Balance at December 31, 2008	—	—	12,072,027	12,072	276,361,775	—	(29,744)	(1,317,362)	(226,982,209)	48,044,532
Employee stock-based compensation	—	—	—	—	2,371,636	—	—	—	—	2,371,636
Option exercises	—	—	100,483	98	406,259	—	—	—	—	406,357
Fair value of redemption feature of Avigen purchase	—	—	—	—	9,513,042	—	—	—	—	9,513,042
Issuance of shares under an employee stock purchase plan at \$2.21 average	—	—	—	—	—	—	81,967	—	—	81,967
Comprehensive loss:										
Net loss	—	—	—	—	—	—	—	—	(20,368,890)	(20,368,890)
Accumulated other comprehensive loss	—	—	—	—	—	—	(35,170)	—	—	(35,170)
Total comprehensive loss	—	—	—	—	—	—	—	—	—	(20,404,060)
Balance at December 31, 2009	—	—	12,172,510	12,170	288,652,712	—	(64,914)	(1,235,395)	(247,351,099)	40,013,474
Employee stock-based compensation	—	—	—	—	2,000,935	—	—	—	—	2,000,935
Option exercises	—	—	44,948	49	166,550	—	—	—	—	166,599
Issuance of shares for Convertible Notes	—	—	265,409	265	1,804,515	—	—	—	—	1,804,780
Fair value of warrant issued in conjunction with Loan Agreement	—	—	—	—	859,208	—	—	—	—	859,208
Issuance of shares under an employee stock purchase plan at \$6.56 average	—	—	—	—	—	—	37,460	—	—	37,460
Comprehensive loss:										
Net loss	—	—	—	—	—	—	—	—	(20,187,308)	(20,187,308)
Accumulated other comprehensive income	—	—	—	—	—	—	9,212	—	—	9,212
Total comprehensive loss	—	—	—	—	—	—	—	—	—	(20,178,096)
Balance at December 31, 2010	—	—	12,482,867	12,484	293,483,920	—	(55,702)	(1,197,935)	(267,538,407)	24,704,360
Employee stock-based compensation	—	—	—	—	1,372,748	—	—	—	—	1,372,748
Option exercises	—	—	32,836	31	76,232	—	—	—	—	76,263
Issuance of shares for Convertible Notes	—	—	11,246	12	76,461	—	—	—	—	76,473
Issuance of shares under an employee stock purchase plan	—	—	—	—	—	—	8,230	—	—	8,230



**MEDICINOVA, INC.**  
**(a development stage company)**

**CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY AND COMPREHENSIVE LOSS—(Continued)**

	Convertible preferred stock		Common stock		Additional paid-in capital	Deferred compensation	Accumulated other comprehensive loss	Treasury stock	Deficit accumulated during the development stage	Total stockholders' equity
	Shares	Amount	Shares	Amount						
Issuance of units in a public offering at \$3.00 per unit net of issuance costs of \$715,112, each unit consisting of one share of common stock and one warrant to purchase one share of common stock.	—	—	2,800,666	2,801	7,684,085	—	—	—	—	7,686,886
Issuance of series B convertible preferred stock at \$25 per share, net of issuance costs of \$144,146	220,000	2,200	—	—	5,353,654	—	—	—	—	5,355,854
Issuance of common stock at \$2.50 per share, net of issuance costs of \$48,049	—	—	800,000	800	1,951,151	—	—	—	—	1,951,951
Comprehensive loss:										
Net loss	—	—	—	—	—	—	—	—	(17,734,076)	(17,734,076)
Accumulated other comprehensive loss	—	—	—	—	—	—	(1,143)	—	—	(1,143)
Total comprehensive loss	—	—	—	—	—	—	—	—	—	(17,735,219)
Balance at December 31, 2011	<u>220,000</u>	<u>\$ 2,200</u>	<u>16,127,615</u>	<u>\$ 16,128</u>	<u>\$309,998,251</u>	<u>\$ —</u>	<u>\$ (56,845)</u>	<u>\$(1,189,705)</u>	<u>\$(285,272,483)</u>	<u>\$ 23,497,546</u>

*See accompanying notes to consolidated financial statements.*

**MEDICINOVA, INC.**  
**(a development stage company)**  
**CONSOLIDATED STATEMENTS OF CASH FLOWS**

	Years ended December 31,			Period from September 26, 2000 (inception) to December 31, 2011
	2011	2010	2009	
Operating activities:				
Net loss	\$ (17,734,076)	\$ (20,187,308)	\$ (20,368,890)	\$ (253,909,361)
Adjustments to reconcile net loss to net cash used in operating activities:				
Non-cash stock-based compensation	1,372,748	2,000,935	2,371,636	49,681,281
Depreciation and amortization	41,869	108,257	219,202	1,945,424
Amortization of premium/discount on investment securities, convertible debt, debt discount and issuance costs	752,124	624,931	—	(1,099,365)
Impairment charge/(gain), net on investment securities and ARS Put	—	785,478	(310,250)	1,735,212
(Gain)/loss on disposal of assets	—	(1,360)	11,997	10,637
Impairment of sublease	—	—	—	35,259
Changes in operating assets and liabilities:				
Prepaid expenses and other assets	164,563	90,546	(114,383)	(577,591)
Accounts payable, income tax payable, accrued expenses and deferred rent	(656,196)	(327,352)	890,854	1,321,542
Accrued compensation and related expenses	250,333	(798,205)	285,672	502,947
Restricted assets	(17)	5,999	—	5,982
Deferred revenue	2,500,000	—	—	2,500,000
Net cash used in operating activities	<u>(13,308,652)</u>	<u>(17,698,079)</u>	<u>(17,014,162)</u>	<u>(197,848,033)</u>
Investing activities:				
Cash paid for acquired business, net of acquired cash	—	(458,036)	(2,371,749)	(2,829,785)
Purchases of investment securities	—	—	—	(377,205,766)
Maturities or sales of investment securities	—	28,111,943	1,252,846	377,918,240
Acquisition of property and equipment	(6,085)	(18,559)	(16,447)	(2,277,590)
Proceeds from sales of property and equipment	—	—	—	256,845
Net cash provided by / (used in) investing activities	<u>(6,085)</u>	<u>27,635,348</u>	<u>(1,135,350)</u>	<u>(4,138,056)</u>
Financing activities:				
Proceeds from issuance of units, net of issuance costs	9,715,100	166,599	406,357	131,178,622
Proceeds from issuance of convertible preferred stock, net of issuance costs	5,355,854	—	—	85,572,825
Proceeds from ARS loan	—	—	17,605,485	17,605,485
Net proceeds from debt	—	14,670,000	—	14,670,000
Proceeds from conversion of convertible notes	76,473	1,804,780	—	1,881,253
Purchase of treasury stock, net of employee stock purchases	8,230	37,460	81,967	(1,223,487)
Repayment of debt	(15,000,000)	—	—	(15,000,000)
Repayment of ARS loan	—	(17,605,485)	—	(17,605,485)
Net cash (used in) / provided by financing activities	<u>155,657</u>	<u>(926,646)</u>	<u>18,093,809</u>	<u>217,079,213</u>
Net increase / (decrease) in cash and cash equivalents	(13,159,080)	9,010,623	(55,703)	15,093,124
Cash and cash equivalents, beginning of period	28,252,204	19,241,581	19,297,284	—
Cash and cash equivalents, end of period	<u>\$ 15,093,124</u>	<u>\$ 28,252,204</u>	<u>\$ 19,241,581</u>	<u>\$ 15,093,124</u>
Supplemental disclosure of investing activities and financing activities:				
China joint venture investment	\$ 650,000	\$ —	\$ —	\$ 650,000
Issuance of warrants	\$ 2,882,258	\$ —	\$ —	\$ 2,882,258
Conversion of convertible preferred stock into common stock upon initial public offering	\$ —	\$ —	\$ —	\$ 43,515,677
Restricted assets, cash unrestricted upon conversion of convertible notes	\$ 76,473	\$ 1,805,342	\$ —	\$ 1,881,815
Supplemental disclosures of cash flow information:				
Income taxes paid	\$ 12,010	\$ 12,678	\$ 9,434	\$ 58,650
Interest paid	\$ 1,088,926	\$ 1,163,053	\$ 235,364	\$ 2,487,343
Supplemental disclosure of investing activities related to business acquisition:				
Fair value of assets acquired (sold)	\$ —	\$ (458,036)	\$ 36,687,706	\$ 36,229,670
Liabilities assumed	\$ —	\$ —	\$ (1,008,687)	\$ (1,008,687)
Deferred tax liability	\$ —	\$ —	\$ (1,956,000)	\$ (1,956,000)
Fair value of total merger consideration (Note 2)	\$ —	\$ —	\$ (42,865,224)	\$ (42,865,224)

*See accompanying notes to consolidated financial statements.*

**MEDICINOVA, INC.**  
**(a development stage company)**

**Notes to Consolidated Financial Statements**

**1. The Company, Basis of Presentation and Summary of Significant Accounting Policies**

***The Company***

We were incorporated in the state of Delaware in September 2000. We are a development stage biopharmaceutical company focused on acquiring and developing novel, small molecule therapeutics for the treatment of serious diseases with unmet medical needs with a specific focus on the U.S. market. Through strategic alliances primarily with Japanese pharmaceutical companies, we hold rights to a diversified portfolio of clinical and preclinical product candidates which we believe provide significant commercial opportunity for the Company.

We incurred losses of \$17.7 million, \$20.2 million and \$20.4 million for the years ended December 31, 2011, 2010, and 2009 respectively. We have an accumulated deficit of \$285.3 million as of December 31, 2011. Additionally, we have used net cash of \$13.3 million, \$17.7 million and \$17.0 million to fund our operating activities for the years ended December 31, 2011, 2010, and 2009, respectively. To date, these operating losses have been funded primarily through the private placement of our equity securities, the public sale of our common stock, long-term debt and the exercise of founders' warrants, net of treasury stock repurchases.

As a development stage company, we have consumed substantial amounts of capital since our inception. We do not have material commitments for capital expenditures. We do conduct clinical trials which are administered by third-party CROs and there is a significant degree of estimation involved in quantifying the expense associated with clinical trial activity. We accrue costs for work performed by CROs based on the achievement of contracted milestone activities and on internal estimates of activities using patient enrollment and contractual or estimated rates during the period. Our R&D expense and cash payments in future periods could potentially be impacted if we were not to receive complete and accurate information from the CRO or other third parties on a timely basis or correctly estimate the outcome of contract negotiations, activity levels and enrollment rates. We have recently announced on March 21, 2012 the completion of patient enrollment of a significant Phase 2 clinical trial (MN-221-CL-007), the trial results of which are expected in second quarter of 2012.

We have had, and will continue to have an ongoing need to raise additional cash from outside sources to fund our operations. Our business will continue to require us to incur substantial research and development expenses and management plans to continue financing operations with equity issuances, debt arrangements or a combination thereof.

We believe our current liquidity position will be sufficient to fund our operating requirements for at least the next 12 months. We expect to utilize our cash and cash equivalents to fund our operations, including research and development of our product development candidates and for clinical trials. Additionally, we believe that without additional sources of financing, we do not currently have adequate funding to complete the research and development and clinical trials required to bring our future products to market. We will therefore require significant additional funding. If we are unsuccessful in our efforts to raise additional funds, we will be required to significantly reduce or curtail our future research and development activities and other operations.

***Basis of Presentation***

Our primary activities since incorporation have been recruiting personnel, conducting research and development, performing business and financial planning and raising capital. Accordingly, in connection with preparation of the consolidated financial statements we operate under one reporting segment and are considered to be in the development stage, in accordance with the authoritative guidance for development stage entities.

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During the first quarter of 2005, we completed our initial public offering, or IPO, of 3,000,000 shares of common stock in Japan for proceeds of \$104.5 million, net of underwriting discounts and commissions and offering costs. In December 2006, we were listed on the Nasdaq Global Market. Accordingly, we are a public company in both the U.S. and Japan, as our stock is traded on both the Nasdaq Global Market and the Jadaq Market (formerly the Hercules Market of the Osaka Securities Exchange until its closure in 2010).

*Avigen Transaction.* On December 18, 2009, or the Merger Date, Absolute Merger, Inc., a wholly-owned subsidiary of ours, merged with and into Avigen, Inc., or Avigen, with Avigen continuing as the surviving entity and wholly-owned subsidiary of ours, or the Merger. Under the terms of the Merger agreement, Avigen shareholders, at their election, received an amount per share either in cash, convertible notes issued by us or a combination thereof, upon closing. Avigen shareholders holding approximately 17% of the 29,852,115 shares of Avigen common stock outstanding at the closing date elected to receive cash in the amount of approximately \$1.19 per share with an additional \$0.04 per share paid in two increments during fiscal year 2010, while the remaining 83% received the corresponding value of additional convertible notes issued by us. In March 2011 we paid \$0.02 per share to former Avigen shareholders related to the management transition plan Contingent Payment Rights (CPR). All additional CPR expired on August 18, 2011 and no payments were made related to these CPR.

*Avigen Management Transition Plan (MTP).* On March 11, 2011, a designated representative from Avigen notified us of the termination of the Avigen MTP, with the final distribution to occur on or about March 31, 2011. In connection with the termination of the Avigen MTP and pursuant to the related contingent payment rights agreement, the remaining funds were distributed to American Stock Transfer & Trust Company, LLC, or AST, and AST was instructed to distribute the funds to the Avigen shareholders on a pro rata basis (approximately \$0.02 per share) based on the shares of Avigen common stock held immediately prior to the effective time of the Merger.

*Joint Venture.* We entered into an agreement to form a joint venture company with Zhejiang Medicine Co., Ltd. and Beijing Make-Friend Medicine Technology Co., Ltd. effective September 27, 2011. The joint venture agreement provides for the joint venture company to develop and commercialize MN-221 in China. A sublicense under which the joint venture company will license MN-221 from us will be required, which sublicense will require the consent of Kissei. In accordance with the joint venture agreement, on March 16, 2012, we paid \$650,000 for a 30% interest in the joint venture company. The other parties to the joint venture agreement are responsible for providing their initial funding in the joint venture company for their combined 70% interest, and for future funding for the joint venture company's activities. We have not entered into the sublicense of MN-221 with the joint venture company as of the date of this filing. At December 31, 2011, we reflect a long-term asset on our consolidated balance sheet which represents our investment and a corresponding current liability which represents our required capital contribution payable to the joint venture company. We evaluated the joint venture company under the authoritative guidance and concluded that it is a variable interest entity for which we are not the primary beneficiary as we will not have a majority of the board seats and we will not have power to direct or significantly influence the actions of the entity. We will therefore not consolidate the joint venture company into our financial results but will account for the activities of the joint venture company under the equity method whereby we will absorb any loss or income generated by the entity according to our percentage ownership. See Notes to Consolidated Financial Statements—Note 12. Subsequent Events, for information regarding our payment for the 30% interest in the joint venture company.

### **Principles of Consolidation**

The consolidated financial statements include the accounts of MediciNova, Inc. and its wholly-owned subsidiaries. MediciNova, Inc. and its subsidiaries are collectively referred to herein as “we,” “our” or “us.”

On December 13, 2006, MediciNova (Europe) Limited, a wholly-owned subsidiary of MediciNova, Inc., was incorporated under the laws of England and Wales and established for the purpose of facilitating the clinical

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development of our compounds for the European marketplace. MediciNova (Europe) Limited's functional currency is the U.S. dollar, the reporting currency of its parent.

On January 4, 2007, MediciNova Japan, Inc., a wholly-owned subsidiary of MediciNova, Inc., was incorporated under the laws of Japan and established to strengthen business development and investor and public relations activities in Japan and other Asian countries. MediciNova Japan, Inc.'s functional currency is the Japanese yen.

On August 17, 2009, Absolute Merger, Inc., a wholly-owned subsidiary of MediciNova, Inc. was incorporated under the General Corporation Law of the State of Delaware for the purpose of facilitating the Merger with Avigen.

All intercompany transactions and investments in our subsidiaries have been eliminated in consolidation.

### ***Use of Estimates***

The preparation of consolidated financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results may differ from these estimates under different assumptions or conditions.

### ***Cash and Cash Equivalents***

Cash and cash equivalents consist of cash and other highly liquid investments with original maturities of three months or less from the date of purchase. Cash equivalents at December 31, 2011 consisted of money market funds.

### ***Restricted Cash***

Restricted cash consisted of cash held in a separate trust account, managed by a third-party, in connection with the Avigen transaction. We no longer hold restricted cash as of our payment of the Convertible Notes at their maturity on June 18, 2011.

### ***Restricted Investment***

Restricted investment consisted of cash held in an irrevocable grantor trust to fund benefit obligations under the Avigen MTP. These funds represented reserves for eligible benefits as defined by the MTP. At December 31, 2011, we no longer held restricted investments as a result of payouts in 2011 of eligible benefits to terminated employees and fees associated with managing the trust account.

### ***Restricted Letter of Credit***

Restricted letter of credit consisted of cash provided as a credit guarantee and security for an irrevocable letter of credit related to the original lease of office space which expired November 30, 2010. The funds remaining after the letter of credit expired reverted to the escrow holdback account described below.

### ***Deferred Revenue and Revenue Recognition***

We recognized no revenues for each of the years in the three-year period ended December 31, 2011.

On October 13, 2011, we entered into an agreement with Kissei to perform research and development services relating to MN-221 in exchange for a non-refundable upfront payment of \$2.5 million. Under the terms

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of the agreement we are responsible for all costs to be incurred in the performance of these services which are expected to be completed in 2012 and 2013. We assessed the deliverables in accordance with the authoritative guidance and concluded the existence of one deliverable, research and development services. As such, we will recognize as revenue the \$2.5 million payment as the research and development services are performed. The amount received from Kissei is recorded on the balance sheet at December 31, 2011 as deferred revenue. As of December 31, 2011, we have not recorded any revenue in 2011 relating to this agreement.

### ***Convertible Notes***

At the closing of the Merger, we and AST, as trustee, entered into an indenture. Under the terms of a separate trust agreement, \$29.4 million, which represented the First Payment Consideration less approximately \$6.0 million paid out to Avigen shareholders who elected cash payment and the initial principal amount of the convertible notes, or Convertible Notes, was deposited with a trust agent for the benefit of the holders and us (the amount of such deposit together with interest accrued and capitalized thereon, the Property). At the Merger Date we recorded the Convertible Notes in our consolidated balance sheet at fair value.

Prior to the maturity of the Convertible Notes on June 18, 2011, holders of the Convertible Notes could submit irrevocable conversion notices instructing the trustee to convert such Convertible Notes into shares of our common stock at an initial conversion price of \$6.80 per share. Following each conversion we would issue the number of whole shares of common stock issuable upon conversion and the trustee would in turn release to us the respective amount of restricted cash to cover the stock issuance. For the year ended December 31, 2011, approximately \$76,000, of Convertible Notes were converted into 11,246 shares of our common stock. All remaining Convertible Notes matured on June 18, 2011 and the principal was repaid in full.

### ***Escrow Holdback***

At the closing of the Merger, we and Avigen funded in cash and letter of credit \$1,500,000 in a separate escrow account, or Second Payment Consideration, pursuant to an escrow agreement. The Second Payment Consideration was considered the "Escrow Holdback". We (Avigen and us) had identified certain additional liabilities of approximately \$400,000 prior to closing of the Merger. As such, in accordance with the procedures set forth in the escrow agreement, \$400,000 was released from the escrow account in satisfaction of these additional liabilities. A reconciliation of expenses was performed around June 30, 2010 and the letter of credit expired in November 2010. As a result, the Second Payment Consideration of \$0.04 per share was paid in two installments. At the Merger Date, we recorded the Escrow Holdback in our consolidated balance sheet at fair value.

### ***At-The-Market Issuance Sales Agreement***

On May 5, 2011, we entered into an at-the-market, or ATM, issuance sales agreement, or sales agreement, with McNicoll, Lewis & Vlak LLC, or MLV, pursuant to which we could issue and sell shares of our common stock having an aggregate offering price of up to \$15.0 million from time to time through MLV as our sales agent. The issuance and sale of these shares by us under the sales agreement, if any, would be subject to the effectiveness of our shelf registration statement on Form S-3 (File No. 333-163116), initially filed with the Securities and Exchange Commission on November 13, 2009.

Effective October 23, 2011, we terminated the ATM between us and MLV. No shares of common stock were issued under the ATM.

### ***Concentrations and Credit Risk***

We maintain cash balances at various financial institutions and such balances commonly exceed the \$250,000 amount insured by the Federal Deposit Insurance Corporation. We also maintain money market funds

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at various financial institutions which are not federally insured although are invested primarily in U.S. government securities. We have not experienced any losses in such accounts and management believes that we do not have significant credit risk with respect to such cash and cash equivalents. We have sustained operating losses since inception and expect such losses to continue over the next several years. Management plans to continue financing operations with equity issuances, debt arrangements or a combination thereof. We believe our working capital at December 31, 2011 to be sufficient to fund our operating requirements through at least December 31, 2012. If adequate funds are not available, we might be required to delay, reduce the scope of or terminate one or more of our product development programs and/or implement other operating cost reductions, any of which could result in the termination of license rights related to any of our product candidates.

### ***Goodwill and Purchased Intangibles***

Goodwill is recorded when the consideration paid for an acquisition exceeds the fair value of the identified net tangible and intangible assets of acquired businesses. The allocation of purchase price for acquisitions require extensive use of accounting estimates and judgments to allocate the purchase price to the identifiable tangible and intangible assets acquired and liabilities assumed based on their respective fair values. Additionally, we must determine whether an acquired entity is considered to be a business or a set of net assets as a portion of the purchase price can only be allocated to goodwill in a business combination. Goodwill and intangible assets deemed to have indefinite lives are not amortized, but are subject to annual impairment tests. The amounts and useful lives assigned to intangible assets that have finite useful lives require the use of estimates and the exercise of judgment. These judgments can significantly affect our net operating results. As of December 31, 2011 and 2010, we had goodwill and IPR&D recorded of \$9.6 million and \$4.8 million, respectively.

Our annual test date for goodwill and purchased intangibles impairment is December 31 or more frequently if we believe indicators of impairment are present. We periodically re-evaluate the original assumptions and rationale utilized in the establishment of the carrying value and estimated lives of our long-lived assets. The criteria used for these evaluations include management's estimate of the asset's continuing ability to generate income from operations and positive cash flows in future periods as well as the strategic significance of any intangible assets in our business objectives. If assets are considered to be impaired, the impairment recognized is the amount by which the carrying value of the assets exceeds the fair value of the assets.

### ***Fair Value***

Financial instruments, including cash equivalents, accounts payable and accrued liabilities, are carried at cost, which we believe approximates fair value given their short-term nature. We are required to measure certain assets and liabilities at fair value, either upon initial measurement or for subsequent accounting or reporting. We use fair value in the initial measurement of net assets acquired in a business combination and when accounting for and reporting on investment securities and certain financial instruments or assets. We estimate fair value using an exit price approach, which requires, among other things, that we determine the price that would be received to sell an asset or paid to transfer a liability in an orderly market of market participants, considering the highest and best use of assets and, for liabilities, assuming the risk of non-performance will be the same before and after the transfer. Many, but not all, of our financial instruments are carried at fair value. In addition, as required under accounting rules for business combinations, the assets acquired and liabilities assumed in the Avigen transaction on December 18, 2009 have been recorded at their estimated fair values as of the Merger Date.

The judgments made in determining an estimate of fair value can materially impact our results of operations.

### ***Property and Equipment***

Property and equipment, net, which consists of leasehold improvements, furniture and equipment and software, is stated at cost. Leasehold improvements, furniture and equipment, and software are depreciated using

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the straight-line method over the estimated useful lives of the related assets. The useful life for furniture, equipment (other than computers) and software is five years, computers is three years and leasehold improvements are amortized over the lesser of the useful life or the term of the lease. Our current lease at our headquarters in San Diego, California expires in May, 2012. We also lease office space in Tokyo, Japan under a lease that expires in May, 2013. See Notes to Consolidated Financial Statements-Note 12. Subsequent Events, for information regarding a lease amendment for our San Diego lease.

### **Research and Development**

Research and development expenses consist of costs incurred to further our research and development activities and include salaries and related employee benefits, costs associated with clinical trials, costs associated with non-clinical activities such as regulatory activities, research-related overhead expenses, and fees paid to external service providers who conduct certain research and development activities on our behalf. We use external service providers and vendors to conduct clinical trials, to manufacture product candidates to be used in clinical trials and to provide various other products and services related to our product development programs. Research and development expenses also include fees for licensed technology for which technological feasibility has not been established and there are no alternative uses. Research and development costs are expensed as incurred or accrued based on certain contractual provisions such as those for estimates of work performed, milestones achieved, patient enrollment, etc. As actual costs become known, accruals are adjusted if necessary. To date, our accrual estimates have not differed significantly from the actual costs incurred.

### **Income Taxes**

In accordance with the authoritative guidance for income taxes under ASC 740, a deferred tax asset or liability is determined based on the difference between the financial statement and the tax basis of assets and liabilities as measured by the enacted tax rates, which will be in effect when these differences reverse. We provide a valuation allowance against net deferred tax assets unless, based upon the available evidence, it is more likely than not that the deferred tax assets will be realized.

Effective January 1, 2007, we adopted the authoritative guidance on accounting for uncertainty in income taxes, which prescribes a comprehensive model for how we should recognize, measure, present and disclose in our financial statements for uncertain tax positions that we have taken or expect to take on a tax return. The cumulative effect of adopting the guidance on accounting for uncertainty in income taxes resulted in no adjustment to retained earnings as of January 1, 2007.

Our practice is to recognize interest and/or penalties related to income tax matters in income tax expense. We had no accrued interest or penalties since implementation of guidance on accounting for uncertainty in income taxes.

We are subject to taxation in the U.S., California and foreign jurisdictions, of which currently no years are under examination. Our tax years for 2000 and forward are subject to examination by the U.S. and state tax authorities due to the carry-forward of unutilized net operating losses and research and development credits. During each of the three years in the period ended December 31, 2011, income tax expense relates to intercompany service income earned by our Japanese subsidiary, MediciNova Japan, Inc.

### **Stock-Based Compensation**

We grant stock options to our employees, directors and consultants under the MediciNova, Inc. Amended and Restated 2004 Stock Incentive Plan (the "2004 Plan"), the successor to the MediciNova, Inc. 2000 General Stock Incentive Plan (the "2000 Plan"). No additional stock options have been or will be issued under the 2000 Plan subsequent to our IPO. Stock options issued to non-employees were recorded at their fair value as determined in accordance with the authoritative guidance for equity under ASC 505.



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Under the MediciNova, Inc. 2007 Employee Stock Purchase Plan, or ESPP, 300,000 shares of our common stock have been reserved for issuance. In addition, the shares reserved will automatically increase by a number equal to the lesser of: (i) 15,000 shares, (ii) 1% of the outstanding shares of our common stock on the last day of the immediately preceding fiscal year or (iii) such lesser amount as determined by the Board. The ESPP permits full-time employees to purchase our common stock through payroll deductions (which cannot exceed 15% of each employee's compensation) at the lower of 85% of fair market value at the beginning of the offering period or the end of each six-month offering period.

The exercise price of stock options granted during the years ended December 31, 2011, 2010 and 2009 were equal to market value on the date of grant. During the years ended December 31, 2011, 2010 and 2009, options to purchase 1,431,000, 525,000 and 521,373 shares of common stock, respectively, were granted. For the year ended December 31, 2011, 4,135 shares were issued under the ESPP, leaving 269,992 shares available for future issuance. Stock-based compensation expense for such stock options and employee stock purchase plan are reflected in total operating expense for each respective year. The estimated fair value of each stock option award was determined on the date of grant using the Black-Scholes option valuation model with the following weighted-average assumptions for stock option grants:

	Year Ended		
	December 31,		
	2011	2010	2009
<b>Stock Options</b>			
Risk-free interest rate	0.70%	1.37%	1.79%
Expected volatility of common stock	78.79%	76.50%	70.00%
Dividend yield	0.00%	0.00%	0.00%
Expected option term (in years)	5.36	4.40	4.13
<b>Employee Stock Purchase Plan</b>			
Risk-free interest rate	0.69%	0.57%	2.37%
Expected volatility of common stock	77.88%	76.00%	73.00%
Dividend yield	0.00%	0.00%	0.00%
Expected option term (in years)	0.5	0.5	0.5

The risk-free interest rate assumption is based upon observed interest rates appropriate for the expected term of our employee stock options. The expected volatility is based on the historical volatility of our stock since listing on the Nasdaq Global Market in December 2006. We have not paid nor do we anticipate paying dividends on our common stock in the foreseeable future. The expected term of employee stock options is based on the simplified method as provided by the authoritative guidance on stock compensation, as we concluded that our historical stock option exercise experience does not provide a reasonable basis for us to estimate the expected term.

The weighted-average fair value of each stock option granted during the years ended December 31, 2011, 2010 and 2009, estimated as of the grant date using the Black-Scholes option valuation model, was \$1.25 per option, \$4.02 per option and \$1.53 per option, respectively.

For the years ended December 31, 2011, 2010 and 2009, stock-based compensation expense related to stock options and the employee stock purchase plan was approximately \$1.4 million, \$2.0 million and \$2.4 million, respectively, and was recorded as a component of general and administrative expense (approximately \$1.1 million, \$1.6 million and \$1.9 million, respectively) and research and development expense (approximately \$0.3 million, \$0.4 million and \$0.5 million, respectively). During the years ended December 31, 2011, 2010 and 2009, there were 32,836, 44,948 and 100,483 stock options exercised, respectively, from which proceeds of approximately \$0.08 million, \$0.2 million and \$0.4 million, respectively, were received.

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As of December 31, 2011, there was approximately \$2.0 million of unamortized compensation cost related to unvested stock option awards which is expected to be recognized over a remaining weighted-average vesting period of 1.9 years, on a straight-line basis.

### **Comprehensive Income (Loss)**

The authoritative guidance for comprehensive income under ASC 220 requires that all components of comprehensive income (loss), including net income (loss), be reported in the financial statements in the period in which they are recognized. Comprehensive income (loss) is defined as the change in equity (net assets) during a period from transactions and other events and circumstances from non-owner sources. Net income (loss) and other comprehensive income (loss), including foreign currency translation adjustments and unrealized gains and losses on available for sale investments, are reported, net of their related tax effect, to arrive at comprehensive income (loss). For the years ended December 31, 2011, 2010 and 2009, comprehensive loss was \$17,735,219, \$20,178,096 and \$20,404,060, respectively. The table below sets forth the components of our accumulated other comprehensive loss at:

	December 31,		
	2011	2010	2009
Beginning Balance	\$ (55,702)	\$ (64,914)	\$ (29,744)
Currency translation	(1,143)	9,212	(35,170)
Ending Balance	<u>\$ (56,845)</u>	<u>\$ (55,702)</u>	<u>\$ (64,914)</u>

### **Net Loss Per Share**

Net loss per share is presented as basic and diluted net loss per share. Basic net loss per share is calculated by dividing the net loss attributable to common stockholders by the weighted average number of common shares outstanding for the period, without consideration for common stock equivalents. Diluted net loss per share is computed by dividing the net loss attributable to common stockholders by the weighted average number of common share equivalents outstanding for the period determined using the treasury-stock method. For purposes of this calculation, convertible preferred stock, stock options and warrants are considered to be common stock equivalents and are only included in the calculation of diluted net loss per share when their effect is dilutive. For the years ended December 31, 2011, 2010 and 2009, 5,436,111, 470,200 and 4,547,300, respectively, of potentially dilutive securities were excluded from determining diluted earnings per share because of their anti-dilutive effect.

### **New Accounting Standards Not Yet Adopted**

In September 2011, the Financial Accounting Standards Board, or FASB, issued updated guidance to simplify how entities test for goodwill impairment. The updated guidance permits an assessment of qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit in which goodwill resides is less than its carrying value. For reporting units in which this assessment concludes it is more likely than not that the fair value is more than its carrying value, the updated guidance eliminates the requirement to perform further goodwill impairment testing. This new guidance is effective for fiscal years beginning after December 15, 2011 and becomes effective for us in the first quarter of fiscal year 2012. We do not expect the adoption to have a material impact on our financial position or results of operations.

In June 2011, the FASB issued a guidance related to the Presentation of Comprehensive Income. The guidance requires an entity to present items of net income and other comprehensive income, or OCI, and total comprehensive income either in a single continuous statement of comprehensive income or two separate but continuous statements. We will no longer be allowed to present OCI in the statement of stockholders' equity.

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Earnings per share would continue to be based on net income. Although existing guidance related to items that must be presented in OCI has not changed, companies will be required to display reclassification adjustments for each component of OCI in both net income and OCI. Also, companies will need to present the components of other comprehensive income in their interim and annual financial statements. This guidance is required to be implemented retrospectively during interim and annual periods beginning after December 15, 2011 and becomes effective for us in the first quarter of fiscal year 2012. The adoption of this update is not expected to have a material impact on our consolidated financial statements.

In May 2011, the FASB issued updated guidance related to Fair Value Measurements and Disclosures that clarified and amended the wording used to describe many of the requirements in GAAP for measuring fair value and for disclosing information about fair value measurements. The FASB also clarified the intent of existing fair value measurement requirements. The new and revised disclosures are required to be implemented prospectively during interim and annual periods beginning after December 15, 2011 and become effective for us in the first quarter of fiscal year 2012. Early adoption is not permitted. The adoption of this update is not expected to have a material impact on our consolidated financial statements.

### **2. Avigen Transaction**

On December 18, 2009 we acquired 100% of the outstanding shares of Avigen, a biopharmaceutical company whose potential product candidate is a therapeutic for Central Nervous System, or CNS, disorders. Under the terms of the acquisition, we issued \$29.4 million in secured convertible notes that matured on June 18, 2011. Holders of these convertible notes may convert their notes into our common stock at an initial conversion price of \$6.80 per share. At the maturity of the convertible notes, the remaining holders would be paid out the same per share amount as the Avigen shareholders that elected to receive cash at the merger closing, plus accrued interest. As part of the merger consideration, the former Avigen shareholders were also entitled to receive approximately \$0.04 per share, which was paid in two increments in 2010, and rights under contingent payment rights issued as part of the merger consideration. The amount to be paid in the two installments was net of a reconciliation of Avigen expenses and a letter of credit after expiry. Under the first and second installments paid out, we paid \$140,119 and \$73,449, respectively, to Avigen shareholders who elected payment in cash and we issued an additional principal amount of \$685,917 and \$359,551, respectively, in convertible notes to Avigen shareholders who elected payment in convertible notes in lieu of a cash payment. We have included Avigen's business operations in our consolidated financial statements since the merger date and we have accounted for the merger under the acquisition method of accounting.

### **3. Fair Value Measurements**

As defined in the authoritative guidance for fair value measurements and disclosures under ASC 820, fair value is based on the price that would be received to sell an asset or would be paid to transfer a liability in an orderly transaction between market participants at the measurement date. To increase the comparability and consistency of fair value measurements, ASC 820 prescribes a fair value hierarchy that prioritizes observable and unobservable inputs used to measure fair value into three broad levels which are described below:

- Level 1: Inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities at the measurement date.
- Level 2: Inputs are quoted prices for similar items in active markets or inputs are quoted prices for identical or similar items in markets that are not active.
- Level 3: Inputs are unobservable due to little or no market data availability and inputs are usually developed by management or a third-party which reflect those inputs that a market participant would use. The fair value hierarchy gives the lowest priority to Level 3 inputs.

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The following table presents our financial instruments measured at fair value on a recurring basis classified by the fair value measurements and disclosures valuation hierarchy (in thousands):

	<b>As of December 31, 2011</b>			
	<b>Fair Value Measurements Using</b>			
	<b>Total</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>
Cash equivalents	<u>\$1,659</u>	<u>\$ 1,659</u>	<u>\$ —</u>	<u>\$ —</u>
	<b>As of December 31, 2010</b>			
	<b>Fair Value Measurements Using</b>			
	<b>Total</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>
Cash equivalents	<u>\$11,082</u>	<u>\$ 11,082</u>	<u>\$ —</u>	<u>\$ —</u>
	<b>As of December 31, 2010</b>			
	<b>Fair Value Measurements Using</b>			
	<b>Total</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>
<b>Current liabilities:</b>				
Current portion of long-term debt(3)	\$ 4,952	\$ —	\$ —	\$ 4,952
Convertible notes(1, 2)	\$28,626	\$ —	\$ —	\$ 28,626
<b>Total current liability</b>	<u>\$33,578</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 33,578</u>
<b>Non-current liability:</b>				
Long-term debt, less current portion(3)	\$ 9,484	\$ —	\$ —	\$ 9,484
<b>Total non-current liability</b>	<u>\$ 9,484</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 9,484</u>

- (1) The fair value of the convertible notes and the related conversion feature was based on a binomial option pricing model, or BOPM. Assumptions used in the BOPM included the maturity date of the Convertible Notes, the time between nodes, volatility, face value of the Convertible Notes at the merger closing date and the risk-free rate.
- (2) Although we recorded the Convertible Notes as a liability upon merger closing on December 18, 2009, following ASC 805, the fair value of the conversion feature was accounted for within equity and measured during interim periods and subsequent settlements (conversions to our stock) would be accounted for in equity.
- (3) The carrying value of the long-term debt, current and non-current portion, approximates fair value.

At December 31, 2011, cash equivalents (instruments with maturities of three months or less at the date of purchase) were \$1.7 million and primarily invested in money market accounts. At December 31, 2011, we no longer held restricted cash. We measure cash equivalents, restricted cash and restricted investments on a recurring basis. The fair value of our cash equivalents, which are current assets, is based on Level 1 criteria in which their carrying amount is a reasonable estimate of their fair value based on daily quoted market prices.

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The following table provides a reconciliation of liabilities measured at fair value using significant observable inputs (Level 3) for the years ended December 2011 and 2010 (in thousands):

	<b>Auction Rate Security Put(1)</b>	<b>Auction Rate Securities(2)</b>	<b>Convertible Notes</b>	<b>Long- term Debt</b>
Balance at December 31, 2009	\$ 2,577	\$ 24,255	\$ (29,258)	\$ —
Conversion of convertible notes	—	—	1,805	—
Principal increase or proceeds	—	—	(1,045)	(13,991)
Accrued interest	—	—	(3)	(134)
Other expense accretion	—	—	(125)	(310)
Fair value adjustment	(2,786)	(1,498)	—	—
Realized gain	229	3,270	—	—
Redemptions	—	(28,112)	—	—
Balance at December 31, 2010	—	—	(28,626)	(14,435)
Conversion of convertible notes	—	—	77	—
Principal increase or proceeds	—	—	—	—
Accrued interest	—	—	(1)	(504)
Other expense accretion/write-off	—	—	(63)	(511)
Repayment	—	—	28,613	15,450
Balance at December 31, 2011	\$ —	\$ —	\$ —	\$ —

(1) The fair value of the ARS put was determined on a level 3 basis based on a discounted cash flow model, which employed a liquidity discount taking into consideration the cost of capital of the redeeming entity, UBS. At December 31, 2010, we no longer held the ARS put as it was redeemed by UBS on July 1, 2010.

(2) The fair value of the ARS was determined on a level 3 basis based a discounted cash flow model, which employed liquidity discounts and included assumptions regarding future cash flows and the likelihood of the redemption or refinancing of such ARS.

#### 4. Long-term Debt

On May 10, 2010, we entered into a loan and security agreement, or the Loan Agreement, with Oxford Finance Corporation, or Oxford, under which we borrowed \$15.0 million at a stated interest rate of 12.87 percent.

Our obligations under the Loan Agreement were secured by a first priority security interest in substantially all of our assets, other than our intellectual property and we also had agreed not to pledge or otherwise encumber our intellectual property. Our obligations under the Loan Agreement were guaranteed on a senior secured basis by Avigen. The Loan Agreement also contained certain restrictive covenants.

Pursuant to the Loan Agreement, we issued to Oxford a warrant to purchase up to 198,020 shares of our common stock. This warrant is exercisable, immediately, in whole or in part, has a per share exercise price of \$6.06 and may be exercised on a cashless basis. The warrant will terminate on the earlier of May 10, 2017 or the closing date of a merger or consolidation transaction in which we are not the surviving entity. In addition, the warrant and debt instrument were immediately separable and issued separately; thus, we accounted for the warrant as a component of stockholders' equity as the agreement required settlement in shares and under no provision of the agreement are we required to settle the warrant in cash.

On April 1, 2011, we entered into an agreement with Oxford under which we made an early repayment of the loan in-full and wherein Oxford waived the prepayment penalty of approximately \$437,000.

We accounted for the interest on the debt using the effective interest method wherein we treated the debt issuance costs paid directly to the lender (financing fees) and the relative fair value of the warrants issued to the

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lender as a discount on the debt (or a contra liability) and we treated the debt issuance costs paid to third parties (primarily legal fees) as an other asset in our consolidated balance sheet. The amortization of the debt discount was recorded as interest expense and the amortization of the debt issuance costs paid to third parties was recorded as other expense in our consolidated statement of operations.

The table below summarizes the long-term debt activity:

	Year Ended December 31, 2011					Carrying Value 12/31/2011
	Carrying Value 12/31/2010	Amortization (Interest Expense)	Amortization (Other Expense)	Payments	Write-Off Debt Related Costs	
<b>Other Assets:</b>						
Debt issuance costs paid to third parties	\$ 124,722	\$ —	\$ (21,426)	\$ —	\$ (103,296)	\$ —
<b>Liability:</b>						
Loan	\$(15,000,000)	\$ —	\$ —	\$ 15,000,000	\$ —	\$ —
Deferred interest charge	\$ (134,491)	\$ (504,207)	—	\$ 450,000	\$ 188,698	\$ —
	<u>\$(15,134,491)</u>	<u>\$ (504,207)</u>	<u>\$ —</u>	<u>\$ 15,450,000</u>	<u>\$ 188,698</u>	<u>\$ —</u>
<b>Contra Liability:</b>						
Relative fair value of warrants issued to lender(1)	\$ 595,342	\$ (102,274)	\$ —	\$ —	\$ (493,068)	\$ —
Debt issuance costs paid to lender	\$ 103,934	\$ (17,855)	—	\$ —	\$ (86,079)	\$ —
	<u>\$ 699,276</u>	<u>\$ (120,129)</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ (579,147)</u>	<u>\$ —</u>

	Year Ended December 31, 2010			
	Gross Amount 5/10/10	Amortization (Interest Expense) 5/10/10- 12/31/10	Amortization (Other Expense) 5/10/10- 12/31/10	Carrying Value 12/31/2010
<b>Other Assets:</b>				
Debt issuance costs paid to third parties	\$ 180,000	\$ —	\$ (55,278)	\$ 124,722
<b>Liability:</b>				
Loan	\$(15,000,000)	\$ —	\$ —	\$(15,000,000)
Deferred interest charge	—	(134,491)	—	(134,491)
	<u>\$(15,000,000)</u>	<u>\$ (134,491)</u>	<u>\$ —</u>	<u>\$(15,134,491)</u>
<b>Contra Liability:</b>				
Relative fair value of warrants issued to lender(1)	\$ 859,209	\$ (263,867)	\$ —	\$ 595,342
Debt issuance costs paid to lender	150,000	(46,066)	—	103,934
	<u>\$ 1,009,209</u>	<u>\$ (309,933)</u>	<u>\$ —</u>	<u>\$ 699,276</u>

(1) The relative fair value of the warrants issued to the lender was calculated using a Black-Scholes valuation model. The risk-free interest rate assumption was 2.86 percent based upon observed risk-free interest rates

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appropriate for the expected term of the warrants. The expected volatility assumption was 76 percent consistent with the volatility of our common stock based on the historical volatility of our stock since listing on the Nasdaq Global Market in December 2006. We have not paid and do not anticipate paying dividends on our common stock since our inception, and therefore, the dividend yield assumption was zero. The expected term assumption was seven years, which is the contractual life of the warrants. The fair value of the warrants using the Black-Scholes valuation model was calculated to be \$4.34 per share.

### 5. Balance Sheet Details

#### *Property and Equipment*

Property and equipment, net, consist of the following:

	<b>December 31,</b>	
	<b>2011</b>	<b>2010</b>
Leasehold improvements	\$ 172,648	\$ 498,581
Furniture and equipment	561,332	794,498
Software	221,380	219,652
	955,360	1,512,731
Less accumulated depreciation and amortization	(925,935)	(1,447,522)
	<u>\$ 29,425</u>	<u>\$ 65,209</u>
Depreciation and amortization expense	<u>\$ 41,869</u>	<u>\$ 108,257</u>

#### *Accrued Expenses*

A substantial portion of our ongoing research and development activities are performed under agreements with external service providers, including clinical research organizations, which conduct many of our research and development activities. A portion of our ongoing general and administrative activities relate to legal, accounting and consulting services. We accrue for costs incurred as the services are being provided by monitoring the status of clinical trials or specific projects or services provided, contractual factors such as milestones or retainer fees and the invoices received from our external service providers. Accrued expenses consist of the following:

	<b>December 31,</b>	
	<b>2011</b>	<b>2010</b>
Research and development costs	\$ 615,792	\$ 766,886
Professional services fees	100,823	226,362
China Joint Venture capital contribution payable	650,000	—
Other	142,710	140,025
	<u>\$ 1,509,325</u>	<u>\$ 1,133,273</u>

### 6. Related Party Transactions

We entered into a consulting agreement dated June 12, 2009 with Danerius, LLC, or Danerius, an affiliate of Alan W. Dunton, M.D., one of our directors, under which Danerius, would provide consulting services to us related to our product development programs at a rate of \$27,500 per month. For the years ended December 31, 2010 and 2009, we paid Danerius approximately \$302,000 and \$193,000, respectively. We terminated the contract with Danerius in November 2010 and Dr. Dunton resigned as a director in January 2011.

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We entered into a stock purchase agreement dated September 26, 2011 with Kissei Pharmaceutical Co., Ltd., or Kissei, under which on October 13, 2011 Kissei purchased for \$7.5 million an aggregate of 800,000 shares of our common stock and 220,000 shares of our Series B Convertible Preferred Stock. On the same day, we entered into a letter agreement with Kissei pursuant to which we agreed to renegotiate in good faith the existing levels of the milestone payment amounts and royalty rates under our license agreement for MN-221 and agreed upon a new price for clinical supplies of API. On October 13, 2011 we entered into a services agreement with Kissei to perform two separate studies relating to MN-221 in exchange for \$2.5 million paid to us in October, 2011. We are responsible for all costs to be incurred in the performance of these studies which are expected to be completed in 2012 and 2013. The amount received from Kissei is recorded on the balance sheet at December 31, 2011 as deferred revenue and will be recognized as revenue as we perform these services. As of December 31, 2011, we have not recorded any revenue in 2011 relating to this agreement.

## 7. Commitments and Contingencies

### *Facility Lease*

In January 2008, we entered into a fourth amendment to lease for our San Diego corporate headquarters in which we reduced the amount of space under lease to 12,699 square feet of office space through August 2011. On July 6, 2011, we entered into a fifth amendment, the Fifth Lease Amendment, which extends the Lease term with respect to 5,089 square feet, from August 31, 2011 to May 31, 2012. The Fifth Lease Amendment provides that we pay the Landlord a monthly base rent of \$12,468.00 for the premises during the nine-month extension period. See Notes to Consolidated Financial Statements-Note 12. Subsequent Events, for information regarding a sixth lease amendment related to our lease in San Diego. In June 2005, we leased 1,726 square feet of office space in Tokyo, Japan under a non-cancelable operating lease that expires in May 2013. Rent expense for the years ended December 31, 2011 and 2010 was \$529,114 and \$612,291, respectively, and rent expense, net of sub-lease income for the period from September 26, 2000 (inception) to December 31, 2011 was \$4.7 million.

Future minimum payments as of December 31, 2011 are as follows:

<b>Years ending December 31:</b>	
2012	\$200,717
2013	\$ 57,657
Total minimum payments	<u>\$258,374</u>

### *License Agreements*

Since our inception, we have entered into eight license agreements with pharmaceutical companies which cover our current product candidates. In general, we seek to obtain exclusive licenses to the patent rights and know-how for all indications under the agreements within our licensed territories and to procure patent protection for our anticipated products, or obtain such protection from the relevant patents owned by our licensors. Under our license agreements we generally are required to make an upfront payment and additional payments upon the achievement of specific development and/or regulatory approval milestones. We are also generally obligated to pay royalties under the agreements until the later of the expiration of the applicable patent or the applicable last date of market exclusivity after the first commercial sale, on a country-by-country basis.

The amounts expended under these agreements and charged to research and development expense from September 26, 2000 (inception) to December 31, 2011 was \$9,850,000. No such amounts have been expended during the three years ended December 31, 2011. As of December 31, 2011, future potential milestone payments totaled approximately \$94.1 million, and there are no minimum royalties required under any of the license agreements. We are unable at this time to estimate with certainty the timing on when these milestone payments will occur as these payments are dependent upon the progress of our product development programs.



### ***Legal Proceedings***

On August 24, 2009, The Pennsylvania Avenue Funds, an Avigen stockholder, filed a complaint in Alameda County Superior Court alleging that Avigen's directors breached their fiduciary duties in connection with the proposed transaction with us. On October 15, 2009, The Pennsylvania Avenue Funds filed an amended complaint adding us as a defendant. In the amended complaint, The Pennsylvania Avenue funds alleged, among other things, that we aided and abetted the alleged breach of fiduciary duties by the Avigen directors. Avigen and The Pennsylvania Avenue Funds have signed a stipulation of settlement agreement and moved the court for preliminary approval. The Court heard oral arguments on the Motion for Preliminary Approval of Settlement and held a case management conference on March 8, 2010, during which it raised a few issues regarding the settlement provisions. On April 6, 2010, the Superior Court for the State of California for the County of Alameda approved the preliminary settlement and set a final settlement hearing for June 24, 2010. Under the terms of the Stipulation of Settlement, Avigen agreed not to oppose a fee motion by counsel to The Pennsylvania Avenue Funds for fees and expenses in the amount not to exceed \$140,000 and a petition by The Pennsylvania Avenue Funds for an incentive award of up to \$2,500. On June 24, 2010, the final order and judgment approving final settlement of \$140,000 for fees and expenses was received. The petition for the \$2,500 incentive award was denied. Avigen's insurance carrier paid the \$140,000 balance due to The Pennsylvania Avenue Funds on July 2, 2010.

On March 3, 2011, we received a letter, in which certain allegations were made, from a former employee who had been terminated in January 2011 pursuant to our planned reduction-in-force. On July 8, 2011, the former employee filed a lawsuit in the Superior Court of the State of California, County of San Diego, asserting certain claims related to the Company's work environment and the employee's termination, and on December 12, 2011 the court granted our motion to compel arbitration. We have engaged legal counsel in this matter. Based on our current assessment, we do not expect its outcome to have a material adverse effect on our business, financial condition and results of operations.

### **8. Stockholders' Equity and Stock Based Compensation**

#### ***Initial Public Offering in Japan***

On February 8, 2005, we completed an IPO of 3,000,000 shares of common stock in Japan and received aggregate proceeds of \$104,486,895, net of underwriting discounts and commissions and offering expenses. In addition, on March 8, 2005, we closed the sale of an additional 157,300 shares of our common stock pursuant to the partial exercise by our underwriters of an over-allotment option which resulted in aggregate proceeds to us of \$5,557,773, net of underwriting discounts and commissions. In connection with our IPO, redeemable convertible and convertible preferred stock outstanding as of February 8, 2005 was automatically converted into 6,678,285 shares of common stock.

#### ***Public Offering in the U.S.***

On February 1, 2007, we completed a public offering of 1,000,000 shares of common stock in the U.S. at a purchase price of \$12.00 per share and received aggregate net proceeds of approximately \$10,639,600 million, net of underwriting discounts and commissions and offering expenses.

#### ***Redeemable Convertible Preferred Stock***

On September 2, 2004, we sold 27,667,856 shares of Series C redeemable convertible preferred stock at a purchase price of \$1.62 per share for total net proceeds of \$43,404,320, net of issuance costs. The Series C preferred stock was sold at a price per share below our IPO price. Accordingly, pursuant to the authoritative guidance for debt under ASC 470, we recorded a deemed dividend on the Series C preferred stock of \$31,264,677, which is equal to the number of shares of Series C preferred stock sold multiplied by the difference

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between the estimated fair value of the underlying common stock and the Series C preferred stock conversion price per share. The deemed dividend increased the net loss applicable to common stockholders in the calculation of basic and diluted net loss per common share and was reported as a charge to accumulated deficit and a credit to additional paid-in capital, with no net impact on total stockholders' equity.

### ***Firm Underwritten Public Offering***

On March 23, 2011, we consummated a firm-commitment underwritten public offering of 2,750,000 units at a price to the public of \$3.00 per unit for gross proceeds of \$8.25 million. Each unit consists of one share of common stock, and a warrant to purchase one share of common stock. The shares of common stock and warrants are immediately separable and were issued separately. On March 24, 2011, the underwriter exercised 50,666 units of its 412,500 unit over allotment. The warrants are exercisable immediately upon issuance, have a five-year term and an exercise price of \$3.56 per share. The warrants are indexed to our stock and do not permit net-cash settlement. On March 29, 2011, we received net proceeds of approximately \$7.7 million, after underwriter discount and underwriter expenses and no warrants exercised. In accordance with the authoritative guidance, the warrants were classified as equity instruments as they contain no provisions which may require cash settlement.

### ***Warrants***

In May 2010, pursuant to the Loan Agreement with Oxford, we issued to Oxford a warrant to purchase up to 198,020 shares of our common stock at an exercise price of \$6.06 per share. The warrant will terminate on the earlier of May 10, 2017 or the closing date of a merger or consolidation transaction in which we are not the surviving entity. In addition, the warrant and debt instrument are immediately separable and were issued separately. We therefore accounted for the warrant as a component of stockholders' equity as the agreement requires settlement in shares and under no provision of the agreement are we required to settle the warrant in cash.

### ***Kissei Stock Purchase***

On October 13, 2011, pursuant to a stock purchase agreement by and between us and Kissei Pharmaceutical Co., Ltd., or Kissei, Kissei purchased (i) an aggregate of 800,000 shares of our common stock, par value \$0.001 per share at a price of \$2.50 per share, which approximated the fair value of our common stock at the time of the transaction, and (ii) 220,000 shares of our Series B Convertible Preferred Stock, or Series B Preferred, par value \$0.01 per share, at a price of \$25.00 per share, which approximated the fair value of our preferred stock on an as converted basis at the time of the transaction. In October 2011 we received gross proceeds of approximately \$7.5 million related to this purchase agreement. The purchase agreement contains customary representations, warranties and covenants and a standstill agreement from Kissei that terminates if Kissei beneficially owns less than three percent of our outstanding voting stock. Each share of the Series B Preferred is convertible into 10 shares of common stock. The Series B Preferred ranks pari passu (on an as-if-converted-to-common-stock basis) with the common stock in liquidation and dividend rights. The holders of the Series B Preferred do not have voting rights, and the consent of a majority of the outstanding Series B Preferred is required for certain actions of the Company.

### ***Stock Options***

We grant options to our employees, directors and consultants under the 2004 Plan, the successor to the 2000 Plan.

#### ***2000 General Stock Incentive Plan***

In September 2000, we adopted the 2000 Plan under which incentive stock options could be granted to our employees and nonstatutory stock options and other stock-based awards could be granted to employees, directors

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and consultants. Stock options have been granted with an exercise price of \$10.00 per share and vest 25% after the first year of service from the grant date, with the remaining shares vesting in equal monthly installments over the subsequent 36 months of service. An employee may exercise stock options prior to vesting in which case we have the right to repurchase the unvested shares at the original exercise price if the employee is terminated before vesting in all shares occurs.

Following the vesting period, options are exercisable until the earlier of 90 days after the employee's termination with us or the ten-year anniversary of the initial grant, subject to adjustment under certain conditions. We have the right to purchase all of those shares that the employees have or will acquire under these stock options. The purchase price for any vested shares repurchased will be the greater of the fair market value of such shares on the date of purchase or the aggregate exercise price for such shares.

At December 31, 2011, stock options to purchase a total of 14,000 shares of common stock were outstanding under the 2000 Plan at a weighted average exercise price of \$10.00 per share. No additional stock options have been or will be issued under the 2000 Plan subsequent to our IPO. However, stock options previously granted under the 2000 Plan will remain outstanding until the earlier of expiration or exercise.

### *2004 Stock Incentive Plan*

In connection with our IPO, we adopted the 2004 Plan, which serves as the successor program to the 2000 Plan. The 2004 Plan became effective upon the completion of our IPO in February 2005 and was amended and restated in February 2007.

The 2004 Plan is administered by the compensation committee of our board of directors and provides for the grant of (i) options to purchase shares of common stock; (ii) restricted stock; (iii) stock appreciation rights; and (iv) stock units. Incentive stock options may only be granted to employees. Nonstatutory stock options and other stock-based awards may be granted to employees, non-employee directors and consultants.

The number of shares reserved for issuance under the 2004 Plan will be increased on the first day of each of our fiscal years from 2006 through 2014, with the first such increase occurring on January 1, 2006, by the lesser of: (i) 100,000 shares; (ii) 3% of our outstanding common stock on the last day of the immediately preceding fiscal year; or (iii) the number of shares determined by our board of directors. In addition, in February 2007 and June 2008, the total number of shares available for grant under the 2004 Plan was increased by 300,000 and 1,000,000, respectively.

Options granted to optionees other than non-employee directors will generally vest monthly over a four-year period, beginning on the vesting commencement date. The exercise price of an incentive stock option shall not be less than 100% of the fair market value at the time of grant and the exercise price of a nonstatutory stock option shall not be less than 85% of the fair market value at the time of grant.

The 2004 Plan terminates ten years after its initial adoption by the board of directors, unless terminated earlier by the board of directors. The board of directors may amend or terminate the plan at any time, subject to stockholder approval where required by applicable law.

A summary of our stock option activity and related information as of December 31, 2011 is as follows:

	<b>Number of Option Shares</b>	<b>Weighted Average Exercise Price</b>
Outstanding at January 1, 2011	2,280,931	\$ 8.38
Granted	1,431,000	\$ 2.47
Exercised	(32,836)	\$ 2.32
Cancelled	(586,424)	\$ 9.36
Outstanding at December 31, 2011	<u>3,092,671</u>	<u>\$ 5.52</u>
Exercisable at December 31, 2011	<u>1,561,214</u>	<u>\$ 7.92</u>

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The weighted average contractual life of options outstanding at December 31, 2011 was 7.7 years and the weighted average contractual life of exercisable options at December 31, 2011 was 6.1 years. The intrinsic value of stock options exercised, during the year ended December 31, 2011 was \$5,000 based on the Nasdaq Global Market on such date.

### **Common Stock Reserved for Future Issuance**

The following table summarizes common stock reserved for future issuance at December 31, 2011:

Common Stock under the employee stock purchase program	269,992
Common stock reserved for issuance upon exercise of warrant	198,020
Common stock options outstanding (under the 2000 Plan and 2004 Plan)	3,092,671
Common stock options authorized for future grant (under the 2004 Plan)	851,329
	<u>4,412,012</u>

### **Convertible Notes**

At the closing of the Merger, we and American Stock Transfer & Trust Company, LLC, as trustee, entered into the indenture. Under the terms of a separate trust agreement (the "Trust Agreement"), \$29.4 million, which represented the initial principal amount of the Convertible Notes, was deposited with a trust agent for the benefit of the holders and us.

Prior to the maturity of the convertible notes on June 18, 2011, holders of the Convertible Notes could submit irrevocable conversion notices instructing the trustee to convert such Convertible Notes into shares of our common stock at an initial conversion price of \$6.80 per share. Following each conversion date we would issue the number of whole shares of common stock issuable upon conversion and the trustee would in turn release to us the respective amount of restricted cash to cover the stock issuance. Prior to the maturity of the Convertible Notes, approximately \$1.9 million of the convertible notes were converted to 276,655 shares of our common stock. All remaining Convertible Notes matured on June 18, 2011 and the principal was repaid in full.

### **9. Income Taxes**

The significant components of our deferred income taxes at December 31, 2011 and 2010 are as follows:

	<u>December 31,</u>	
	<u>2011</u>	<u>2010</u>
<b>Deferred Tax Assets:</b>		
Net operating loss carry-forwards	79,215,000	72,100,000
Capitalized licenses	2,067,000	2,313,000
Research tax credits	7,124,000	6,723,000
Stock Options	395,000	846,000
Other, net	988,000	1,224,000
<b>Total Deferred Tax Assets</b>	<u>89,789,000</u>	<u>83,206,000</u>
<b>Deferred Tax Liabilities</b>		
IPR&D	(1,956,000)	(1,956,000)
<b>Total Deferred Tax Liabilities</b>	<u>(1,956,000)</u>	<u>(1,956,000)</u>
<b>Net deferred tax assets</b>	87,833,000	81,250,000
Valuation Allowance	(89,789,000)	(83,206,000)
<b>Net Deferred Tax Liability</b>	<u>(1,956,000)</u>	<u>(1,956,000)</u>

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We have established a valuation allowance against our deferred tax assets due to the uncertainty that such assets will be realized. We periodically evaluate the recoverability of the deferred tax assets. At such time as it is determined that it is more likely than not that deferred tax assets will be realizable, the valuation allowance will be reduced.

At December 31, 2011, we had federal and California net operating loss carry-forwards of approximately \$194.5 million and \$193.9 million, respectively. Included in these amounts are federal and California tax expense of approximately \$22,000 attributable to stock option deductions which will be credited to equity when realized. The federal net operating loss carry-forwards begin to expire in 2020, and the California net operating loss carry-forwards begin to expire in 2013. At December 31, 2011, we also had federal and California research tax credit carry-forwards of approximately \$6.2 million and \$1.4 million, respectively. The federal research tax credit carry-forwards begin to expire in 2024, and the California research tax credit carry-forward does not expire and can be carried forward indefinitely until utilized.

Additionally, utilization of the net operating losses, or NOL, and tax credit carry-forwards will be subject to a substantial annual limitation under Section 382 and 383 of the Internal Revenue Code of 1986, and similar state provisions due to ownership change limitations that have occurred. These ownership changes will limit the amount of NOL and tax credit carry-forwards that can be utilized to offset future taxable income and tax, respectively. In general, an ownership change, as defined by Section 382 and 383, results from transactions increasing ownership of certain stockholders or public groups in the stock of the corporation by more than 50 percentage points over a three-year period. An analysis was performed which indicated that multiple ownership changes have occurred in previous years which created annual limitations on our ability to utilize NOL and tax credit carryovers. Such limitations will result in approximately \$7.3 million and \$1 million of tax benefits related to federal and state NOL and tax credit carry-forwards, respectively, that will expire unused. Accordingly, the related NOL and R&D credit carry-forwards have been removed from deferred tax assets accompanied by a corresponding reduction of the valuation allowance. Due to the existence of the valuation allowance, limitations created by future ownership changes, if any, related to our operations in the U.S. will not impact our effective tax rate.

A reconciliation of the federal statutory income tax rate to our effective income tax rate is as follows:

	Year Ended December 31,		
	2011	2010	2009
Federal statutory income tax rate	35.0%	35.0%	35.0%
State income taxes, net of federal benefit	5.5	6.4	8.8
Tax credits	1.6	2.8	2.7
Change in valuation allowance	(37.1)	(44.0)	(60.9)
Permanent differences	(5.0)	(0.2)	14.5
Other	—	—	(0.1)
Provision for income taxes	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>

We file income tax returns in the United States, California and foreign jurisdictions. Due to our losses incurred, we are essentially subject to income tax examination by tax authorities from our inception to date. Our practice is to recognize interest expense and penalties related to income tax matters as tax expense. At December 31, 2011, we do not have any significant accruals for interest related to unrecognized tax benefits or tax penalties. During each of the three years in the period ended December 31, 2011, income tax expense relates to intercompany service income earned by our Japanese subsidiary, MediciNova Japan, Inc.

### 10. Employee Savings Plan

We have an employee savings plan available to substantially all employees. Under the plan, an employee may elect salary reductions which are contributed to the plan. The plan provides for discretionary contributions

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by us, which totaled \$97,929, \$139,621 and \$149,994, and \$1,099,676 for the years ended December 31, 2011, 2010, 2009 and the period from September 26, 2000 (inception) to December 31, 2011, respectively.

### 11. Quarterly Financial Data (Unaudited)

The following financial information reflects all normal recurring adjustments, which are, in the opinion of management, necessary for a fair statement of the results of the interim periods. Summarized quarterly data for fiscal 2011 and 2010 are as follows (in thousands, except per share data):

	Year Ended December 31, 2011			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
<b>Selected quarterly financial data:</b>				
Total operating expenses	4,976	3,722	3,907	3,503
Net loss	(5,656)	(4,681)	(3,894)	(3,503)
Net loss applicable to common stockholders	(5,656)	(4,681)	(3,894)	(3,503)
Basic and diluted net loss per common share(1)	(0.45)	(0.31)	(0.25)	(0.22)

	Year Ended December 31, 2010			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
<b>Selected quarterly financial data:</b>				
Total operating expenses	5,236	4,152	4,148	4,347
Net loss	(5,161)	(4,334)	(5,701)	(4,991)
Net loss applicable to common stockholders	(5,161)	(4,334)	(5,701)	(4,991)
Basic and diluted net loss per common share(1)	(0.42)	(0.35)	(0.46)	(0.40)

(1) Loss per share is computed independently for each of the quarters presented. Therefore, the sum of the quarterly net loss per share will not necessarily equal the total for the year.

### 12. Subsequent Events

#### *Lease Amendment*

On March 19, 2012, we entered into a sixth amendment of our lease agreement, the Sixth Lease Amendment, with 4350 La Jolla Village LLC, the Landlord. The Sixth Lease Amendment extends the lease term for nine additional months with respect to 5,089 square feet, from May 31, 2012 to February 28, 2013. The Sixth Lease Amendment provides that we will pay the Landlord a monthly base rent of \$12,672 for the premises during the nine month period.

#### *Joint Venture Company Payment*

On March 16, 2012, we paid \$650,000 for our 30% interest in the joint venture company.

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

None

**Item 9A. Controls and Procedures**

**Evaluation of Disclosure Controls and Procedures**

An evaluation was performed by our Chief Executive Officer and Chief Financial Officer of the effectiveness of the design and operation of our disclosure controls and procedures as defined in the Rules 13(a)-15(e) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). Disclosure controls and procedures are those controls and procedures designed to provide reasonable assurance that the information required to be disclosed in our Exchange Act filings is (1) recorded, processed, summarized and reported within the time periods specified in Securities and Exchange Commission’s rules and forms, and (2) accumulated and communicated to management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of December 31, 2011, our disclosure controls and procedures were effective.

Our management, including our Chief Executive Officer and Chief Financial Officer, does not expect that our procedures or our internal controls will prevent or detect all errors and all fraud. An internal control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Because of the inherent limitations in all control systems, no evaluation of our controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected.

**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 Rules 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 as of December 31, 2011. In making this assessment, our management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”) in Internal Control—Integrated Framework. Our management has concluded that, as of December 31, 2011, our internal control over financial reporting was effective based on these criteria.

**REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

The Board of Directors and Stockholders of  
MediciNova, Inc.

We have audited MediciNova, Inc.'s internal control over financial reporting as of December 31, 2011, based on criteria established in Internal Control — Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (the COSO criteria). MediciNova, Inc.'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 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 its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, MediciNova, Inc. maintained, in all material respects, effective internal control over financial reporting as of December 31, 2011, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheet of MediciNova, Inc. as of December 31, 2011, and the related consolidated statements of operations, stockholders' equity and comprehensive loss, and cash flows for the year then ended, and for the period from September 26, 2000 (inception) to December 31, 2011, and our report dated March 28, 2012 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

San Diego, California  
March 28, 2012



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**Item 9B. Other Information**

Not applicable.

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

The information required by this item will be contained in our definitive proxy statement to be filed with the SEC in connection with the Annual Meeting of Stockholders within 120 days after the conclusion of our fiscal year ended December 31, 2011, or the Proxy Statement, and is incorporated in this Annual Report on Form 10-K by reference.

We have adopted a Code of Ethics for Senior Officers, or Code of Ethics, that applies to our Chief Executive Officer, President, Chief Financial Officer and key management employees (including other senior financial officers) who have been identified by our Board of Directors. We have also adopted a Code of Business Conduct that applies to all of our officers, directors, employees, consultants and representatives. Each of the Code of Ethics and Code of Business Conduct are available on our website at [www.medicinova.com](http://www.medicinova.com) under the Corporate Governance section of our Investor Relations page. We will promptly post on our website (i) any waiver, if and when granted, to any provision of the Code of Ethics or Code of Business Conduct (for executive officers or directors) and (ii) any amendment to the Code of Ethics or Code of Business Conduct.

**Item 11. Executive Compensation**

The information required by this item will be contained in the Proxy Statement and is incorporated in this Annual Report on Form 10-K by reference.

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

Certain of the information required by this item will be contained in the Proxy Statement and is incorporated in this Annual Report on Form 10-K by reference.

The following table provides information as of December 31, 2011 with respect to the shares of our common stock that may be issued under our existing equity compensation plans.

<b>Plan Category</b>	<b>Number of Securities to be Issued Upon Exercise of Outstanding Options and Rights</b>	<b>Weighted Average Exercise Price of Outstanding Options and Rights</b>	<b>Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans</b>
Equity Compensation Plans Approved by Stockholders(1)	3,078,671	\$ 5.50	851,329
Equity Compensation Plans Approved by Stockholders(2)	15,002	\$ 1.79(2)	269,992
Equity Compensation Plans Not Approved by Stockholders(3)	14,000	\$ 10.00	—
<b>Total</b>	<b>3,107,673</b>	<b>\$ 5.52</b>	<b>1,121,321</b>

- (1) Consists of the MediciNova, Inc. Amended and Restated 2004 Stock Incentive Plan, or 2004 Plan. Awards under the 2004 Plan shall not exceed 3,330,000 shares, plus an annual increase on the first day of each fiscal year, with the first increase occurring on January 1, 2006, in an amount equal to the lesser of (i) 100,000 shares, (ii) 3% of the outstanding shares on the last day of the immediately preceding year, or (iii) an amount determined by the Board. Stock options under the 2004 Plan have an exercise price equal to the fair market value of the underlying common stock at the date of grant, generally vest over a period of four years and have a ten-year life.

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- (2) Consists of the MediciNova, Inc. 2007 Employee Stock Purchase Plan, or ESPP. Under the ESPP, 300,000 shares of our common stock have been reserved for issuance. In addition, the shares reserved will automatically increase by a number equal to the lesser of: (i) 15,000 shares, (ii) 1% of the outstanding shares of our common stock on the last day of the immediately preceding fiscal year or (iii) such lesser amount as determined by the Board. The ESPP permits full-time employees to purchase our common stock through payroll deductions (which cannot exceed 15% of each employee's compensation) at the lower of 85% of fair market value at the beginning of the offering period or the end of each six-month offering period.
- (3) Consists solely of the MediciNova, Inc. 2000 General Stock Incentive Plan, or 2000 Plan, which was terminated upon the completion of our initial public offering on February 8, 2005. The material terms of the 2000 Plan are described in Note 8 to our consolidated financial statements contained in this Annual Report on Form 10-K.

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

The information required by this item will be contained in the Proxy Statement and is incorporated in this Annual Report on Form 10-K by reference.

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

The information required by this item will be contained in the Proxy Statement and is incorporated in this Annual Report on Form 10-K by reference.

**PART IV****Item 15. Exhibits, Financial Statement Schedules**

(a) *Documents filed as part of this report.*

1. *Financial Statements.* The following financial statements of MediciNova, Inc. and Reports of KPMG LLP and Ernst & Young LLP, each an independent registered public accounting firm, are included in this Annual Report on Form 10-K:

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<a href="#">Consolidated Statements of Cash Flows</a>	88
<a href="#">Notes to Consolidated Financial Statements</a>	89

2. *Financial Statement Schedules.* None.

3. *Exhibits.*

<b>Exhibit Number</b>	<b>Description</b>
2.1(22)	Agreement and Plan of Merger dated as of August 20, 2009 by and among Registrant, Absolute Merger, Inc. and Avigen, Inc. (attached as Annex A to the joint proxy statement/prospectus).
3.1(19)	Restated Certificate of Incorporation of the Registrant, as amended.
3.2(1)	Amended and Restated Bylaws of the Registrant.
3.3(34)	Certificate of Designation, Preferences and Rights of the Series B Convertible Preferred Stock.
4.1(11)	Specimen of Common Stock Certificate.
4.2(1)	Amended and Restated Registration Rights Agreement by and among the Registrant, its founders and the investors named therein, dated September 2, 2004.
4.4(22)	Form of Indenture by and between Registrant and American Stock Transfer and Trust Company, LLC (attached as Annex C to the joint proxy statement/prospectus).
4.5(22)	Form of Convertible Note (included in Exhibit 4.4).
4.6(29)	Warrant dated May 10, 2010 issued to Oxford Finance Corporation.
4.7(36)	Form of Warrant to Purchase Common Stock.
10.1(1)*	2000 General Stock Incentive Plan of the Registrant.
10.2*	Amended and Restated 2004 Stock Incentive Plan of the Registrant.
10.3(5)*	Form of Indemnification Agreement between the Registrant and its officers and directors.
10.4(2)†	License Agreement between the Registrant and Kyorin Pharmaceutical Co., Ltd., dated March 14, 2002.
10.5(2)†	License Agreement between the Registrant and Angiogene Pharmaceuticals, Ltd., dated June 19, 2002.
10.6(2)†	Exclusive License Agreement between the Registrant and Kissei Pharmaceutical Co., Ltd., dated February 25, 2004.

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<b>Exhibit Number</b>	<b>Description</b>
10.7(2)†	License Agreement between the Registrant and Mitsubishi Tanabe Pharma Corporation, dated April 27, 2004.
10.8(3)†	License Agreement between the Registrant and Kyorin Pharmaceutical Co., Ltd., dated October 22, 2004.
10.9(2)	Office Lease Agreement between the Registrant and CA-LA Jolla II Limited Partnership, dated January 28, 2004 and the First Amendment thereto, dated August 10, 2004.
10.10(3)†	License Agreement between the Registrant and Mitsubishi Tanabe Pharma Corporation, dated December 8, 2004.
10.11(4)	Second Amendment to Office Lease Agreement between the Registrant and CA-La Jolla II Limited Partnership, dated March 21, 2005.
10.13(11)*	Executive Employment Agreement between the Registrant and Masatsune Okajima, dated September 1, 2006.
10.14(7)†	License Agreement, dated October 31, 2006 by and between the Registrant and Meiji Seika Kaisha, Ltd.
10.15(7)†	License Agreement, dated October 31, 2006 by and between the Registrant and Meiji Seika Kaisha, Ltd.
10.16(8)*	Executive Employment Agreement between the Registrant and Yuichi Iwaki, M.D., Ph.D., dated April 1, 2007.
10.17(13)*	2007 Employee Stock Purchase Plan of the Registrant.
10.18(9)*	Form of Severance Protection Agreement between the Registrant and certain of its executive officers, dated September 12, 2007.
10.19(10)	Third Amendment to Office Lease Agreement between the Registrant and 4350 La Jolla Village LLC, dated January 31, 2008.
10.23(16)	Fourth Amendment to Lease Agreement between the Registrant and 4350 La Jolla Village LLC, dated October 3, 2008.
10.24(17)	Credit Line Account Application and Agreement for Organizations and Businesses, executed by the Registrant on January 8, 2009, by and between the Registrant and UBS Bank USA.
10.25(17)	Addendum to Credit Line Account Application and Agreement, executed by the Registrant on January 8, 2009, by and between the Registrant, UBS Bank USA and UBS Financial Services Inc.
10.26(17)	Addendum to Credit Line Agreement, executed by the Registrant on January 8, 2009, by and between the Registrant and UBS Bank USA.
10.27(17)	Important Notice on Interest Rates and Payments, executed by the Registrant on January 8, 2009, by and between the Registrant and UBS Bank USA.
10.28(18)†	Development and Supply Agreement between the Registrant and Hospira Worldwide, Inc., dated as of March 26, 2009.
10.31(22)	Form of Contingent Payment Rights Agreement by and among Registrant, Avigen, Inc. and American Stock Transfer and Trust Company, LLC (attached as Annex B to the joint proxy statement/prospectus).
10.32(22)	Form of Trust Agreement by and between Registrant and American Stock Transfer and Trust Company, LLC (attached as Annex D to the joint proxy statement/prospectus).

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<b>Exhibit Number</b>	<b>Description</b>
10.33(22)	Form of Escrow Agreement by and between Registrant and American Stock Transfer and Trust Company, LLC (attached as Annex E to the joint proxy statement/prospectus).
10.34(23)†	Assignment Agreement, dated December 19, 2005, by and between Genzyme Corporation and Avigen, Inc.
10.35(25)†	Asset Purchase Agreement, dated December 17, 2008, by and between Baxter Healthcare Corporation, Baxter International Inc., and Baxter Healthcare S.A. and Avigen, Inc.
10.36(28)*	Executive Employment Agreement between Registrant and Kirk Johnson, dated February 1, 2010.
10.37(29)	Loan and Security Agreement dated May 10, 2010 by and among Registrant, Avigen, Inc. and Oxford Finance Corporation.
10.38(24)*	Executive Employment Agreement between Registrant and Michael Coffee, dated June 14, 2010.
10.39(26)*	Form of Amendment to Employment Agreement between Registrant and certain of its executive officers, dated December 31, 2011.
10.40(26)*	Form of Severance Protection Agreement between Registrant and certain of its executive officers, dated December 31, 2011.
10.41(30)*	Separation Agreement and Release between Registrant and Shintaro Asako, dated February 1, 2011.
10.42(31)	Pay-off Letter between Registrant and Oxford Finance Corporation, dated March 31, 2011.
10.43(32)	Joint Venture Agreement among Registrant, Zhejiang Medicine Co., Ltd. and Beijing Make-Friend Medicine Technology Co., Ltd., dated June 29, 2011.
10.44(33)	Fifth Amendment to Office Lease Agreement between Registrant and 4350 La Jolla Village LLC, dated July 6, 2011.
10.45(34)	Stock Purchase Agreement between Registrant and Kissei Pharmaceutical Co. Ltd., dated September 26, 2011.
10.46(35)	Consulting Agreement for Chief Financial Officer between Registrant and FLG Partners, dated September 1, 2011
14.1(11)	Code of Ethics of the Registrant.
21.1(27)	List of subsidiaries of the Registrant.
23.1	Consent of Independent Registered Public Accounting Firm.
23.2	Consent of Independent Registered Public Accounting Firm.
24.1	Powers of Attorney (included in Signature page).
31.1	Certification of the Chief Executive Officer pursuant to Rules 13a-14 and 15d-14 promulgated under the Securities Act of 1933.
31.2	Certification of the Chief Financial Officer pursuant to Rules 13a-14 and 15d-14 promulgated under the Securities Act of 1933.

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<b>Exhibit Number</b>	<b>Description</b>
32.1	Certification of the Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	Certification of the Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101**	The following financial statements from MediciNova, Inc. on Form 10-K for year ended December 31, 2011 formatted in Extensible Business Reporting Language (XBRL): (i) Consolidated Balance Sheets; (ii) Consolidated Statements of Operations; (iii) Consolidated Statements of Stockholders' Equity and Comprehensive Loss; (iv) Consolidated Statements of Cash Flows; and (v) the notes to the consolidated financial statements (tagged as block text).

- (1) Filed with the Registrant's Registration Statement on Form S-1 filed October 1, 2004 and incorporated herein by reference.
- (2) Filed with the Registrant's Amendment to Registration Statement on Form S-1/A filed November 24, 2004 and incorporated herein by reference.
- (3) Filed with the Registrant's Amendment to Registration Statement on Form S-1/A filed January 6, 2005 and incorporated herein by reference.
- (4) Filed with the Registrant's Quarterly Report on Form 10-Q filed May 12, 2005 and incorporated herein by reference.
- (5) Filed with the Registrant's Registration Statement on Form S-1 filed on September 1, 2005 and incorporated herein by reference.
- (7) Filed with the Registrant's Current Report on Form 8-K filed November 2, 2006 and incorporated herein by reference.
- (8) Filed with the Registrant's Current Report on Form 8-K filed April 4, 2007 and incorporated herein by reference.
- (9) Filed with the Registrant's Current Report on Form 8-K filed September 14, 2007 and incorporated herein by reference.
- (10) Filed with the Registrant's Current Report on Form 8-K filed February 4, 2008 and incorporated herein by reference.
- (11) Filed with the Registrant's Annual Report on Form 10-K filed February 15, 2007 and incorporated herein by reference.
- (13) Filed with the Registrant's Definitive Proxy Statement on Schedule 14A filed March 13, 2007 and incorporated herein by reference.
- (16) Filed with the Registrant's Current Report on Form 8-K filed October 8, 2008 and incorporated herein by reference.
- (17) Filed with the Registrant's Current Report on Form 8-K filed January 21, 2009 and incorporated herein by reference.
- (18) Filed with the Registrant's Current Report on Form 8-K filed March 30, 2009 and incorporated herein by reference.
- (19) Filed with the Registrant's Current Report on Form 8-K filed May 29, 2009 and incorporated herein by reference.
- (22) Filed with the Registrant's Registration Statement on Form S-4 initially filed September 17, 2009 and incorporated herein by reference.
- (23) Filed with Avigen, Inc.'s Annual Report on Form 10-K filed March 16, 2006 and incorporated herein by reference.
- (24) Filed with the Registrant's Current Report on Form 8-K filed June 16, 2010 and incorporated herein by reference.
- (25) Filed with Avigen, Inc.'s Annual Report on Form 10-K filed with the SEC on March 16, 2009.
- (26) Filed with the Registrant's Current Report on Form 8-K filed January 4, 2011 and incorporated herein by reference.

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- (27) Filed with the Registrant's Annual Report on Form 10-K filed March 24, 2010 and incorporated herein by reference.
- (28) Filed with the Registrant's Current Report on Form 8-K filed February 1, 2010 and incorporated herein by reference.
- (29) Filed with the Registrant's Current Report on Form 8-K filed May 14, 2010 and incorporated herein by reference.
- (30) Filed with the Registrant's Current Report on Form 8-K filed February 3, 2011 and incorporated herein by reference.
- (31) Filed with the Registrant's Current Report on Form 10-Q filed May 16, 2011 and incorporated herein by reference.
- (32) Filed with the Registrant's Current Report on Form 10-Q filed August 15, 2011 and incorporated herein by reference.
- (33) Filed with the Registrant's Current Report on Form 8-K filed July 12, 2011 and incorporated herein by reference.
- (34) Filed with the Registrant's Current Report on Form 8-K filed September 27, 2011 and incorporated herein by reference.
- (35) Filed with the Registrant's Current Report on Form 8-K filed September 8, 2011 and incorporated herein by reference.
- (36) Filed with the Registrant's Current Report on Form 8-K filed March 24, 2011 and incorporated herein by reference.

† Portions of this Exhibit have been omitted pursuant to a grant of confidential treatment by the SEC.

\* Indicates management contract or compensatory plan.

\*\* Pursuant to Rule 406T of Regulation S-T, this interactive data file is deemed not filed or part of a registration statement or prospectus for purpose of Section 11 or 12 of the Securities Act of 1933, is deemed not filed for purpose of Section 18 of the Exchange Act of 1934, and otherwise is not subject to liability under these sections.





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**MEDICINOVA, INC.**

**AMENDED AND RESTATED**

**2004 STOCK INCENTIVE PLAN**

(Adopted by the Board on November 11, 2004 and by the Stockholders on December 21, 2004)

(Amended and Restated by the Board on January 9, 2006)

(Amended by the Board on February 20, 2007 and by the Stockholders on March 30, 2007)

(Amended by the Board on March 18, 2008 and by the Stockholders on June 6, 2008)

(Amended and Restated by the Board on November 29, 2011)

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MEDICINOVA, INC.  
2004 STOCK INCENTIVE PLAN

MEDICINOVA, INC.  
2004 STOCK INCENTIVE PLAN

MEDICINOVA, INC.

AMENDED AND RESTATED

2004 STOCK INCENTIVE PLAN

**SECTION 1. ESTABLISHMENT AND PURPOSE.**

The Plan was adopted by the Board of Directors on November 11, 2004, effective as of the date of the initial public offering of Stock to the public pursuant to a registration statement filed by the Company with the Securities and Exchange Commission and an application for listing filed with the Hercules market of the Osaka Securities Exchange (the "Effective Date"). The Plan was most recently Amended and Restated on November 29, 2011. The purpose of the Plan is to promote the long-term success of the Company and the creation of stockholder value by (a) encouraging Employees, Outside Directors and Consultants to focus on critical long-range objectives, (b) encouraging the attraction and retention of Employees, Outside Directors and Consultants with exceptional qualifications and (c) linking Employees, Outside Directors and Consultants directly to stockholder interests through increased stock ownership. The Plan seeks to achieve this purpose by providing for Awards in the form of restricted shares, stock units, options (which may constitute incentive stock options or nonstatutory stock options) or stock appreciation rights.

**SECTION 2. DEFINITIONS.**

(a) "*Affiliate*" shall mean any entity other than a Subsidiary, if the Company and/or one of more Subsidiaries own not less than 50% of such entity.

(b) "*Award*" shall mean any award of an Option, a SAR, a Restricted Share or a Stock Unit under the Plan.

(c) "*Board of Directors*" shall mean the Board of Directors of the Company, as constituted from time to time.

(d) "*Change in Control*" shall mean the occurrence of any of the following events:

(i) A change in the composition of the Board of Directors occurs, as a result of which fewer than one-half of the incumbent directors are directors who either:

(A) Had been directors of the Company on the "look-back date" (as defined below) (the "original directors"); or

(B) Were elected, or nominated for election, to the Board of Directors with the affirmative votes of at least a majority of the aggregate of the original directors who were still in office at the time of the election or nomination and the directors whose election or nomination was previously so approved (the "continuing directors"); or

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(ii) Any “person” (as defined below) who by the acquisition or aggregation of securities, is or becomes the “beneficial owner” (as defined in Rule 13d-3 under the Exchange Act), directly or indirectly, of securities of the Company representing 50% or more of the combined voting power of the Company’s then outstanding securities ordinarily (and apart from rights accruing under special circumstances) having the right to vote at elections of directors (the “Base Capital Stock”); except that any change in the relative beneficial ownership of the Company’s securities by any person resulting solely from a reduction in the aggregate number of outstanding shares of Base Capital Stock, and any decrease thereafter in such person’s ownership of securities, shall be disregarded until such person increases in any manner, directly or indirectly, such person’s beneficial ownership of any securities of the Company; or

(iii) The consummation of a merger or consolidation of the Company with or into another entity or any other corporate reorganization, if persons who were not stockholders of the Company immediately prior to such merger, consolidation or other reorganization own immediately after such merger, consolidation or other reorganization 50% or more of the voting power of the outstanding securities of each of (A) the continuing or surviving entity and (B) any direct or indirect parent corporation of such continuing or surviving entity; or

(iv) The sale, transfer or other disposition of all or substantially all of the Company’s assets.

For purposes of subsection (d)(i) above, the term “look-back” date shall mean the later of (1) the Effective Date, or (2) the date 24 months prior to the date of the event that may constitute a Change in Control.

For purposes of subsection (d)(ii) above, the term “person” shall have the same meaning as when used in Sections 13(d) and 14(d) of the Exchange Act but shall exclude (1) a trustee or other fiduciary holding securities under an employee benefit plan maintained by the Company or a Parent or Subsidiary and (2) a corporation owned directly or indirectly by the stockholders of the Company in substantially the same proportions as their ownership of the Stock.

Any other provision of this Section 2(d) notwithstanding, a transaction shall not constitute a Change in Control if its sole purpose is to change the state of the Company’s incorporation or to create a holding company that will be owned in substantially the same proportions by the persons who held the Company’s securities immediately before such transaction, and a Change in Control shall not be deemed to occur if the Company files a registration statement with the Securities and Exchange Commission for the initial offering of Stock to the public.

(e) “Code” shall mean the Internal Revenue Code of 1986, as amended.

(f) “Committee” shall mean the Compensation Committee as designated by the Board of Directors, which is authorized to administer the Plan, as described in Section 3 hereof.

(g) “Company” shall mean MediciNova, Inc., a Delaware corporation.

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(h) “*Consultant*” shall mean a consultant or advisor who provides bona fide services to the Company, a Parent, a Subsidiary or an Affiliate as an independent contractor or a member of the board of directors of a Parent or a Subsidiary who is not an Employee.

(i) “*Employee*” shall mean any individual who is a common-law employee of the Company, a Parent or a Subsidiary.

(j) “*Exchange Act*” shall mean the Securities Exchange Act of 1934, as amended.

(k) “*Exercise Price*” shall mean, in the case of an Option, the amount for which one Share may be purchased upon exercise of such Option, as specified in the applicable Stock Option Agreement. “*Exercise Price*,” in the case of a SAR, shall mean an amount, as specified in the applicable SAR Agreement, which is subtracted from the Fair Market Value of one Share in determining the amount payable upon exercise of such SAR.

(l) “*Fair Market Value*” with respect to a Share, shall mean the market price of one Share, determined by the Committee as follows:

(i) If the Stock was traded over-the-counter on the date in question but was not traded on The Nasdaq Stock Market, then the Fair Market Value shall be equal to the last transaction price quoted for such date by the OTC Bulletin Board or, if not so quoted, shall be equal to the mean between the last reported representative bid and asked prices quoted for such date by the principal automated inter-dealer quotation system on which the Stock is quoted or, if the Stock is not quoted on any such system, by the Pink Sheets LLC;

(ii) If the Stock was traded on The Nasdaq Stock Market, then the Fair Market Value shall be equal to the last reported sale price quoted for such date by The Nasdaq Stock Market;

(iii) If the Stock was traded on a United States stock exchange on the date in question, then the Fair Market Value shall be equal to the closing price reported for such date by the applicable composite-transactions report; and

(iv) If none of the foregoing provisions is applicable, then the Fair Market Value shall be determined by the Committee in good faith on such basis as it deems appropriate.

In all cases, the determination of Fair Market Value by the Committee shall be conclusive and binding on all persons.

(m) “*ISO*” shall mean an employee incentive stock option described in Section 422 of the Code.

(n) “*Nonstatutory Option*” or “*NSO*” shall mean an employee stock option that is not an ISO.

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- (o) “*Offeree*” shall mean an individual to whom the Committee has offered the right to acquire Shares under the Plan (other than upon exercise of an Option).
- (p) “*Option*” shall mean an ISO or Nonstatutory Option granted under the Plan and entitling the holder to purchase Shares.
- (q) “*Optionee*” shall mean an individual or estate who holds an Option or SAR.
- (r) “*Outside Director*” shall mean a member of the Board of Directors who is not a common-law employee of, or paid consultant to, the Company or a Subsidiary.
- (s) “*Parent*” shall mean any corporation (other than the Company) in an unbroken chain of corporations ending with the Company, if each of the corporations other than the Company owns stock possessing 50% or more of the total combined voting power of all classes of stock in one of the other corporations in such chain. A corporation that attains the status of a Parent on a date after the adoption of the Plan shall be a Parent commencing as of such date.
- (t) “*Participant*” shall mean a person who holds an Award.
- (u) “*Plan*” shall mean this 2004 Stock Incentive Plan of MediciNova, Inc., as amended from time to time.
- (v) “*Person*” shall have the same meaning ascribed to such term in the Exchange Act.
- (w) “*Purchase Price*” shall mean the consideration for which one Share may be acquired under the Plan (other than upon exercise of an Option), as specified by the Committee.
- (x) “*Restricted Share*” shall mean a Share awarded under the Plan.
- (y) “*Restricted Share Agreement*” shall mean the agreement between the Company and the recipient of a Restricted Share which contains the terms, conditions and restrictions pertaining to such Restricted Shares.
- (z) “*SAR*” shall mean a stock appreciation right granted under the Plan.
- (aa) “*SAR Agreement*” shall mean the agreement between the Company and an Optionee which contains the terms, conditions and restrictions pertaining to his or her SAR.
- (bb) “*Service*” shall mean service as an Employee, Consultant or Outside Director.
- (cc) “*Share*” shall mean one share of Stock, as adjusted in accordance with Section 8 (if applicable).
- (dd) “*Stock*” shall mean the Common Stock of the Company.

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(ee) "Stock Option Agreement" shall mean the agreement between the Company and an Optionee that contains the terms, conditions and restrictions pertaining to his Option.

(ff) "Stock Unit" shall mean a bookkeeping entry representing the equivalent of one Share, as awarded under the Plan.

(gg) "Stock Unit Agreement" shall mean the agreement between the Company and the recipient of a Stock Unit which contains the terms, conditions and restrictions pertaining to such Stock Unit.

(hh) "Subsidiary" shall mean any corporation, if the Company and/or one or more other Subsidiaries own not less than 50% of the total combined voting power of all classes of outstanding stock of such corporation. A corporation that attains the status of a Subsidiary on a date after the adoption of the Plan shall be considered a Subsidiary commencing as of such date.

### SECTION 3. ADMINISTRATION.

(a) *Committee Composition.* The Plan shall be administered by the Committee. The Committee shall consist of two or more directors of the Company, who shall be appointed by the Board. In addition, the composition of the Committee shall satisfy (i) such requirements as the Securities and Exchange Commission may establish for administrators acting under plans intended to qualify for exemption under Rule 16b-3 (or its successor) under the Exchange Act; and (ii) such requirements as the Internal Revenue Service may establish for outside directors acting under plans intended to qualify for exemption under Section 162(m)(4)(C) of the Code.

(b) *Committee for Non-Officer Grants.* The Board may also appoint one or more separate committees of the Board, each composed of one or more directors of the Company who need not satisfy the requirements of Section 3(a), who may administer the Plan with respect to Employees who are not considered officers or directors of the Company under Section 16 of the Exchange Act, may grant Awards under the Plan to such Employees and may determine all terms of such grants. Within the limitations of the preceding sentence, any reference in the Plan to the Committee shall include such committee or committees appointed pursuant to the preceding sentence. The Board of Directors may also authorize one or more officers of the Company to designate Employees, other than officers under Section 16 of the Exchange Act, to receive Awards and/or to determine the number of such Awards to be received by such persons; provided, however, that the Board of Directors shall specify the total number of Awards that such officers may so award.

(c) *Committee Procedures.* The Board of Directors shall designate one of the members of the Committee as chairman. The Committee may hold meetings at such times and places as it shall determine. The acts of a majority of the Committee members present at meetings at which a quorum exists, or acts reduced to or approved in writing by all Committee members, shall be valid acts of the Committee.

(d) *Committee Responsibilities.* Subject to the provisions of the Plan, the Committee shall have full authority and discretion to take the following actions:

- (i) To interpret the Plan and to apply its provisions;

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(ii) To adopt, amend or rescind rules, procedures and forms relating to the Plan;

(iii) To authorize any person to execute, on behalf of the Company, any instrument required to carry out the purposes of the Plan;

(iv) To determine when Awards are to be granted under the Plan;

(v) To select the Offerees and Optionees;

(vi) To determine the number of Shares to be made subject to each Award;

(vii) To prescribe the terms and conditions of each Award, including (without limitation) the Exercise Price and Purchase Price, and the vesting or duration of the Award (including accelerating the vesting of Awards, either at the time of the Award or thereafter, without the consent of the Participant), to determine whether an Option is to be classified as an ISO or as a Nonstatutory Option, and to specify the provisions of the agreement relating to such Award;

(viii) To amend any outstanding Award agreement, subject to applicable legal restrictions and to the consent of the Participant if the Participant's rights or obligations would be materially impaired;

(ix) To prescribe the consideration for the grant of each Award or other right under the Plan and to determine the sufficiency of such consideration;

(x) To determine the disposition of each Award or other right under the Plan in the event of a Participant's divorce or dissolution of marriage;

(xi) To determine whether Awards under the Plan will be granted in replacement of other grants under an incentive or other compensation plan of an acquired business;

(xii) To correct any defect, supply any omission, or reconcile any inconsistency in the Plan or any Award agreement; and

(xiii) To take any other actions deemed necessary or advisable for the administration of the Plan.

Subject to the requirements of applicable law, the Committee may designate persons other than members of the Committee to carry out its responsibilities and may prescribe such conditions and limitations as it may deem appropriate, except that the Committee may not delegate its authority with regard to the selection for participation of or the granting of Options or other rights under the Plan to persons subject to Section 16 of the Exchange Act. All decisions,

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interpretations and other actions of the Committee shall be final and binding on all Offerees, all Optionees, and all persons deriving their rights from an Offeree or Optionee. No member of the Committee shall be liable for any action that he has taken or has failed to take in good faith with respect to the Plan, any Option, or any right to acquire Shares under the Plan.

#### **SECTION 4. ELIGIBILITY.**

(a) *General Rule.* Only Employees shall be eligible for the grant of ISOs. Only Employees, Consultants and Outside Directors shall be eligible for the grant of Restricted Shares, Stock Units, Nonstatutory Options or SARs.

(b) *Ten-Percent Stockholders.* An Employee who owns more than 10% of the total combined voting power of all classes of outstanding stock of the Company, a Parent or Subsidiary shall not be eligible for the grant of an ISO unless such grant satisfies the requirements of Section 422(c)(5) of the Code.

(c) *Attribution Rules.* For purposes of Section 4(b) above, in determining stock ownership, an Employee shall be deemed to own the stock owned, directly or indirectly, by or for such Employee's brothers, sisters, spouse, ancestors and lineal descendants. Stock owned, directly or indirectly, by or for a corporation, partnership, estate or trust shall be deemed to be owned proportionately by or for its stockholders, partners or beneficiaries.

(d) *Outstanding Stock.* For purposes of Section 4(b) above, "outstanding stock" shall include all stock actually issued and outstanding immediately after the grant. "Outstanding stock" shall not include shares authorized for issuance under outstanding options held by the Employee or by any other person.

#### **SECTION 5. STOCK SUBJECT TO PLAN.**

(a) *Basic Limitation.* Shares offered under the Plan shall be authorized but unissued Shares or treasury shares. The maximum aggregate number of Shares authorized for issuance as Awards under the Plan shall not exceed 3,930,000 Shares, plus an annual increase on the first day of each fiscal year during the term of the Plan, with the first such increase occurring on January 1, 2012, in each case in an amount equal to the lesser of (i) 100,000 Shares, (ii) 3% of the outstanding Shares on the last day of the immediately preceding year, or (iii) an amount determined by the Board. The limitations of this Section 5(a) shall be subject to adjustment pursuant to Section 11. The number of Shares that are subject to Options or other Awards outstanding at any time under the Plan shall not exceed the number of Shares which then remain available for issuance under the Plan. The Company, during the term of the Plan, shall at all times reserve and keep available sufficient Shares to satisfy the requirements of the Plan.

(b) *Option/SAR Limitation.* Subject to the provisions of Section 11, no Participant may receive Options or SARs under the Plan in any calendar year that relate to more than 203,000 Shares.

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(c) *Additional Shares.* If Restricted Shares or Shares issued upon the exercise of Options are forfeited, then such Shares shall again become available for Awards under the Plan. If Stock Units, Options or SARs are forfeited or terminate for any other reason before being exercised, then the corresponding Shares shall again become available for Awards under the Plan. If Stock Units are settled, then only the number of Shares (if any) actually issued in settlement of such Stock Units shall reduce the number available under Section 5(a) and the balance shall again become available for Awards under the Plan. If SARs are exercised, then only the number of Shares (if any) actually issued in settlement of such SARs shall reduce the number available in Section 5(a) and the balance shall again become available for Awards under the Plan.

## **SECTION 6. RESTRICTED SHARES.**

(a) *Restricted Stock Agreement.* Each grant of Restricted Shares under the Plan shall be evidenced by a Restricted Stock Agreement between the recipient and the Company. Such Restricted Shares shall be subject to all applicable terms of the Plan and may be subject to any other terms that are not inconsistent with the Plan. The provisions of the various Restricted Stock Agreements entered into under the Plan need not be identical.

(b) *Payment for Awards.* Subject to the following sentence, Restricted Shares may be sold or awarded under the Plan for such consideration as the Committee may determine, including (without limitation) cash, cash equivalents, full-recourse promissory notes, past services and future services. To the extent that an Award consists of newly issued Restricted Shares, the Award recipient shall furnish consideration with a value not less than the par value of such Restricted Shares in the form of cash, cash equivalents, or past services rendered to the Company (or a Parent or Subsidiary), as the Committee may determine.

(c) *Vesting.* Each Award of Restricted Shares may or may not be subject to vesting. Vesting shall occur, in full or in installments, upon satisfaction of the conditions specified in the Restricted Stock Agreement. A Restricted Stock Agreement may provide for accelerated vesting in the event of the Participant's death, disability or retirement or other events. The Committee may determine, at the time of granting Restricted Shares of thereafter, that all or part of such Restricted Shares shall become vested in the event that a Change in Control occurs with respect to the Company.

(d) *Voting and Dividend Rights.* The holders of Restricted Shares awarded under the Plan shall have the same voting, dividend and other rights as the Company's other stockholders. A Restricted Stock Agreement, however, may require that the holders of Restricted Shares invest any cash dividends received in additional Restricted Shares. Such additional Restricted Shares shall be subject to the same conditions and restrictions as the Award with respect to which the dividends were paid.

(e) *Restrictions on Transfer of Shares.* Restricted Shares shall be subject to such rights of repurchase, rights of first refusal or other restrictions as the Committee may determine. Such restrictions shall be set forth in the applicable Restricted Stock Agreement and shall apply in addition to any general restrictions that may apply to all holders of Shares.

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## SECTION 7. TERMS AND CONDITIONS OF OPTIONS.

(a) *Stock Option Agreement.* Each grant of an Option under the Plan shall be evidenced by a Stock Option Agreement between the Optionee and the Company. Such Option shall be subject to all applicable terms and conditions of the Plan and may be subject to any other terms and conditions which are not inconsistent with the Plan and which the Committee deems appropriate for inclusion in a Stock Option Agreement. The Stock Option Agreement shall specify whether the Option is an ISO or an NSO. The provisions of the various Stock Option Agreements entered into under the Plan need not be identical. Options may be granted in consideration of a reduction in the Optionee's other compensation.

(b) *Number of Shares.* Each Stock Option Agreement shall specify the number of Shares that are subject to the Option and shall provide for the adjustment of such number in accordance with Section 11.

(c) *Exercise Price.* Each Stock Option Agreement shall specify the Exercise Price. The Exercise Price of an ISO shall not be less than 100% of the Fair Market Value of a Share on the date of grant, except as otherwise provided in Section 4(b), and the Exercise Price of an NSO shall not be less 85% of the Fair Market Value of a Share on the date of grant. Notwithstanding the foregoing, a Stock Option Agreement may specify that the exercise price of an NSO may vary in accordance with a predetermined formula. Subject to the foregoing in this Section 7(c), the Exercise Price under any Option shall be determined by the Committee at its sole discretion. The Exercise Price shall be payable in one of the forms described in Section 8.

(d) *Withholding Taxes.* As a condition to the exercise of an Option, the Optionee shall make such arrangements as the Committee may require for the satisfaction of any federal, state, local or foreign withholding tax obligations that may arise in connection with such exercise. The Optionee shall also make such arrangements as the Committee may require for the satisfaction of any federal, state, local or foreign withholding tax obligations that may arise in connection with the disposition of Shares acquired by exercising an Option.

(e) *Exercisability and Term.* Each Stock Option Agreement shall specify the date when all or any installment of the Option is to become exercisable. The Stock Option Agreement shall also specify the term of the Option; provided that the term of an ISO shall in no event exceed 10 years from the date of grant (five years for Employees described in Section 4(b)). A Stock Option Agreement may provide for accelerated exercisability in the event of the Optionee's death, disability, or retirement or other events and may provide for expiration prior to the end of its term in the event of the termination of the Optionee's Service. Options may be awarded in combination with SARs, and such an Award may provide that the Options will not be exercisable unless the related SARs are forfeited. Subject to the foregoing in this Section 7(e), the Committee at its sole discretion shall determine when all or any installment of an Option is to become exercisable and when an Option is to expire.

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(f) *Exercise of Options Upon Termination of Service.* Each Stock Option Agreement shall set forth the extent to which the Optionee shall have the right to exercise the Option following termination of the Optionee's Service with the Company and its Subsidiaries, and the right to exercise the Option of any executors or administrators of the Optionee's estate or any person who has acquired such Option(s) directly from the Optionee by bequest or inheritance. Such provisions shall be determined in the sole discretion of the Committee, need not be uniform among all Options issued pursuant to the Plan, and may reflect distinctions based on the reasons for termination of Service.

(g) *Effect of Change in Control.* The Committee may determine, at the time of granting an Option or thereafter, that such Option shall become exercisable as to all or part of the Shares subject to such Option in the event that a Change in Control occurs with respect to the Company.

(h) *Leaves of Absence.* An Employee's Service shall cease when such Employee ceases to be actively employed by, or a Consultant to, the Company (or any subsidiary) as determined in the sole discretion of the Board of Directors. For purposes of Options, Service does not terminate when an Employee goes on a bona fide leave of absence, that was approved by the Company in writing, if the terms of the leave provide for continued service crediting, or when continued service crediting is required by applicable law. However, for purposes of determining whether an Option is entitled to ISO status, an Employee's Service will be treated as terminating 90 days after such Employee went on leave, unless such Employee's right to return to active work is guaranteed by law or by a contract. Service terminates in any event when the approved leave ends, unless such Employee immediately returns to active work. The Company determines which leaves count toward Service, and when Service terminates for all purposes under the Plan.

(i) *No Rights as a Stockholder.* An Optionee, or a transferee of an Optionee, shall have no rights as a stockholder with respect to any Shares covered by his Option until the date of the issuance of a stock certificate for such Shares. No adjustments shall be made, except as provided in Section 11.

(j) *Modification, Extension and Renewal of Options.* Within the limitations of the Plan, the Committee may modify, extend or renew outstanding options or may accept the cancellation of outstanding options (to the extent not previously exercised), whether or not granted hereunder, in return for the grant of new Options for the same or a different number of Shares and at the same or a different exercise price, or in return for the grant of the same or a different number of Shares. The foregoing notwithstanding, no modification of an Option shall, without the consent of the Optionee, materially impair his or her rights or obligations under such Option.

(k) *Restrictions on Transfer of Shares.* Any Shares issued upon exercise of an Option shall be subject to such special forfeiture conditions, rights of repurchase, rights of first refusal and other transfer restrictions as the Committee may determine. Such restrictions shall be set forth in the applicable Stock Option Agreement and shall apply in addition to any general restrictions that may apply to all holders of Shares.

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(l) *Buyout Provisions.* The Committee may at any time (a) offer to buy out for a payment in cash or cash equivalents an Option previously granted or (b) authorize an Optionee to elect to cash out an Option previously granted, in either case at such time and based upon such terms and conditions as the Committee shall establish.

#### **SECTION 8. PAYMENT FOR OPTION SHARES.**

(a) *General Rule.* The entire Exercise Price of Shares issued upon the exercise of Options shall be payable in lawful money of the United States of America at the time when such Shares are purchased, except as provided in Section 8(b) through Section 8(f) below.

(b) *Surrender of Stock.* To the extent permitted by the Committee in its sole discretion, payment may be made all or in part by surrendering, or attesting to the ownership of, Shares which have already been owned by the Optionee or his representative. Such Shares shall be valued at their Fair Market Value on the date when the new Shares are purchased under the Plan. The Optionee shall not surrender, or attest to the ownership of, Shares in payment of the Exercise Price if such action would cause the Company to recognize compensation expense (or additional compensation expense) with respect to the Option for financial reporting purposes.

(c) *Exercise/Sale.* To the extent permitted by the Committee in its sole discretion, payment may be made all or in part by delivery (on a form prescribed by the Committee) of an irrevocable direction to a securities broker to sell Shares and to deliver all or part of the sale proceeds to the Company in payment of the aggregate Exercise Price.

(d) *Exercise/Pledge.* To the extent permitted by the Committee in its sole discretion, payment may be made all or in part by delivery (on a form prescribed by the Committee) of an irrevocable direction to a securities broker or lender to pledge Shares, as security for a loan, and to deliver all or part of the loan proceeds to the Company in payment of the aggregate Exercise Price.

(e) *Promissory Note.* To the extent permitted by the Committee in its sole discretion, payment may be made all or in part by delivering (on a form prescribed by the Company) a full-recourse promissory note. However, the par value of the Common Shares being purchased under the Plan, if newly issued, shall be paid in cash or cash equivalents.

(f) *Other Forms of Payment.* To the extent permitted by the Committee in its sole discretion, payment may be made in any other form that is consistent with applicable laws, regulations and rules.

(g) *Limitations under Applicable Law.* Notwithstanding anything herein or in a Stock Option Agreement to the contrary, payment may not be made in any form that is unlawful, as determined by the Committee in its sole discretion.

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## SECTION 9. STOCK APPRECIATION RIGHTS.

(a) *SAR Agreement.* Each grant of a SAR under the Plan shall be evidenced by a SAR Agreement between the Optionee and the Company. Such SAR shall be subject to all applicable terms of the Plan and may be subject to any other terms that are not inconsistent with the Plan. The provisions of the various SAR Agreements entered into under the Plan need not be identical. SARs may be granted in consideration of a reduction in the Optionee's other compensation.

(b) *Number of Shares.* Each SAR Agreement shall specify the number of Shares to which the SAR pertains and shall provide for the adjustment of such number in accordance with Section 11.

(c) *Exercise Price.* Each SAR Agreement shall specify the Exercise Price. A SAR Agreement may specify an Exercise Price that varies in accordance with a predetermined formula while the SAR is outstanding.

(d) *Exercisability and Term.* Each SAR Agreement shall specify the date when all or any installment of the SAR is to become exercisable. The SAR Agreement shall also specify the term of the SAR. A SAR Agreement may provide for accelerated exercisability in the event of the Optionee's death, disability or retirement or other events and may provide for expiration prior to the end of its term in the event of the termination of the Optionee's service. SARs may be awarded in combination with Options, and such an Award may provide that the SARs will not be exercisable unless the related Options are forfeited. A SAR may be included in an ISO only at the time of grant but may be included in an NSO at the time of grant or thereafter. A SAR granted under the Plan may provide that it will be exercisable only in the event of a Change in Control.

(e) *Effect of Change in Control.* The Committee may determine, at the time of granting a SAR or thereafter, that such SAR shall become fully exercisable as to all Common Shares subject to such SAR in the event that a Change in Control occurs with respect to the Company.

(f) *Exercise of SARs.* Upon exercise of a SAR, the Optionee (or any person having the right to exercise the SAR after his or her death) shall receive from the Company (a) Shares, (b) cash or (c) a combination of Shares and cash, as the Committee shall determine. The amount of cash and/or the Fair Market Value of Shares received upon exercise of SARs shall, in the aggregate, be equal to the amount by which the Fair Market Value (on the date of surrender) of the Shares subject to the SARs exceeds the Exercise Price.

(g) *Modification or Assumption of SARs.* Within the limitations of the Plan, the Committee may modify, extend or assume outstanding SARs or may accept the cancellation of outstanding SARs (whether granted by the Company or by another issuer) in return for the grant of new SARs for the same or a different number of shares and at the same or a different exercise price. The foregoing notwithstanding, no modification of a SAR shall, without the consent of the holder, materially impair his or her rights or obligations under such SAR.

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## SECTION 10. STOCK UNITS.

(a) *Stock Unit Agreement.* Each grant of Stock Units under the Plan shall be evidenced by a Stock Unit Agreement between the recipient and the Company. Such Stock Units shall be subject to all applicable terms of the Plan and may be subject to any other terms that are not inconsistent with the Plan. The provisions of the various Stock Unit Agreements entered into under the Plan need not be identical. Stock Units may be granted in consideration of a reduction in the recipient's other compensation.

(b) *Payment for Awards.* To the extent that an Award is granted in the form of Stock Units, no cash consideration shall be required of the Award recipients.

(c) *Vesting Conditions.* Each Award of Stock Units may or may not be subject to vesting. Vesting shall occur, in full or in installments, upon satisfaction of the conditions specified in the Stock Unit Agreement. A Stock Unit Agreement may provide for accelerated vesting in the event of the Participant's death, disability or retirement or other events. The Committee may determine, at the time of granting Stock Units or thereafter, that all or part of such Stock Units shall become vested in the event that a Change in Control occurs with respect to the Company.

(d) *Voting and Dividend Rights.* The holders of Stock Units shall have no voting rights. Prior to settlement or forfeiture, any Stock Unit awarded under the Plan may, at the Committee's discretion, carry with it a right to dividend equivalents. Such right entitles the holder to be credited with an amount equal to all cash dividends paid on one Share while the Stock Unit is outstanding. Dividend equivalents may be converted into additional Stock Units. Settlement of dividend equivalents may be made in the form of cash, in the form of Shares, or in a combination of both. Prior to distribution, any dividend equivalents which are not paid shall be subject to the same conditions and restrictions (including without limitation, any forfeiture conditions) as the Stock Units to which they attach.

(e) *Form and Time of Settlement of Stock Units.* Settlement of vested Stock Units may be made in the form of (a) cash, (b) Shares or (c) any combination of both, as determined by the Committee. The actual number of Stock Units eligible for settlement may be larger or smaller than the number included in the original Award, based on predetermined performance factors. Methods of converting Stock Units into cash may include (without limitation) a method based on the average Fair Market Value of Shares over a series of trading days. Vested Stock Units may be settled in a lump sum or in installments. The distribution may occur or commence when all vesting conditions applicable to the Stock Units have been satisfied or have lapsed, or it may be deferred to any later date. The amount of a deferred distribution may be increased by an interest factor or by dividend equivalents. Until an Award of Stock Units is settled, the number of such Stock Units shall be subject to adjustment pursuant to Section 11.

(f) *Death of Recipient.* Any Stock Units Award that becomes payable after the recipient's death shall be distributed to the recipient's beneficiary or beneficiaries. Each recipient of a Stock Units Award under the Plan shall designate one or more beneficiaries for this

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purpose by filing the prescribed form with the Company. A beneficiary designation may be changed by filing the prescribed form with the Company at any time before the Award recipient's death. If no beneficiary was designated or if no designated beneficiary survives the Award recipient, then any Stock Units Award that becomes payable after the recipient's death shall be distributed to the recipient's estate.

*(g) Creditors' Rights.* A holder of Stock Units shall have no rights other than those of a general creditor of the Company. Stock Units represent an unfunded and unsecured obligation of the Company, subject to the terms and conditions of the applicable Stock Unit Agreement.

#### **SECTION 11. ADJUSTMENT OF SHARES.**

*(a) Adjustments.* In the event of a subdivision of the outstanding Stock, a declaration of a dividend payable in Shares, a declaration of a dividend payable in a form other than Shares in an amount that has a material effect on the price of Shares, a combination or consolidation of the outstanding Stock (by reclassification or otherwise) into a lesser number of Shares, a recapitalization, a spin-off or a similar occurrence, the Committee shall make such adjustments as it, in its sole discretion, deems appropriate in one or more of:

- (i) The number of Options, SARs, Restricted Shares and Stock Units available for future Awards under Section 5;
- (ii) The limitations set forth in Section 5(a) and (b);
- (iii) The number of Shares covered by each outstanding Option and SAR;
- (iv) The Exercise Price under each outstanding Option and SAR; or
- (v) The number of Stock Units included in any prior Award which has not yet been settled.

Except as provided in this Section 11, a Participant shall have no rights by reason of any issue by the Company of stock of any class or securities convertible into stock of any class, any subdivision or consolidation of shares of stock of any class, the payment of any stock dividend or any other increase or decrease in the number of shares of stock of any class.

*(b) Dissolution or Liquidation.* To the extent not previously exercised or settled, Options, SARs and Stock Units shall terminate immediately prior to the dissolution or liquidation of the Company.

*(c) Reorganizations.* In the event that the Company is a party to a merger or other reorganization, outstanding Awards shall be subject to the agreement of merger or reorganization. Such agreement shall provide for:

- (i) The continuation of the outstanding Awards by the Company, if the Company is a surviving corporation;

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- (ii) The assumption of the outstanding Awards by the surviving corporation or its parent or subsidiary;
- (iii) The substitution by the surviving corporation or its parent or subsidiary of its own awards for the outstanding Awards;
- (iv) Full exercisability or vesting and accelerated expiration of the outstanding Awards; or
- (v) Settlement of the full value of the outstanding Awards in cash or cash equivalents followed by cancellation of such Awards.

(d) *Reservation of Rights.* Except as provided in this Section 11, an Optionee or Offeree shall have no rights by reason of any subdivision or consolidation of shares of stock of any class, the payment of any dividend or any other increase or decrease in the number of shares of stock of any class. Any issue by the Company of shares of stock of any class, or securities convertible into shares of stock of any class, shall not affect, and no adjustment by reason thereof shall be made with respect to, the number or Exercise Price of Shares subject to an Option. The grant of an Option pursuant to the Plan shall not affect in any way the right or power of the Company to make adjustments, reclassifications, reorganizations or changes of its capital or business structure, to merge or consolidate or to dissolve, liquidate, sell or transfer all or any part of its business or assets.

#### **SECTION 12. DEFERRAL OF AWARDS.**

The Committee (in its sole discretion) may permit or require a Participant to:

- (a) Have cash that otherwise would be paid to such Participant as a result of the exercise of a SAR or the settlement of Stock Units credited to a deferred compensation account established for such Participant by the Committee as an entry on the Company's books;
- (b) Have Shares that otherwise would be delivered to such Participant as a result of the exercise of an Option or SAR converted into an equal number of Stock Units; or
- (c) Have Shares that otherwise would be delivered to such Participant as a result of the exercise of an Option or SAR or the settlement of Stock Units converted into amounts credited to a deferred compensation account established for such Participant by the Committee as an entry on the Company's books. Such amounts shall be determined by reference to the Fair Market Value of such Shares as of the date when they otherwise would have been delivered to such Participant.

A deferred compensation account established under this Section 12 may be credited with interest or other forms of investment return, as determined by the Committee. A Participant for

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whom such an account is established shall have no rights other than those of a general creditor of the Company. Such an account shall represent an unfunded and unsecured obligation of the Company and shall be subject to the terms and conditions of the applicable agreement between such Participant and the Company. If the deferral or conversion of Awards is permitted or required, the Committee (in its sole discretion) may establish rules, procedures and forms pertaining to such Awards, including (without limitation) the settlement of deferred compensation accounts established under this Section 12.

### **SECTION 13. AWARDS UNDER OTHER PLANS.**

The Company may grant awards under other plans or programs. Such awards may be settled in the form of Shares issued under this Plan. Such Shares shall be treated for all purposes under the Plan like Shares issued in settlement of Stock Units and shall, when issued, reduce the number of Shares available under Section 5.

### **SECTION 14. PAYMENT OF DIRECTOR'S FEES IN SECURITIES.**

(a) *Effective Date.* No provision of this Section 14 shall be effective unless and until the Board has determined to implement such provision.

(b) *Elections to Receive NSOs, Restricted Shares or Stock Units.* An Outside Director may elect to receive his or her annual retainer payments and/or meeting fees from the Company in the form of cash, NSOs, Restricted Shares or Stock Units, or a combination thereof, as determined by the Board. Such NSOs, Restricted Shares and Stock Units shall be issued under the Plan. An election under this Section 14 shall be filed with the Company on the prescribed form.

(c) *Number and Terms of NSOs, Restricted Shares or Stock Units.* The number of NSOs, Restricted Shares or Stock Units to be granted to Outside Directors in lieu of annual retainers and meeting fees that would otherwise be paid in cash shall be calculated in a manner determined by the Board. The terms of such NSOs, Restricted Shares or Stock Units shall also be determined by the Board.

### **SECTION 15. LEGAL AND REGULATORY REQUIREMENTS.**

Shares shall not be issued under the Plan unless the issuance and delivery of such Shares complies with (or is exempt from) all applicable requirements of law, including (without limitation) the Securities Act of 1933, as amended, the rules and regulations promulgated thereunder, state securities laws and regulations and the regulations of any stock exchange on which the Company's securities may then be listed, and the Company has obtained the approval or favorable ruling from any governmental agency which the Company determines is necessary or advisable.

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## **SECTION 16. WITHHOLDING TAXES.**

(a) *General.* To the extent required by applicable federal, state, local or foreign law, a Participant or his or her successor shall make arrangements satisfactory to the Company for the satisfaction of any withholding tax obligations that arise in connection with the Plan. The Company shall not be required to issue any Shares or make any cash payment under the Plan until such obligations are satisfied.

(b) *Share Withholding.* The Committee may permit a Participant to satisfy all or part of his or her withholding or income tax obligations by having the Company withhold all or a portion of any Shares that otherwise would be issued to him or her or by surrendering all or a portion of any Shares that he or she previously acquired. Such Shares shall be valued at their Fair Market Value on the date when taxes otherwise would be withheld in cash. In no event may a Participant have Shares withheld that would otherwise be issued to him or her in excess of the number necessary to satisfy the legally required minimum tax withholding.

## **SECTION 17. TRANSFERABILITY.**

Unless the agreement evidencing an Award (or an amendment thereto authorized by the Committee) expressly provides otherwise, no Award granted under this Plan, nor any interest in such Award, may be sold, assigned, conveyed, gifted, pledged, hypothecated or otherwise transferred in any manner (prior to the vesting and lapse of any and all restrictions applicable to Shares issued under such Award), other than by will or the laws of descent and distribution; provided, however, that an ISO may be transferred or assigned only to the extent consistent with Section 422 of the Code. Any purported assignment, transfer or encumbrance in violation of this Section 17 shall be void and unenforceable against the Company.

## **SECTION 18. NO EMPLOYMENT RIGHTS.**

No provision of the Plan, nor any right or Option granted under the Plan, shall be construed to give any person any right to become, to be treated as, or to remain an Employee. The Company and its Subsidiaries reserve the right to terminate any person's Service at any time and for any reason, with or without notice.

## **SECTION 19. DURATION AND AMENDMENTS.**

(a) *Term of the Plan.* The Plan, as set forth herein, shall terminate automatically ten (10) years after its adoption by the Board. The Plan may be terminated on any earlier date pursuant to Subsection (b) below.

(b) *Right to Amend or Terminate the Plan.* The Board of Directors may amend the Plan at any time and from time to time. Rights and obligations under any Award granted before amendment of the Plan shall not be materially impaired by such amendment, except with consent of the Participant. An amendment of the Plan shall be subject to the approval of the Company's stockholders only to the extent required by applicable laws, regulations or rules.

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*(c) Effect of Termination.* No Awards shall be granted under the Plan after the termination thereof. The termination of the Plan shall not affect any Award previously granted under the Plan.

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**SECTION 20. EXECUTION.**

To record the adoption of the Amended and Restated 2004 Stock Incentive Plan by the Board of Directors on November 29, 2011, the Company has caused its authorized officer to execute the same.

**MEDICINOVA, INC.**

By: /s/ Yuichi Iwaki  
Yuichi Iwaki, M.D., Ph.D.  
Chief Executive Officer

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**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-151808, 333-141694 and 333-122665) and Form S-3 (No. 333-163116) of MediciNova, Inc. and in the related Prospectus of our reports dated March 28, 2012, with respect to the consolidated financial statements of MediciNova, Inc., and the effectiveness of internal control over financial reporting of MediciNova, Inc., included in this Annual Report (Form 10-K) for the year ended December 31, 2011.

/s/ Ernst & Young LLP

San Diego, California  
March 28, 2012

**Consent of Independent Registered Public Accounting Firm**

We consent to the incorporation by reference in the registration statements (No. 333-163116) on Form S-3 and (Nos. 333-151808, 333-141694, and 333-122665) on Form S-8 of MediciNova, Inc. and subsidiaries (a development stage company) of our report dated March 31, 2011, with respect to the consolidated balance sheets of MediciNova, Inc. as of December 31, 2010, and the related consolidated statements of operations, stockholders' equity, cash flows, and comprehensive loss for each of the years in the two-year period ended December 31, 2010, and all related financial statement schedules, which report appears in the December 31, 2011 annual report on Form 10-K of MediciNova, Inc.

/s/ KPMG LLP

San Diego, California  
March 28, 2012

**CERTIFICATION OF CHIEF EXECUTIVE OFFICER PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Yuichi Iwaki, certify that:

1. I have reviewed this Annual Report on Form 10-K for the fiscal year ended December 31, 2011 of MediciNova, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the consolidated financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
  - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ Yuichi Iwaki

Yuichi Iwaki, M.D., Ph.D.

President & Chief Executive Officer

Date: March 28, 2012

**CERTIFICATION OF THE CHIEF FINANCIAL OFFICER PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Michael Gennaro, certify that:

1. I have reviewed this Annual Report on Form 10-K for the fiscal year ended December 31, 2011 of MediciNova, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the consolidated financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
  - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ Michael Gennaro

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Michael Gennaro  
Chief Financial Officer

Date: March 28, 2012

**CERTIFICATION**  
**Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002**  
**(Subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code)**

In connection with the Annual Report on Form 10-K of MediciNova, Inc. (the "Company") for the period ended December 31, 2011, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Yuichi Iwaki, M.D., Ph.D., as President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 28, 2012

/s/ Yuichi Iwaki

Yuichi Iwaki, M.D., Ph.D.

President & Chief Executive Officer

The foregoing certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. § 1350, and is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and is not to be incorporated by reference into any filing of the Company, whether made before or after the date hereof, regardless of any general incorporation language in such filing. A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

**CERTIFICATION**  
**Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002**  
**(Subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code)**

In connection with the Annual Report on Form 10-K of MediciNova, Inc. (the "Company") for the period ended December 31, 2011, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Michael Gennaro, as Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 28, 2012

/s/ Michael Gennaro

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Michael Gennaro  
Chief Financial Officer

The foregoing certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. § 1350, and is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and is not to be incorporated by reference into any filing of the Company, whether made before or after the date hereof, regardless of any general incorporation language in such filing. A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.