IDERA PHARMACEUTICALS, INC.
Form S-1/A
May 01, 2013
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As filed with the Securities and Exchange Commission on May 1, 2013

Registration No. 333-187155

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

For the Fiscal Year Ended December 31, 2012

Amendment No. 2

FORM S-1

REGISTRATION STATEMENT

UNDER

THE SECURITIES ACT OF 1933

Idera Pharmaceuticals, Inc.

(Exact name of registrant as specified in its charter)

Delaware	2836	04-3072298
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification Number)

167 Sidney Street

Cambridge, Massachusetts 02139

(617) 679-5500

(Address, including zip code, and telephone number, including area code, of registrant s principal executive offices)

Sudhir Agrawal, D. Phil.

Chairman of the Board of Directors, President

and Chief Executive Officer

Idera Pharmaceuticals, Inc.

167 Sidney Street

Cambridge, Massachusetts 02139

(617) 679-5500

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

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Approximate date of commencement of proposed sale to the public: As soon as practical after this Registration Statement becomes effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box. ¨

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ¨

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ¨

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ¨

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

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

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

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The information in this prospectus is not complete and may be changed. We may not sell these securities under this registration statement until the registration statement filed with the Securities and Exchange Commission is declared effective. This prospectus is not an offer to sell any securities, and we are not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED MAY 1**, 2013**

PRELIMINARY PROSPECTUS

Idera Pharmaceuticals, Inc.

$15,000,000

Common Stock

Warrants to Purchase Common Stock

We are offering $15,000,000 of shares of our common stock and warrants to purchase up to shares of our common stock (and the shares of common stock that are issuable from time to time upon exercise of the warrants). Each share of common stock is being sold together with a warrant to purchase up to shares of our common stock at an exercise price of $ per share. The shares of common stock and warrants are immediately separable and will be issued separately in this offering.

We are also offering to those purchasers, which propose to purchase shares of common stock in this offering that would result in the purchaser, together with its affiliates and certain related parties, beneficially owning more than 9.9% of our outstanding common stock following the consummation of this offering, the opportunity to purchase, in lieu of the shares of our common stock that would result in ownership in excess of 9.9%, warrants to purchase such excess shares of our common stock. The purchase price for each such pre-funded warrant would equal the per share public offering price for the common stock in this offering less the $0.01 per share exercise price of each such pre-funded warrant, and the exercise price of these pre-funded warrants would equal $0.01 per share. Purchasers of these pre-funded warrants would receive the warrants described above together with the pre-funded warrants as if such purchasers had purchased shares of our common stock in this offering.

Our common stock is listed on the Nasdaq Capital Market under the symbol IDRA. The last sale price of our common stock on April 29, 2013, as reported by the Nasdaq Capital Market, was $0.73 per share. We do not intend to list the warrants on the Nasdaq Capital Market, any other national securities exchange or any other nationally recognized trading system.

Investing in our common stock involves risks. Please read carefully the section entitled Risk Factors beginning on page 8 of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

	Per Share	Per Warrant	Per Pre-Funded Warrant	Total
Public Offering Price	$	$	$	$
Underwriting Discounts and Commissions(1)	$	$	$	$
Proceeds to Us, Before Expenses	$	$	$	$

(1) In addition to underwriting discounts and commissions payable by us, we have agreed to reimburse the underwriters for expenses up to $150,000. See Underwriting.

The above summary of offering proceeds to us does not give effect to any issuance of the pre-funded warrants or any exercise of the warrants being issued in this offering.

Certain of our existing principal stockholders and their affiliated entities have indicated an interest in purchasing up to $2.5 million of shares of our common stock and warrants to purchase shares of our common stock in this offering at the public offering price. However, because indications of interest are not binding agreements or commitments to purchase, the underwriters could determine to sell more, less or no shares and warrants to any of these existing principal stockholders and any of these existing principal stockholders could determine to purchase more, less or no shares and warrants in this offering.

The underwriter expects to deliver the shares of common stock and warrants against payment on or about , 2013.

Piper Jaffray

Prospectus dated , 2013

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You should rely only on the information contained in this prospectus or in any free writing prospectus we may authorize to be delivered or made available to you. We have not authorized anyone to provide you with different information. We are offering to sell, and seeking offers to buy, shares of our common stock and warrants only in jurisdictions where offers and sales are permitted. The information in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or any sale of shares of our common stock or warrants.

For investors outside the United States: We have not and the underwriters have not done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the shares of common stock and the distribution of this prospectus outside the United States.

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PROSPECTUS SUMMARY

This summary highlights information contained elsewhere in this prospectus. This summary does not contain all of the information you should consider before investing in our securities. You should read this entire prospectus carefully, especially the Risk Factors section beginning on page 8 and our financial statements and the related notes appearing at the end of this prospectus, before making an investment decision.

As used in this prospectus, unless the context otherwise requires, references to we, us, our and Idera Pharmaceuticals refer to the operations of Idera Pharmaceuticals, Inc.

Overview

We are a clinical stage biotechnology company engaged in the discovery and development of novel synthetic DNA- and RNA-based drug candidates that are designed to modulate immune responses mediated through Toll-like Receptors, or TLRs. We are focusing our development efforts on the treatment of autoimmune and inflammatory diseases. We have two drug candidates, IMO-3100, a TLR7 and TLR9 antagonist, and IMO-8400, a TLR7, TLR8, and TLR9 antagonist, in clinical development for the treatment of autoimmune and inflammatory diseases. In December 2012, we announced top-line data from a Phase 2 clinical trial of IMO-3100 in patients with moderate to severe plaque psoriasis. We believe that the results of this trial provide clinical proof of concept for our approach of targeting specific TLRs for the treatment of psoriasis and potentially other autoimmune and inflammatory diseases.

TLRs are specific receptors present in immune system cells. Using a chemistry-based approach, we have created synthetic DNA- and RNA-based compounds that are targeted to TLR3, TLR7, TLR8, and TLR9. A TLR antagonist is a compound that blocks activation of an immune response through the targeted TLR. A TLR agonist is a compound that stimulates an immune response through the targeted TLR.

We believe that the modulation of immune responses through TLRs provides a rationale for the development of drug candidates to treat a broad range of diseases, including autoimmune and inflammatory diseases, cancer and respiratory diseases, and for use as vaccine adjuvants. We are a party to a collaboration alliance with Merck Sharp & Dohme Corp. (formerly Merck & Co., Inc.), or Merck & Co., for the use of agonists of TLR7, TLR8, and TLR9 as adjuvants in the development of vaccines for cancer, infectious diseases, and Alzheimer s disease. We are seeking to enter into additional collaborative alliances with third parties with respect to our TLR-targeted programs in oncology, hematological malignancies, respiratory diseases, and the use of TLR3 agonists as vaccine adjuvants.

Autoimmune and Inflammatory Disease Program. In December 2012, we announced top-line data from a randomized double-blinded, placebo-controlled Phase 2 clinical trial of IMO-3100 that we conducted in 44 adult patients with moderate to severe plaque psoriasis. In this Phase 2 trial, patients received doses of IMO-3100 once weekly for four weeks. In addition, in this Phase 2 trial, IMO-3100 showed clinical activity in patients with psoriasis. We believe that the results of this trial provide clinical proof of concept for our approach of targeting specific TLRs for the treatment of psoriasis and potentially other autoimmune and inflammatory diseases.

We are conducting a Phase 1 clinical trial to evaluate the safety and pharmacodynamics of IMO-8400 in healthy subjects. The first portion of the trial involved escalating single doses of IMO-8400 and the

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second portion of the trial involved four weekly doses of IMO-8400. We completed dosing in the escalating single-dose portion of this trial in the first quarter of 2013. In this portion of the trial, IMO-8400 was well-tolerated and showed target engagement of TLR7, TLR8, and TLR9 in these subjects. In the second quarter of 2013, we completed dosing in the multiple-dose portion of the trial. We anticipate data from the multiple-dose portion of this trial later in the second quarter of 2013.

Based on the clinical activity of IMO-3100 observed in our four-week Phase 2 clinical trial of IMO-3100 in patients with psoriasis, we have determined that the next step in our development program is to conduct a Phase 2 clinical trial in patients with psoriasis with a treatment period of up to 12 weeks. Based on our evaluation of the comparative profiles of IMO-3100 and IMO-8400, including the engagement of TLR8 by IMO-8400, we have determined to focus our resources on the development of IMO-8400 and to conduct this trial in patients with psoriasis with IMO-8400. We expect that we could initiate this trial as early as the second quarter of 2013 and could have top-line data by the end of 2013. However, we do not plan to initiate this trial unless and until we have completed this offering and raised the necessary proceeds to fund this trial and until we have confirmed the successful completion of our ongoing Phase 1 trial of IMO-8400.

We are also planning to initiate a signal-seeking Phase 2 clinical trial of IMO-8400 in patients with lupus and are considering conducting a proof-of-concept study of IMO-8400 in an orphan autoimmune disease indication. We expect to select the orphan autoimmune disease indication for further exploration in the second half of 2013. However, our plans to conduct the Phase 2 clinical trial of IMO-8400 in patients with lupus and the proof-of-concept study are subject to successful completion of our ongoing Phase 1 trial of IMO-8400 and our ability to raise additional funding beyond the proceeds of this offering to fund the conduct of this Phase 2 trial and proof-of-concept study. We expect to seek such funding through public or private equity offerings, debt financings, collaborations and licensing arrangements or other sources.

Vaccine Adjuvant Collaboration. In January 2012, we announced that Merck & Co. had selected several of our TLR7, TLR8 or TLR9 agonists for evaluation and use as vaccine adjuvant candidates in the fields of cancer, infectious diseases, and Alzheimer s disease.

Additional Programs. In addition to our TLR program in autoimmune and inflammatory diseases, and our collaboration with Merck & Co. for the use of TLR7, TLR8, and TLR9 agonists as vaccine adjuvants, we have identified TLR drug candidates for applications in the treatment of cancer, hematological malignancies and respiratory diseases, and created TLR3 agonists for use as vaccine adjuvants. We have also created gene silencing oligonucleotides, or GSOs, which are designed to inhibit the production of disease-associated proteins by targeting RNA. We believe our GSO technology provides us with a platform from which drug candidates for multiple disease indications can be developed. We are seeking to enter into collaborations with third parties to advance these drug candidates and technology platform. Except in connection with collaborations, we do not plan to expend any additional resources on these programs.

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Risk Factors

Our business is subject to numerous risks and uncertainties. As a clinical stage biotechnology company, we face many risks inherent in our business and our industry generally, including the risks and uncertainties described below. You should carefully consider all of the information set forth in this prospectus and, in particular, the information under the heading Risk Factors, prior to making an investment in our securities.

We are heavily dependent on the development of our clinical stage lead TLR-targeted drug candidates, IMO-3100 and IMO-8400, and on our collaborative alliance with Merck & Co.

We need to raise substantial additional funds to conduct research and development, including preclinical testing and clinical trials of our drug candidates, and to fund our operations. Additional financing may not be available to us in the timeframe or amounts that we need, on terms that are acceptable to us or at all. Our independent auditors have expressed substantial doubt about our ability to continue as a going concern.

Our common stock would be delisted from the Nasdaq Capital Market on May 22, 2013 if we fail to satisfy the continued listing requirements by such date.

We have incurred substantial losses and expect to continue to incur losses, and we may not be successful in reversing this trend.

We may not be able to successfully develop and commercialize our drug candidates if our clinical trials are unsuccessful, or if they are delayed or terminated.

We may not be able to obtain marketing approval for products resulting from our development efforts.

The value of our technology and products is dependent on our ability to protect our intellectual property rights.

Our Corporate Information

Our executive offices are located at 167 Sidney Street, Cambridge, MA 02139, our telephone number is (617) 679-5500 and our Internet address is www.iderapharma.com. The information on our website is not incorporated by reference in this prospectus and should not be considered to be part of this prospectus. Our website address is included in this prospectus as an inactive technical reference only.

Idera® and IMO® are our trademarks. All other trademarks and service marks appearing in this registration statement are the property of their respective owners.

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The Offering

Common stock offered by us	$15,000,000 of shares of common stock. Each share of common stock is being sold together with a warrant to purchase up to shares of our common stock.
Warrants offered by us	Warrants to purchase up to shares of our common stock. Each warrant will have an exercise price of $ per share, will be exercisable upon issuance and will expire from the date of issuance. This prospectus also relates to the offering of shares of common stock issuable upon exercise of the warrants.
Pre-funded warrants offered by us	If the issuance of shares of our common stock to a purchaser in this offering would result in such purchaser, together with its affiliates and certain related parties, beneficially owning more than 9.9% of our outstanding common stock following the consummation of this offering, then such purchaser may purchase, in lieu of the shares of our common stock that would result in such excess ownership, a warrant to purchase shares of our common stock for a purchase price per share of common stock subject to such warrant equal to the per share public offering price for the common stock in this offering less the $0.01 per share exercise price of such warrant. Each pre-funded warrant will have an exercise price of $0.01 per share, will be exercisable upon issuance and will expire from the date of issuance. Purchasers of these pre-funded warrants would receive the warrants described above as if such purchasers were buying shares of our common stock in this offering. This prospectus also relates to the offering of the shares of common stock issuable upon exercise of these pre-funded warrants.
Common stock to be outstanding after this offering	shares.
Use of proceeds	We intend to use the net proceeds to us from this offering, together with our existing cash resources, to fund our planned Phase 2 clinical trial of IMO-8400 in patients with psoriasis and for working capital and other general corporate purposes. See Use of Proceeds for more information.
Risk factors	You should read the Risk Factors section and other information included in this prospectus for a discussion of factors to consider carefully before deciding to invest in shares of our common stock.

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Nasdaq Capital Market listing	Our common stock is listed on the Nasdaq Capital Market under the symbol IDRA. We do not intend to list the warrants or pre-funded warrants on the Nasdaq Capital Market, any other nationally recognized securities exchange or any other nationally recognized trading system.

The number of shares of our common stock to be outstanding after this offering set forth above is based on 27,642,969 shares of our common stock outstanding as of December 31, 2012.

Certain of our existing principal stockholders and their affiliated entities have indicated an interest in purchasing up to $2.5 million of shares of our common stock and warrants to purchase shares of our common stock in this offering at the public offering price. However, because indications of interest are not binding agreements or commitments to purchase, the underwriters could determine to sell more, less or no shares and warrants to any of these existing principal stockholders and any of these existing principal stockholders could determine to purchase more, less or no shares and warrants in this offering.

Unless otherwise indicated, all information in this prospectus, including the number of shares of our common stock to be outstanding after this offering set forth above, excludes the shares of common stock issuable upon exercise of the warrants being offered by us in this offering and also excludes the following:

- 5,657,256 shares of common stock issuable upon exercise of stock options outstanding as of December 31, 2012, at a weighted-average exercise price of $4.96 per share;
- 2,413,469 shares of common stock reserved as of December 31, 2012 for future issuance under our equity incentive plans;
- 1,926 shares of common stock reserved as of December 31, 2012 for issuance upon any conversion of our outstanding Series A convertible preferred stock, or Series A preferred stock;
- 6,266,175 shares of common stock reserved as of December 31, 2012 for issuance upon any conversion of our outstanding Series D redeemable convertible preferred stock, or Series D preferred stock;
- 8,484,840 shares of common stock reserved as of December 31, 2012 for issuance upon any conversion of our outstanding Series E convertible preferred stock, or Series E preferred stock; and
- 12,923,892 shares of common stock issuable upon exercise of warrants outstanding as of December 31, 2012, at a weighted average exercise price of $1.24 per share.

In addition, unless otherwise indicated, this prospectus also reflects and assumes the following:

- no exercise of outstanding options or warrants; and

no issuance of pre-funded warrants.

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Summary Financial Data

The following table sets forth a summary of our historical financial data at the date and for the periods indicated. The summary historical financial data presented below for the years ended December 31, 2012, 2011 and 2010 and as of December 31, 2012 have been derived from our audited financial statements, which are included elsewhere in this prospectus. The summary historical financial data presented below for the years ended December 31, 2009 and 2008 are derived from audited financial statements, which are not included in this prospectus. Our historical results are not necessarily indicative of results to be expected in any future period.

The summary historical financial data presented below should be read in conjunction with Management s Discussion and Analysis of Financial Condition and Results of Operations and our financial statements and the related notes thereto, which are included elsewhere in this prospectus. The summary historical financial data in this section is not intended to replace our financial statements or the related notes thereto.

	Year Ended December 31,				
	2012	2011	2010	2009	2008
	(In thousands, except per share data)				
Alliance revenue	$ 51	$ 53	$ 16,110	$ 34,518	$ 26,450
Operating expenses:					
Research and development	13,673	17,969	24,226	18,570	16,152
General and administrative	6,279	7,939	9,867	8,561	9,798
Total operating expenses	19,952	25,908	34,093	27,131	25,950
(Loss) income from operations	(19,901)	(25,855)	(17,983)	7,387	500
Other income (expense):					
Decrease in fair value of warrant liability	675	1,974			
Investment income, net	9	30	116	145	1,344
Interest expense			(2)	(3)	(92)
Foreign currency exchange (loss) gain	(23)	75	(94)	(27)	(267)
(Loss) income before income taxes	(19,240)	(23,776)	(17,963)	7,502	1,485
Income tax benefit				44	24
Net (loss) income	$ (19,240)	$ (23,776)	$ (17,963)	$ 7,546	$ 1,509
Preferred stock accretion and dividends	3,210	4,548			
Net (loss) income applicable to common stockholders	$ (22,450)	$ (28,324)	$ (17,963)	$ 7,546	$ 1,509
Basic net (loss) income per share applicable to common stockholders	$ (0.81)	$ (1.03)	$ (0.71)	$ 0.32	$ 0.07
Diluted net (loss) income per share applicable to common stockholders	$ (0.81)	$ (1.03)	$ (0.71)	$ 0.31	$ 0.06
Shares used in computing basic net (loss) income per common share applicable to common stockholders[(1)]	27,639	27,623	25,139	23,420	22,655
Shares used in computing diluted net (loss) income per common share applicable to common stockholders[(1)]	27,639	27,623	25,139	24,079	25,331

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	As of December 31, 2012	
	Actual	As Adjusted[2] (unaudited)
	(In thousands)	
Balance Sheet Data:		
Cash, cash equivalents and investments	$ 10,096	$ 23,369
Working capital	6,163	19,436
Total assets	10,823	24,096
Capital lease obligations	12	12
Redeemable preferred stock	5,921	5,921
Accumulated deficit	(394,658)	(394,658)
Total stockholders equity	706	13,979

(1) Computed on the basis described in Note 11 of notes to financial statements appearing elsewhere in this prospectus.

(2) As adjusted to reflect our issuance and sale in this offering of $15,000,000 of shares of common stock and warrants to purchase shares of our common stock at an assumed combined public offering price of $0.73 per share of common stock and related warrant, which price was the last reported sale price of our common stock on the Nasdaq Capital Market on April 29, 2013, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us and excluding the proceeds, if any, from the exercise of the warrants issued pursuant to this offering.

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RISK FACTORS

Investing in our securities involves a high degree of risk. You should carefully consider the risks described below, together with all of the other information included in this prospectus, before making an investment decision. Our business, financial condition and results of operations could be materially and adversely affected by any of these risks or uncertainties. In that case, the market price of our common stock could decline, and you may lose all or part of your investment.

Risks Relating to Our Financial Results and Need for Financing

We will need additional financing, which may be difficult to obtain. Our failure to obtain necessary financing or doing so on unattractive terms could result in the termination of our operations and the sale and license of our assets or otherwise adversely affect our research and development programs and other operations.

We had cash and cash equivalents of approximately $10.1 million at December 31, 2012. We believe that without the proceeds of this offering our existing cash and cash equivalents would only be sufficient to fund our operations at least into the third quarter of 2013 based on our current operating plan, including the completion of our ongoing Phase 1 clinical trial of IMO-8400 in healthy subjects that we initiated in the fourth quarter of 2012, and preparations for the further advancement of our autoimmune and inflammatory disease program. We believe, however, that the net proceeds of this offering, together with our existing cash and cash equivalents, will enable us to fund our operations at least through the fourth quarter of 2014. Specifically, we believe that our available funds following this offering will be sufficient to enable us to conduct our planned Phase 2 clinical trial of IMO-8400 in patients with psoriasis and to plan for further clinical development of IMO-8400. We expect that these funds will not be sufficient to enable us to conduct, and we do not plan to conduct, any other clinical development of IMO-8400 or to conduct any other development of our other product candidates or technologies, including IMO-3100. It is also possible that we will not achieve the progress that we expect with respect to IMO-8400 because the actual costs and timing of clinical development activities are difficult to predict and are subject to substantial risks and delays.

We expect that we will require substantial additional funds beyond the proceeds of this offering to conduct research and development, including preclinical testing and clinical trials of our drug candidates and to fund our operations. We are seeking and expect to continue to seek additional funding through collaborations, the sale or license of assets or financings of equity or debt securities. We believe that the key factors that will affect our ability to obtain funding are:

- the results of our clinical and preclinical development programs, including the top-line results of the Phase 2 trial of IMO-3100 and anticipated results of the ongoing Phase 1 clinical trial of IMO-8400;
- developments related to our existing collaboration with Merck & Co.;
- our ability to maintain the listing of our common stock on the Nasdaq Capital Market or an alternative national securities exchange;
- the cost, timing, and outcome of regulatory reviews;
- competitive and potentially competitive products and technologies and investors receptivity to our drug candidates and the technology underlying them in light of competitive products and technologies;
- the receptivity of the capital markets to financings by biotechnology companies generally and companies with drug candidates and technologies such as ours specifically; and

our ability to enter into additional collaborations with biotechnology and pharmaceutical companies and the success of such collaborations.

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In addition, increases in expenses or delays in clinical development may adversely impact our cash position and require additional funds or further cost reductions.

Additional financing may not be available to us when we need it or may not be available to us on favorable or acceptable terms or at all. We could be required to seek funds through collaborative alliances or through other means that may require us to relinquish rights to some of our technologies, drug candidates or drugs that we would otherwise pursue on our own. In addition, if we raise additional funds by issuing equity securities, our then existing stockholders will experience dilution. The terms of any financing may adversely affect the holdings or the rights of existing stockholders. An equity financing that involves existing stockholders may cause a concentration of ownership. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends, and are likely to include rights that are senior to the holders of our common stock. Any additional debt financing or equity that we raise may contain terms, such as liquidation and other preferences, or liens or other restrictions on our assets, which are not favorable to us or our stockholders.

If we are unable to obtain adequate funding on a timely basis or at all, we will be required to terminate, modify or delay preclinical or clinical trials of one or more of our drug candidates, significantly curtail or terminate discovery or development programs for new drug candidates, relinquish rights to portions of our technology, drug candidates and/or products or terminate our operations and pursue a liquidation of the company through a sale or license of assets or a possible bankruptcy.

Our independent auditors have expressed substantial doubt about our ability to continue as a going concern.

We have received a report from Ernst & Young LLP, our independent registered public accounting firm, regarding our financial statements as of December 31, 2012 and for the fiscal year then ended, which included an explanatory paragraph stating that the financial statements were prepared assuming we will continue as a going concern. The report also stated that our recurring losses and negative cash flows from operations will require us to raise additional capital or obtain alternative means of financial support, or both, prior to December 31, 2013 in order to continue to fund our operations. These factors raise substantial doubt about our ability to continue as a going concern. As, without the proceeds of this offering, we only have cash resources to fund our operations into the third quarter of 2013, we will need to raise substantial additional funds in order to conduct research and development, including preclinical testing and clinical trials of our drug candidates, and to fund our operations. The going concern explanatory paragraph included in our auditor s report on our financial statements could inhibit our ability to finance our operations. If we are unable to obtain adequate funding on a timely basis or at all, we will be required to terminate, modify or delay preclinical or clinical trials of one or more of our drug candidates, significantly curtail or terminate discovery or development programs for new drug candidates, relinquish rights to portions of our technology, drug candidates and/or products or terminate our operations and pursue a liquidation of the company through a sale or license of assets or a possible bankruptcy.

We must meet the Nasdaq Capital Market continued listing requirements or we risk delisting. If our common stock is delisted, our stock price may decline and it will likely make it more difficult for us to sell securities in a financing and for our stockholders to trade our stock.

Our common stock began trading on the Nasdaq Capital Market on February 7, 2013. In order to continue the listing of our common stock on the Nasdaq Capital Market, we are required to satisfy the $2.5 million stockholders equity requirement on or before May 22, 2013 and to otherwise meet the continued listing requirements of the Nasdaq Capital Market. If we do not meet these requirements by such date, our common stock will be delisted.

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Prior to February 7, 2013, our common stock was traded on the Nasdaq Global Market where we were required to meet specified financial requirements, including requirements that we maintain a minimum closing bid price of at least $1.00 per share for our common stock and that we maintain a minimum stockholders equity of $10.0 million or a minimum market value of listed securities of $50.0 million. On June 7, 2012, we received a notification letter from the Nasdaq Listing Qualifications staff of the Nasdaq Stock Market advising us that we were not in compliance with the $50.0 million minimum market value of listed securities requirement for continued listing on the Nasdaq Global Market pursuant to Nasdaq Listing Rule 5450(b)(2)(A). Nasdaq also noted in its letter that we did not satisfy the alternative requirement under Nasdaq Listing Rule 5450(b)(1)(A), which requires registrants to maintain a minimum of $10.0 million in stockholders equity. Nasdaq also stated in its letter that, in accordance with Nasdaq Listing Rule 5810(c)(3)(C), we had been provided a compliance period of 180 calendar days, or until December 4, 2012, to regain compliance with the minimum $50.0 million market value continued listing requirement.

On December 5, 2012, we received a letter from the Listing Qualifications Staff of the Nasdaq Stock Market advising us that we had not regained compliance with the minimum $50.0 million market value of listed securities requirement set forth in Nasdaq Listing Rule 5450(b)(2)(A) or the minimum $10.0 million stockholders equity alternative continued listing requirement set forth in Nasdaq Listing Rule 5450(b)(1)(A), and that, unless we requested a hearing before the Panel trading in our common stock would be suspended at the opening of business on December 14, 2012, and our common stock would be delisted from the Nasdaq Global Market. We requested a hearing before the Nasdaq Listing Qualifications Hearings Panel, or the Panel, at which we requested continued listing pending our return to compliance. Our hearing request stayed the suspension of trading and delisting of our common stock pending the conclusion of the hearing process. On February 5, 2013, the Panel granted our request to transfer the listing of our common stock from the Nasdaq Global Market to the Nasdaq Capital Market and to continue the listing of our common stock on the Nasdaq Capital Market, provided that we have satisfied the $2.5 million stockholders equity requirement on or before March 31, 2013, and have otherwise met the continued listing requirements of the Nasdaq Capital Market. On March 5, 2013, we received a revised determination from the Panel indicating that the Panel had extended the date by which we are required to satisfy the $2.5 million stockholders equity requirement for continued listing on that market and otherwise meet the continued listing requirements of the Nasdaq Capital Market from March 31, 2013 to May 22, 2013. In addition, by May 22, 2013, we are required to provide the Panel with additional information regarding our projected burn-rate and stockholders equity through May 31, 2014.

In addition, on November 26, 2012, we received a letter from the Listing Qualifications Staff of the Nasdaq Stock Market indicating that, based on the closing bid price of our common stock for the 30 consecutive business days prior to November 26, 2012, we no longer satisfied the requirement that our common stock maintain a minimum bid price of $1.00 per share as required by Nasdaq Listing Rule 5450(a)(1). Nasdaq stated in its letter that in accordance with Nasdaq Listing Rule 5810(c)(3)(A), we had been provided 180 calendar days, or until May 28, 2013, to regain compliance with the minimum bid price requirement. The Nasdaq letter stated that if, at any time before May 28, 2013, the closing bid price of our common stock is at or above $1.00 per share for a minimum of 10 consecutive business days, we will be deemed to have regained compliance with the minimum bid price requirement and the matter will be closed. If we do not regain compliance with the minimum bid price requirement by May 28, 2013, Nasdaq will provide us with a written notification that our common stock is subject to delisting. We may be eligible to receive an additional 180 day grace period (for a total of 360 days from November 26, 2012) to regain compliance with the minimum bid price requirement provided that we satisfy the continued listing standard for market value of publicly held shares and all other applicable initial listing standards for the Nasdaq Capital Market, other than the minimum bid price requirement, as of May 28, 2013.

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If our common stock is delisted from Nasdaq, it may be eligible to trade on the Over-The-Counter Bulletin Board, which may be a less liquid market, or on the pink sheets. In such case, our stockholders ability to trade, or obtain quotations of the market value of, shares of our common stock would be severely limited because of lower trading volumes and transaction delays. These factors could contribute to lower prices and larger spreads in the bid and ask prices for our securities. There can be no assurance that our common stock, if delisted from the Nasdaq Capital Market, will be listed on a national securities exchange, a national quotation service, the Over-The-Counter Bulletin Board or the pink sheets. Delisting from Nasdaq, or even the issuance of a notice of potential delisting, would also result in negative publicity, make it more difficult for us to raise additional capital, adversely affect the market liquidity of our common stock, reduce security analysts coverage of us and diminish investor, supplier and employee confidence.

We have incurred substantial losses and expect to continue to incur losses. We will not be successful unless we reverse this trend.

We have incurred losses in every year since our inception, except for 2002, 2008, and 2009 when our recognition of revenues under license and collaboration agreements resulted in our reporting net income for those years. As of December 31, 2012, we had an accumulated deficit of $394.7 million. Since January 1, 2001, we have primarily been involved in the development of our TLR pipeline. From January 1, 2001 to December 31, 2012, we incurred losses of $134.5 million. We incurred losses of $260.2 million prior to December 31, 2000 during which time we were primarily involved in the development of non-TLR targeted antisense technology. These losses, among other things, have had and will continue to have an adverse effect on our stockholders equity, total assets, and working capital.

We have never had any products of our own available for commercial sale and have received no revenues from the sale of drugs. As of January 31, 2013, almost all of our revenues have been from collaborative and license agreements. We have devoted substantially all of our efforts to research and development, including clinical trials, and we have not completed development of any drug candidates. Because of the numerous risks and uncertainties associated with developing drugs, we are unable to predict the extent of any future losses, whether or when any of our drug candidates will become commercially available, or when we will become profitable, if at all. We expect to incur substantial operating losses in future periods.

Risks Relating to Our Business, Strategy and Industry

We are depending heavily on the development of TLR-targeted drug candidates for the treatment of autoimmune and inflammatory diseases. If we terminate the development of the program or any of our drug candidates in the program, are unable to successfully develop and commercialize any of our drug candidates, or experience significant delays in doing so, our business may be materially harmed.

We have invested a significant portion of our time and financial resources in the development of our clinical stage lead drug candidates, IMO-3100 and IMO-8400, as part of our autoimmune and inflammatory disease program. Based on the clinical activity of IMO-3100 observed in our four-week Phase 2 clinical trial of IMO-3100 in patients with psoriasis, we have determined that the next step in our development program is to conduct a Phase 2 clinical trial in patients with psoriasis to, among other things, evaluate the clinical activity of IMO-8400 with a treatment period of up to 12 weeks. Based on our evaluation of the comparative profiles of IMO-3100 and IMO-8400, including the engagement of TLR8 by IMO-8400, we have determined to focus our resources on the development of IMO-8400 and to conduct this trial in patients with psoriasis with IMO-8400. We expect that we could initiate this trial as early as the second quarter of 2013 and could have top-line data by the end of 2013. However, we do not plan to initiate this trial unless and until we have completed this offering and raised the necessary proceeds to fund this trial and until we have confirmed the successful completion of our ongoing Phase 1 trial of IMO-8400.

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We are also planning to initiate a signal-seeking Phase 2 clinical trial of IMO-8400 in patients with lupus and are considering conducting a proof-of-concept study of IMO-8400 in an orphan autoimmune disease indication. We expect to select the orphan autoimmune disease indication for further exploration in the second half of 2013. However, our plans to conduct the Phase 2 clinical trial of IMO-8400 in patients with lupus and the proof-of-concept study are subject to successful completion of our ongoing Phase 1 trial of IMO-8400 and our ability to raise additional funding beyond the proceeds of this offering to fund the conduct of this Phase 2 trial and proof-of-concept study. We expect to seek such funding through public or private equity offerings, debt financings, collaborations and licensing arrangements or other sources.

As such, we anticipate that our ability to generate product revenues will depend heavily on the successful development and commercialization of our drug candidates in our autoimmune and inflammatory disease program. Our ability to generate product revenues will also depend on the development and commercialization of the drug candidates being developed under our collaboration with Merck & Co. Our efforts, and the efforts of Merck & Co., to develop and commercialize these compounds are at an early stage and are subject to many challenges. We have experienced setbacks with respect to our programs for IMO-3100, IMO-2125, and IMO-2055, including:

During the fourth quarter of 2010, we commenced additional nonclinical studies of IMO-3100 in light of some reversible immune responses that were observed in the 13-week nonclinical toxicology studies and that were inconsistent with observations made in our other nonclinical studies of IMO-3100. In June 2011, we submitted a Phase 2 protocol to the United States Food and Drug Administration, or FDA, to conduct a 12-week clinical trial of IMO-3100 in patients with psoriasis. In July 2011, the FDA placed a clinical hold on the protocol that we had submitted. In October 2011, we submitted to FDA a new Phase 2 protocol to evaluate IMO-3100 in adult patients with moderate to severe plaque psoriasis, over a four-week treatment period. In December 2011, the FDA removed the clinical hold. We subsequently initiated in the second quarter of 2012 the four-week Phase 2 clinical trial that we completed in the fourth quarter of 2012. We cannot be certain that the FDA will allow us to conduct further clinical trials of IMO-3100 for treatment periods of more than four weeks or at all without additional clinical or preclinical data.

In April 2011, we chose to delay initiation of our planned 12-week Phase 2 randomized clinical trial of IMO-2125 plus ribavirin in treatment-naïve, genotype 1 hepatitis C virus, or HCV, patients based on preliminary observations in an ongoing 26-week chronic nonclinical toxicology study of IMO-2125 in rodents. We subsequently completed a 39-week chronic nonclinical toxicology study of IMO-2125 in non-human primates in which there were no similar observations. During the third quarter of 2011, we re-assessed and prioritized our drug development programs, and determined to discontinue further investment of internal resources on the development of IMO-2125 for the treatment of HCV.

In July 2011, Merck KGaA, Darmstadt, Germany, or Merck KGaA, informed us that, based on increased incidence of neutropenia and electrolyte imbalances reported in its Phase 1 trial of IMO-2055 in combination with cisplatin/5-FU and cetuximab in patients with first-line squamous cell carcinoma of the head and neck, or SCCHN, and subsequent re-evaluation of its clinical development program, Merck KGaA had determined that it would not conduct further clinical development of IMO-2055. In November 2011, as part of an agreed-upon termination of our collaboration with Merck KGaA, we regained global rights to IMO-2055 and our other TLR9 agonists, including preclinical lead drug candidates selected for further evaluation under the collaboration, for the treatment of cancer. In May 2012, we announced that in the Phase 2 trial of IMO-2055 in combination with cetuximab in patients with second-line SCCHN, the combination of IMO-2055 and cetuximab did not meet the primary endpoint of the trial.

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We intend to seek to enter into collaborations with pharmaceutical companies to advance the use of our TLR candidates. Our setbacks with respect to our programs for IMO-3100, IMO-2125, and IMO-2055 could negatively impact our ability to license any of such compounds to a third party.

Our ability to successfully develop and commercialize these drug candidates, or other potential candidates, will depend on our ability to overcome these recent challenges and on several factors, including the following:

- the drug candidates demonstrating activity in clinical trials;
- the drug candidates demonstrating an acceptable safety profile in nonclinical toxicology studies and during clinical trials;
- timely enrollment in clinical trials of IMO-8400 and other drug candidates, which may be slower than anticipated, potentially resulting in significant delays;
- satisfying conditions imposed on us and/or our collaborators by the FDA or equivalent foreign regulatory authorities regarding the scope or design of clinical trials;
- the ability to demonstrate to the satisfaction of the FDA, or equivalent foreign regulatory authorities, the safety and efficacy of the drug candidates through current and future clinical trials;
- timely receipt of necessary marketing approvals from the FDA and equivalent foreign regulatory authorities;
- the ability to combine our drug candidates and the drug candidates being developed by Merck & Co. and any other collaborators safely and successfully with other therapeutic agents;
- achieving and maintaining compliance with all regulatory requirements applicable to the products;
- establishment of commercial manufacturing arrangements with third-party manufacturers;
- the successful commercial launch of the drug candidates, assuming FDA approval is obtained, whether alone or in combination with other products;
- acceptance of the products as safe and effective by patients, the medical community, and third-party payors;
- competition from other companies and their therapies;
- changes in treatment regimes;

successful protection of our intellectual property rights from competing products in the United States and abroad; and

a continued acceptable safety and efficacy profile of the drug candidates following marketing approval.

If our clinical trials are unsuccessful, or if they are delayed or terminated, we may not be able to develop and commercialize our products.

In order to obtain regulatory approvals for the commercial sale of our products, we are required to complete extensive clinical trials in humans to demonstrate the safety and efficacy of our drug candidates. Clinical trials are lengthy, complex, and expensive processes with uncertain results. We may not be able to complete any clinical trial of a potential product within any specified time period. Moreover, clinical trials may not show our potential products to be both safe and efficacious. The FDA or other equivalent foreign regulatory agencies may not allow us to complete these trials or commence and complete any other clinical trials. For example, in July 2011, the FDA placed a clinical hold on a protocol we had submitted for a proposed Phase 2 clinical trial of IMO-3100 in patients with psoriasis.

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The results from preclinical testing of a drug candidate that is under development may not be predictive of results that will be obtained in human clinical trials. In addition, the results of early human clinical trials may not be predictive of results that will be obtained in larger scale, advanced stage clinical trials. Furthermore, interim results of a clinical trial do not necessarily predict final results, and failure of any of our clinical trials can occur at any stage of testing. Companies in the biotechnology and pharmaceutical industries, including companies with greater experience in preclinical testing and clinical trials than we have, have suffered significant setbacks in clinical trials, even after demonstrating promising results in earlier trials. Moreover, effects seen in nonclinical studies, even if not observed in clinical trials, may result in limitations or restrictions on clinical trials. Numerous unforeseen events may occur during, or as a result of, preclinical testing, nonclinical testing or the clinical trial process that could delay or inhibit the ability to receive regulatory approval or to commercialize drug products.

Other companies developing drugs targeted to TLRs have experienced setbacks in clinical trials. For example in 2007, Coley Pharmaceutical Group, which since has been acquired by Pfizer, Inc., or Pfizer, discontinued four clinical trials for PF-3512676, its investigational TLR9 agonist compound, in combination with cytotoxic chemotherapy in cancer, and suspended its development of Actilon®, a TLR9 agonist, for HCV infection. In July 2007, Anadys Pharmaceuticals, Inc. and its partner Novartis Pharmaceuticals, Ltd., or Novartis, discontinued the development of ANA975, the investigational TLR7 agonist compound for HCV infection. Dynavax Technologies Corporation, or Dynavax, announced in May 2008 discontinuation of the clinical development program for TOLAMBA®, an investigational vaccine which contained a TLR9 agonist adjuvant, and in February 2013 Dynavax announced receipt of a Complete Response Letter from FDA regarding its Biological License Application for HEPLISAV®, which is an investigational hepatitis B vaccine that contains a TLR9 agonist adjuvant. These setbacks with respect to TLR-targeted drug candidates may result in enhanced scrutiny by regulators or institutional review boards, or IRBs, of clinical trials of TLR-targeted drug candidates, including our TLR-targeted drug candidates, which could result in regulators or IRBs prohibiting the commencement of clinical trials, requiring additional nonclinical studies as a precondition to commencing clinical trials or imposing restrictions on the design or scope of clinical trials that could slow enrollment of trials, increase the costs of trials or limit the significance of the results of trials. Such setbacks could also adversely impact the desire of investigators to enroll patients in, and the desire of patients to enroll in, clinical trials of TLR-targeted drug candidates.

Other events that could delay or inhibit conduct of our clinical trials include:

- regulators or IRBs may not authorize us to commence a clinical trial or conduct a clinical trial at a prospective trial site;
- nonclinical or clinical data may not be readily interpreted, which may lead to delays and/or misinterpretation;
- our nonclinical tests, including toxicology studies, or clinical trials may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional nonclinical testing or clinical trials or we may abandon projects that we expect may not be promising;
- the rate of enrollment or retention of patients in our clinical trials may be lower than we expect;
- we might have to suspend or terminate our clinical trials if the participating subjects experience serious adverse events or undesirable side effects or are exposed to unacceptable health risks;
- regulators or IRBs may hold, suspend or terminate clinical research for various reasons, including noncompliance with regulatory requirements, issues identified through inspections of manufacturing or clinical trial operations or clinical trial sites, or if, in their opinion, the participating subjects are being exposed to unacceptable health risks;

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regulators may hold or suspend our clinical trials while collecting supplemental information on, or clarification of, our clinical trials or other clinical trials, including trials conducted in other countries or trials conducted by other companies;

we, along with our collaborators and subcontractors, may not employ, in any capacity, persons who have been debarred under the FDA s Application Integrity Policy, or similar policy under foreign regulatory authorities. Employment of such debarred persons, even if inadvertent, may result in delays in the FDA s or foreign equivalent s review or approval of our products, or the rejection of data developed with the involvement of such person(s);

the cost of our clinical trials may be greater than we currently anticipate; and

our products may not cause the desired effects or may cause undesirable side effects or our products may have other unexpected characteristics.

The rate of completion of clinical trials is dependent in part upon the rate of enrollment of patients. For example, in our Phase 1 clinical trial of IMO-2125 in patients with chronic HCV infection who had not responded to the current standard of care therapy, completion of each cohort took longer than anticipated due to enrollment procedures. Patient accrual is a function of many factors, including:

the size of the patient population;

the proximity of patients to clinical sites;

the eligibility criteria for the trial;

the nature of the trial, including the pattern of patient enrollment;

the existence of competitive clinical trials; and

the availability of alternative treatments.

We do not know whether clinical trials will begin as planned, will need to be restructured or will be completed on schedule, if at all. Significant clinical trial delays also could allow our competitors to bring products to market before we do and impair our ability to commercialize our products.

Delays in commencing clinical trials of potential products could increase our costs, delay any potential revenues, and reduce the probability that a potential product will receive regulatory approval.

Our drug candidates and our collaborators drug candidates will require preclinical and other nonclinical testing and extensive clinical trials prior to submission of any regulatory application for commercial sales. In conducting clinical trials, we cannot be certain that any planned clinical trial will begin on time, if at all. Delays in commencing clinical trials of potential products could increase our product development costs, delay any potential revenues, and reduce the probability that a potential product will receive regulatory approval.

Commencing clinical trials may be delayed for a number of reasons, including delays in:

manufacturing sufficient quantities of drug candidate that satisfy the required quality standards for use in clinical trials;

demonstrating sufficient safety to obtain regulatory approval for conducting a clinical trial;

reaching an agreement with any collaborators on all aspects of the clinical trial;

reaching agreement with contract research organizations, if any, and clinical trial sites on all aspects of the clinical trial;

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resolving any objections from the FDA or any regulatory authority on an Investigational New Drug application, or IND, or proposed clinical trial design;

obtaining IRB approval for conducting a clinical trial at a prospective site; and

enrolling patients in order to commence the clinical trial.

The technologies on which we rely are unproven and may not result in any approved and marketable products.

Our technologies or therapeutic approaches are relatively new and unproven. We have focused our efforts on the research and development of RNA- and DNA-based compounds targeted to TLRs and on GSOs. Neither we nor any other company have obtained regulatory approval to market such compounds as therapeutic drugs, and no such products currently are being marketed. It is unknown whether the results of preclinical studies with TLR-targeted compounds will be indicative of results that may be obtained in clinical trials, and results we have obtained in the clinical trials we have conducted to date may not be predictive of results in subsequent large-scale clinical trials. Further, the chemical and pharmacological properties of RNA- and DNA-based compounds targeted to TLRs or of GSOs may not be fully recognized in preclinical studies and small-scale clinical trials, and such compounds may interact with human biological systems in unforeseen, ineffective or harmful ways that we have not yet identified.

As a result of these factors, we may never succeed in obtaining regulatory approval to market any product. Furthermore, the commercial success of any of our products for which we may obtain marketing approval from the FDA or other regulatory authorities will depend upon their acceptance by patients, the medical community, and third-party payors as clinically useful, safe, and cost-effective. In addition, if products being developed by our competitors have negative clinical trial results or otherwise are viewed negatively, the perception of our technologies and market acceptance of our products could be impacted negatively.

Our recent setbacks with respect to our TLR-targeted compounds, together with the setbacks experienced by other companies developing TLR-targeted compounds, may result in a negative perception of our technology and our TLR-targeted compounds, impact our ability to obtain marketing approval of these drug candidates and adversely affect acceptance of our technology and our TLR-targeted compounds by patients, the medical community and third-party payors.

Our efforts to educate the medical community on our potentially unique approaches may require greater resources than would be typically required for products based on conventional technologies or therapeutic approaches. The safety, efficacy, convenience, and cost-effectiveness of our products as compared to competitive products will also affect market acceptance.

We face substantial competition, which may result in others discovering, developing or commercializing drugs before or more successfully than us.

We are developing our TLR-targeted drug candidates for use in the treatment of autoimmune and inflammatory diseases and for use as vaccine adjuvants. We have two drug candidates in clinical development in our autoimmune and inflammatory disease program. We are also collaborating with Merck & Co. for the use of agonists of TLR7, TLR8, and TLR9 as vaccine adjuvants for cancer, infectious diseases and Alzheimer s disease. Finally, we are seeking to enter into collaborative alliances with pharmaceutical companies to advance our TLR-targeted programs in oncology and respiratory diseases, and for the use of TLR3 agonists as vaccine adjuvants, as well as applications of our GSO technology platform. For all of these disease areas, there are many other companies, public and private, that are actively engaged in discovery, development, and commercializing products and technologies that may compete with our drug candidates and programs, including TLR targeted compounds as well as non-TLR targeted therapies.

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Our principal competitor developing TLR-targeted compounds for autoimmune and inflammatory diseases is Dynavax, with its collaborator, GlaxoSmithKline plc., or GlaxoSmithKline. Merck & Co. s vaccines using our TLR7, TLR8 or TLR9 agonists as adjuvants may compete with vaccines using TLR agonists as adjuvants being developed or marketed by GlaxoSmithKline, Novartis, Dynavax, VaxInnate, Inc., Intercell AG and Cytos Biotechnology AG.

We are developing drug candidates for the treatment of moderate to severe plaque psoriasis. There are a number of well-known immune suppressors and biologics that are currently being widely used for the treatment of moderate to severe plaque psoriasis, including methotrexate and cyclosporine, which are both immune suppressors, and biologics like Enbrel, which is marketed by Amgen Inc., or Amgen, Pfizer and Takeda Pharmaceutical Company Limited, Remicade, which is marketed by Janssen Biotech, Merck & Co. and Mitsubishi Tanabe Pharma, Humira, which is marketed by Abbott Laboratories, and Stelara, which is marketed by Janssen Biotech. In addition to existing treatments, we are also aware of additional compounds for the treatment of moderate to severe plaque psoriasis that are currently in late stage development, including apremilast, which is being developed by Celgene Corporation, tofacitinib, which is being developed by Pfizer, secukinumab, which is being developed by Novartis, ixekizumab, which is being developed by Eli Lilly and Company, and brodalumab, which is being developed by Amgen, AstraZeneca PLC and Kyowa Hakko Kirin Co., Ltd.

Some of these potentially competitive products have been in development or commercialized for years, in some cases by large, well established pharmaceutical companies. Many of the marketed products have been accepted by the medical community, patients, and third-party payors. Our ability to compete may be affected by the previous adoption of such products by the medical community, patients, and third-party payors. Additionally, in some instances, insurers and other third-party payors seek to encourage the use of generic products, which makes branded products, such as our drug candidates, potentially less attractive, from a cost perspective, to buyers.

We recognize that other companies, including large pharmaceutical companies, may be developing or have plans to develop products and technologies that may compete with ours. Many of our competitors have substantially greater financial, technical, and human resources than we have. In addition, many of our competitors have significantly greater experience than we have in undertaking preclinical studies and human clinical trials of new pharmaceutical products, obtaining FDA and other regulatory approvals of products for use in health care and manufacturing, and marketing and selling approved products. Our competitors may discover, develop or commercialize products or other novel technologies that are more effective, safer or less costly than any that we are developing. Our competitors may also obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours.

We anticipate that the competition with our products and technologies will be based on a number of factors including product efficacy, safety, availability, and price. The timing of market introduction of our products and competitive products will also affect competition among products. We expect the relative speed with which we can develop products, complete the clinical trials, and approval processes and supply commercial quantities of the products to the market to be important competitive factors. Our competitive position will also depend upon our ability to attract and retain qualified personnel, to obtain patent protection or otherwise develop proprietary products or processes, and protect our intellectual property, and to secure sufficient capital resources for the period between technological conception and commercial sales.

Competition for technical and management personnel is intense in our industry, and we may not be able to sustain our operations or grow if we are unable to attract and retain key personnel.

Our success is highly dependent on the retention of principal members of our technical and management staff, including Dr. Sudhir Agrawal. Dr. Agrawal serves as our Chairman of the Board of Directors,

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President and Chief Executive Officer. Dr. Agrawal has made significant contributions to the field of oligonucleotide-based drug candidates, and has led the discovery and development of our compounds targeted to TLRs. He is named as an inventor on over 400 patents and patent applications in countries around the world. Dr. Agrawal provides us with leadership for our management team and research and development activities. The loss of Dr. Agrawal s services would be detrimental to our ongoing scientific progress and the execution of our business plan.

We are a party to an employment agreement with Dr. Agrawal that expires on October 19, 2015, but automatically extends annually for additional one year periods. This agreement may be terminated by us or Dr. Agrawal for any reason or no reason at any time upon notice to the other party. We do not carry key man life insurance for Dr. Agrawal.

Furthermore, our future growth will require hiring a number of qualified technical and management personnel. Accordingly, recruiting and retaining such personnel in the future will be critical to our success. There is intense competition from other companies and research and academic institutions for qualified personnel in the areas of our activities. If we are not able to continue to attract and retain, on acceptable terms, the qualified personnel necessary for the continued development of our business, we may not be able to sustain our operations or growth.

Regulatory Risks

We may not be able to obtain marketing approval for products resulting from our development efforts.

All of the drug candidates that we are developing, or may develop in the future, will require additional research and development, extensive preclinical studies, nonclinical testing, clinical trials, and regulatory approval prior to any commercial sales. This process is lengthy, often taking a number of years, is uncertain, and is expensive. Since our inception, we have conducted clinical trials of a number of compounds. Currently two of our compounds, IMO-3100 and IMO-8400, are in clinical development. The FDA and other regulatory authorities may not approve any of our potential products for any indication.

We may need to address a number of technological challenges in order to complete development of our products. Moreover, these products may not be effective in treating any disease or may prove to have undesirable or unintended side effects, unintended alteration of the immune system over time, toxicities or other characteristics that may preclude our obtaining regulatory approval or prevent or limit commercial use. If we do not obtain necessary regulatory approvals, our business will be adversely affected.

We are subject to comprehensive regulatory requirements, which are costly and time consuming to comply with; if we fail to comply with these requirements, we could be subject to adverse consequences and penalties.

The testing, manufacturing, labeling, advertising, promotion, export, and marketing of our products are subject to extensive regulation by governmental authorities in Europe, the United States, and elsewhere throughout the world.

In general, submission of materials requesting permission to conduct clinical trials may not result in authorization by the FDA or any equivalent foreign regulatory agency to commence clinical trials. Further, permission to continue ongoing trials may be withdrawn by the FDA or other regulatory agencies at any time after initiation, based on new information available after the initial authorization to commence clinical trials or for other reasons. In addition, submission of an application for marketing approval to the relevant regulatory agency following completion of clinical trials may not result in the regulatory agency approving the application if applicable regulatory criteria are not satisfied, and may result in the regulatory agency requiring additional testing or information.

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Even if we obtain regulatory approval for any of our product candidates, we will be subject to ongoing FDA obligations and regulatory oversight. Any regulatory approval of a product may contain limitations on the approved indicated uses for which the product may be marketed or requirements for costly post-marketing testing and surveillance to monitor the safety or efficacy of the product. Any product for which we obtain marketing approval, along with the facilities at which the product is manufactured, any post-approval clinical data, and any advertising and promotional activities for the product will be subject to continual review and periodic inspections by the FDA and other regulatory agencies.

Both before and after approval is obtained, failure to comply with regulatory requirements, or discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, may result in:

- the regulatory agency s delay in approving, or refusal to approve, an application for marketing of a product or a supplement to an approved application;
- restrictions on our products or the marketing or manufacturing of our products;
- withdrawal of our products from the market;
- warning letters;
- voluntary or mandatory product recalls;
- fines;
- suspension or withdrawal of regulatory approvals;
- product seizure or detention;
- refusal to permit the import or export of our products;
- injunctions or the imposition of civil penalties; and
- criminal penalties.

We have only limited experience in regulatory affairs and our products are based on new technologies; these factors may affect our ability or the time we require to obtain necessary regulatory approvals.

We have only limited experience in filing the applications necessary to obtain regulatory approvals. Moreover, the products that result from our research and development programs will likely be based on new technologies and new therapeutic approaches that have not been extensively tested in humans. The regulatory requirements governing these types of products may be more rigorous than for conventional drugs. As a result, we may experience a longer regulatory process in connection with obtaining regulatory approvals of any product that we develop.

Failure to obtain regulatory approval in jurisdictions outside the United States will prevent us from marketing our products abroad.

We intend to market our products, if approved, in markets outside the United States, which will require separate regulatory approvals and compliance with numerous and varying regulatory requirements. The approval procedures vary among such markets and may involve requirements for additional testing, and the time required to obtain approval may differ from that required to obtain FDA approval. Approval by the FDA does not ensure approval by regulatory authorities in other countries or jurisdictions, and approval by one foreign regulatory authority does not ensure approval by regulatory authorities in other foreign countries or by the FDA. The foreign regulatory approval process may include all of the risks associated with obtaining FDA approval. We may not obtain foreign regulatory approvals on a timely basis, if at all.

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Risks Relating to Collaborators

If we are unable to establish additional collaborative alliances, our business may be materially harmed.

Collaborators provide the necessary resources and drug development experience to advance our compounds in their programs. We are seeking to enter into collaborative alliances with pharmaceutical companies to advance our TLR-targeted programs in oncology, infectious diseases, respiratory diseases, and the use of TLR3 agonists as vaccine adjuvants, as well as applications of our GSO technology platform.

Upfront payments and milestone payments received from collaborations help to provide us with the financial resources for our internal research and development programs. Our internal programs are focused on developing TLR-targeted drug candidates for the potential treatment of autoimmune and inflammatory diseases. We believe that additional resources will be required to advance compounds in all of these areas. If we do not reach agreements with additional collaborators in the future, we may not be able to obtain the expertise and resources necessary to achieve our business objectives, our ability to advance our compounds will be jeopardized and we may fail to meet our business objectives.

We may have difficulty establishing additional collaborative alliances, particularly with respect to our TLR-targeted drug candidates and technology. Potential partners may note that our TLR collaborations with Novartis and with Merck KGaA have been terminated. Potential partners may also be reluctant to establish collaborations with respect to IMO-2125, IMO-3100, IMO-2055, and our other TLR-targeted drug candidates, given our recent setbacks with respect to these drug candidates. We also face, and expect to continue to face, significant competition in seeking appropriate collaborators.

Even if a potential partner were willing to enter into a collaborative alliance with respect to our TLR-targeted compounds or technology, the terms of such a collaborative alliance may not be on terms that are favorable to us. Moreover, collaborations are complex and time consuming to negotiate, document, and implement. We may not be successful in our efforts to establish and implement collaborations on a timely basis.

Our existing collaboration and any collaborations we enter into in the future may not be successful.

An important element of our business strategy includes entering into collaborative alliances with corporate collaborators, primarily large pharmaceutical companies, for the development, commercialization, marketing, and distribution of some of our drug candidates. In December 2007, we entered into an exclusive, worldwide license agreement with Merck KGaA to research, develop, and commercialize products containing our TLR9 agonists for treatment of cancer, excluding cancer vaccines. In December 2006, we entered into an exclusive license and research collaboration with Merck & Co. to research, develop, and commercialize vaccine products containing our TLR7, TLR8, and TLR9 agonists in the fields of cancer, infectious diseases, and Alzheimer s disease.

Any collaboration that we enter into may not be successful. For instance, in July 2011, Merck KGaA informed us that it had determined not to conduct further clinical development of IMO-2055, and in November 2011, we entered into an agreement with Merck KGaA terminating our collaboration with them. The success of our collaborative alliances, if any, will depend heavily on the efforts and activities of our collaborators. Our existing collaboration and any potential future collaborations have risks, including the following:

- our collaborators may control the development of the drug candidates being developed with our technologies and compounds including the timing of development;

- our collaborators may control the public release of information regarding the developments, and we may not be able to make announcements or data presentations on a schedule favorable to us;

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disputes may arise in the future with respect to the ownership of rights to technology developed with our collaborators;

disagreements with our collaborators could delay or terminate the research, development or commercialization of products, or result in litigation or arbitration;

we may have difficulty enforcing the contracts if any of our collaborators fail to perform;

our collaborators may terminate their collaborations with us, which could make it difficult for us to attract new collaborators or adversely affect the perception of us in the business or financial communities;

our collaboration agreements are likely to be for fixed terms and subject to termination by our collaborators in the event of a material breach or lack of scientific progress by us;

our collaborators may have the first right to maintain or defend our intellectual property rights and, although we would likely have the right to assume the maintenance and defense of our intellectual property rights if our collaborators do not, our ability to do so may be compromised by our collaborators acts or omissions;

our collaborators may challenge our intellectual property rights or utilize our intellectual property rights in such a way as to invite litigation that could jeopardize or invalidate our intellectual property rights or expose us to potential liability;

our collaborators may not comply with all applicable regulatory requirements, or may fail to report safety data in accordance with all applicable regulatory requirements;

our collaborators may change the focus of their development and commercialization efforts. Pharmaceutical and biotechnology companies historically have re-evaluated their priorities following mergers and consolidations, which have been common in recent years in these industries. For example, we have a strategic partnership with Merck & Co., which merged with Schering-Plough, which has been involved with certain TLR-targeted research and development programs. Although the merger has not affected our partnership with Merck & Co. to date, management of the combined company could determine to reduce the efforts and resources that the combined company will apply to its strategic partnership with us or terminate the strategic partnership. The ability of our products to reach their potential could be limited if our collaborators decrease or fail to increase spending relating to such products;

our collaborators may under fund or not commit sufficient resources to the testing, marketing, distribution or development of our products; and

our collaborators may develop alternative products either on their own or in collaboration with others, or encounter conflicts of interest or changes in business strategy or other business issues, which could adversely affect their willingness or ability to fulfill their obligations to us.

Given these risks, it is possible that any collaborative alliance into which we enter may not be successful. Collaborations with pharmaceutical companies and other third parties often are terminated or allowed to expire by the other party. For example, effective as of February 2010, Novartis terminated the research collaboration and option agreement that we entered into with it in May 2005, and in November 2011, we entered into an agreement with Merck KGaA terminating our collaboration with them. In addition, Merck & Co. may terminate its license and research collaboration agreement by giving us 90 days advance notice. The termination or expiration of our agreement with Merck & Co. or any other collaboration agreement that we enter into in the future may adversely affect us financially and could harm our business reputation.

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Risks Relating to Intellectual Property

If we are unable to obtain patent protection for our discoveries, the value of our technology and products will be adversely affected.

Our patent positions, and those of other drug discovery companies, are generally uncertain and involve complex legal, scientific, and factual questions. Our ability to develop and commercialize drugs depends in significant part on our ability to:

- obtain patents;
- obtain licenses to the proprietary rights of others on commercially reasonable terms;
- operate without infringing upon the proprietary rights of others;
- prevent others from infringing on our proprietary rights; and
- protect our trade secrets.

We do not know whether any of our patent applications or those patent applications that we license will result in the issuance of any patents. Our issued patents and those that may be issued in the future, or those licensed to us, may be challenged, invalidated or circumvented, and the rights granted thereunder may not provide us proprietary protection or competitive advantages against competitors with similar technology. Moreover, intellectual property laws may change and negatively impact our ability to obtain issued patents covering our technologies or to enforce any patents that issue. Because of the extensive time required for development, testing, and regulatory review of a potential product, it is possible that, before any of our products can be commercialized, any related patent may expire or remain in force for only a short period following commercialization, thus reducing any advantage provided by the patent.

Because patent applications in the United States and many foreign jurisdictions are typically not published until 18 months after filing, or in some cases not at all, and because publications of discoveries in the scientific literature often lag behind actual discoveries, neither we nor our licensors can be certain that we or they were the first to make the inventions claimed in issued patents or pending patent applications, or that we or they were the first to file for protection of the inventions set forth in these patent applications.

As of January 31, 2013, we owned more than 50 U.S. patents and patent applications and more than 100 patents and patent applications throughout the rest of the world for our TLR-targeted immune modulation technologies. These patents and patent applications include novel chemical compositions of matter and methods of use of our IMO compounds, including IMO-3100, IMO-8400 and IMO-2055. As of January 31, 2013, all of our intellectual property covering immune modulatory compositions and methods of their use is based on discoveries made solely by us. These patents expire at various dates ranging from 2017 to 2031. With respect to IMO-3100, we have issued U.S. patents that cover the chemical composition of matter of IMO-3100 and methods of its use that will expire at the earliest in 2026. With respect to IMO-8400, we have U.S. patent applications that cover the chemical composition of matter of IMO-8400 and methods of its use that will expire at the earliest in 2031. With respect to IMO-2055, we have issued U.S. patents that cover the chemical composition of matter of IMO-2055 and methods of its use, including in combination with marketed cancer products, with the earliest composition claims in the United States expiring in 2023.

As of January 31, 2013, we owned three U.S. patent applications and six worldwide patent applications for our GSO compounds and methods of their use. Patents issuing from these patent applications, if any, would expire at the earliest in 2030.

In addition to our TLR-targeted and GSO patent portfolios, we are the owner or hold licenses of patents and patent applications related to antisense technology. As of January 31, 2013, our antisense patent

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portfolio included more than 75 U.S. patents and patent applications and more than 75 patents and patent applications throughout the rest of the world. These antisense patents and patent applications include novel compositions of matter, the use of these compositions for various genes, sequences and therapeutic targets, and oral and other routes of administration. Some of the patents and patent applications in our antisense portfolio were in-licensed. These in-licensed patents expire at various dates ranging from 2013 to 2021.

Third parties may own or control patents or patent applications and require us to seek licenses, which could increase our development and commercialization costs, or prevent us from developing or marketing products.

Although we have many issued patents and pending patent applications in the United States and other countries, we may not have rights under certain third-party patents or patent applications related to our products. Third parties may own or control these patents and patent applications in the United States and abroad. In particular, we are aware of third-party U.S. patents that contain broad claims related to the use of certain oligonucleotides for stimulating an immune response, although we do not believe that these claims are valid. In addition, there may be other patents and patent applications related to our products of which we are not aware. Therefore, in some cases, in order to develop, manufacture, sell or import some of our products, we or our collaborators may choose to seek, or be required to seek, licenses under third-party patents issued in the United States and abroad or under third-party patents that might issue from U.S. and foreign patent applications. In such an event, we would be required to pay license fees or royalties or both to the licensor. If licenses are not available to us on acceptable terms, we or our collaborators may not be able to develop, manufacture, sell or import these products.

We may lose our rights to patents, patent applications or technologies of third parties if our licenses from these third parties are terminated. In such an event, we might not be able to develop or commercialize products covered by the licenses.

Currently, we have not in-licensed any patents or patent applications related to our TLR-targeted drug candidate programs or our GSO compounds and methods of their use. However, we are party to six royalty-bearing license agreements under which we have acquired rights to patents, patent applications, and technology of third parties in the field of antisense technology, which may be applicable to our TLR antisense. Under these licenses we are obligated to pay royalties on net sales by us of products or processes covered by a valid claim of a patent or patent application licensed to us. We also are required in some cases to pay a specified percentage of any sublicense income that we may receive. These licenses impose various commercialization, sublicensing, insurance, and other obligations on us.

Our failure to comply with these requirements could result in termination of the licenses. These licenses generally will otherwise remain in effect until the expiration of all valid claims of the patents covered by such licenses or upon earlier termination by the parties. The issued patents covered by these licenses expire at various dates ranging from 2013 to 2021. If one or more of these licenses is terminated, we may be delayed in our efforts, or be unable, to develop and market the products that are covered by the applicable license or licenses.

We may become involved in expensive patent litigation or other proceedings, which could result in our incurring substantial costs and expenses or substantial liability for damages or require us to stop our development and commercialization efforts.

There has been substantial litigation and other proceedings regarding patent and other intellectual property rights in the biotechnology industry. We may become a party to various types of patent litigation or other proceedings regarding intellectual property rights from time to time even under circumstances where we are not practicing and do not intend to practice any of the intellectual property

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involved in the proceedings. For instance, in 2002, 2003, and 2005, we became involved in interference proceedings declared by the United States Patent and Trademark Office for some of our antisense and ribozyme patents. All of these interferences have since been resolved. We are neither practicing nor intending to practice the intellectual property that is associated with any of these interference proceedings.

The cost to us of any patent litigation or other proceeding even if resolved in our favor, could be substantial. Some of our competitors may be able to sustain the cost of such litigation or proceedings more effectively than we can because of their substantially greater financial resources. If any patent litigation or other proceeding is resolved against us, we or our collaborators may be enjoined from developing, manufacturing, selling or importing our drugs without a license from the other party and we may be held liable for significant damages. We may not be able to obtain any required license on commercially acceptable terms or at all.

Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace. Patent litigation and other proceedings may also absorb significant management time.

Risks Relating to Product Manufacturing, Marketing and Sales, and Reliance on Third Parties

Because we have limited manufacturing experience, and no manufacturing facilities or infrastructure, we are dependent on third-party manufacturers to manufacture drug candidates for us. If we cannot rely on third-party manufacturers, we will be required to incur significant costs and devote significant efforts to establish our own manufacturing facilities and capabilities.

We have limited manufacturing experience and no manufacturing facilities, infrastructure or clinical or commercial scale manufacturing capabilities. In order to continue to develop our drug candidates, apply for regulatory approvals, and ultimately commercialize products, we need to develop, contract for or otherwise arrange for the necessary manufacturing capabilities.

We currently rely upon third parties to produce material for nonclinical and clinical testing purposes and expect to continue to do so in the future. We also expect to rely upon third parties to produce materials that may be required for the commercial production of our products. Our current and anticipated future dependence upon others for the manufacture of our drug candidates may adversely affect our future profit margins and our ability to develop drug candidates and commercialize any drug candidates on a timely and competitive basis. We currently do not have any long term supply contracts.

There are a limited number of manufacturers that operate under the FDA s current Good Manufacturing Practices, or cGMP, regulations capable of manufacturing our drug candidates. As a result, we may have difficulty finding manufacturers for our products with adequate capacity for our needs. If we are unable to arrange for third-party manufacturing of our drug candidates on a timely basis, or to do so on commercially reasonable terms, we may not be able to complete development of our drug candidates or market them.

Reliance on third-party manufacturers entails risks to which we would not be subject if we manufactured drug candidates ourselves, including:

- reliance on the third party for regulatory compliance and quality assurance;
- the possibility of breach of the manufacturing agreement by the third party because of factors beyond our control;
- the possibility of termination or nonrenewal of the agreement by the third party, based on its own business priorities, at a time that is costly or inconvenient for us;

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the potential that third-party manufacturers will develop know-how owned by such third party in connection with the production of our drug candidates that becomes necessary for the manufacture of our drug candidates; and

reliance upon third-party manufacturers to assist us in preventing inadvertent disclosure or theft of our proprietary knowledge.

Any contract manufacturers with which we enter into manufacturing arrangements will be subject to ongoing periodic, unannounced inspections by the FDA, or foreign equivalent, and corresponding state and foreign agencies or their designees to ensure compliance with cGMP requirements and other governmental regulations and corresponding foreign standards. For example, one of our contract manufacturers notified us that it had received a cGMP warning letter from the FDA in February 2011. This contract manufacturer no longer manufactures drug product for us. Any failure by our third-party manufacturers to comply with such requirements, regulations or standards could lead to a delay in the conduct of our clinical trials, or a delay in, or failure to obtain, regulatory approval of any of our drug candidates. Such failure could also result in sanctions being imposed, including fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, product seizures or recalls, imposition of operating restrictions, total or partial suspension of production or distribution, or criminal prosecution.

Additionally, contract manufacturers may not be able to manufacture our drug candidates at a cost or in quantities necessary to make them commercially viable. As of January 31, 2013, our third-party manufacturers have met our manufacturing requirements, but we cannot be assured that they will continue to do so. Furthermore, changes in the manufacturing process or procedure, including a change in the location where the drug substance or drug product is manufactured or a change of a third-party manufacturer, may require prior FDA review and approval in accordance with the FDA s cGMP and NDA/BLA regulations. Contract manufacturers may also be subject to comparable foreign requirements. This review may be costly and time-consuming and could delay or prevent the launch of a drug candidate. The FDA or similar foreign regulatory agencies at any time may also implement new standards, or change their interpretation and enforcement of existing standards for manufacture, packaging or testing of products. If we or our contract manufacturers are unable to comply, we or they may be subject to regulatory action, civil actions or penalties.

We have no experience selling, marketing or distributing products and no internal capability to do so.

If we receive regulatory approval to commence commercial sales of any of our drug candidates, we will face competition with respect to commercial sales, marketing, and distribution. These are areas in which we have no experience. To market any of our drug candidates directly, we would need to develop a marketing and sales force with technical expertise and with supporting distribution capability. In particular, we would need to recruit a large number of experienced marketing and sales personnel. Alternatively, we could engage a pharmaceutical or other healthcare company with an existing distribution system and direct sales force to assist us. However, to the extent we entered into such arrangements, we would be dependent on the efforts of third parties. If we are unable to establish sales and distribution capabilities, whether internally or in reliance on third parties, our business would suffer materially.

If third parties on whom we rely for clinical trials do not perform as contractually required or as we expect, we may not be able to obtain regulatory approval for or commercialize our products and our business may suffer.

We do not have the ability to independently conduct the clinical trials required to obtain regulatory approval for our drug candidates. We depend on independent clinical investigators, contract research organizations, and other third-party service providers in the conduct of the clinical trials of our drug candidates and expect to continue to do so. We contracted with contract research organizations to

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manage our Phase 1 and Phase 2 clinical trials of IMO-3100, our ongoing Phase 1 clinical trial of IMO-8400 and our planned Phase 2 clinical trial of IMO-8400 in patients with psoriasis, and expect to contract with such organizations for future clinical trials. We rely heavily on these parties for successful execution of our clinical trials, but do not control many aspects of their activities. We are responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan and protocols for the trial. Moreover, the FDA and foreign regulatory agencies require us to comply with certain standards, commonly referred to as good clinical practices, and applicable regulatory requirements, for conducting, recording, and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity, and confidentiality of clinical trial participants are protected. Our reliance on third parties that we do not control does not relieve us of these responsibilities and requirements. Third parties may not complete activities on schedule, or at all, or may not conduct our clinical trials in accordance with regulatory requirements or our stated protocols. The failure of these third parties to carry out their obligations could delay or prevent the development, approval, and commercialization of our drug candidates. If we seek to conduct any of these activities ourselves in the future, we will need to recruit appropriately trained personnel and add to our infrastructure.

The commercial success of any drug candidates that we may develop will depend upon the degree of market acceptance by physicians, patients, third-party payors, and others in the medical community.

Any products that we ultimately bring to the market, if they receive marketing approval, may not gain market acceptance by physicians, patients, third-party payors or others in the medical community. If these products do not achieve an adequate level of acceptance, we may not generate significant product revenue and we may not become profitable. The degree of market acceptance of our drug candidates, if approved for commercial sale, will depend on a number of factors, including:

- the prevalence and severity of any side effects, including any limitations or warnings contained in the product s approved labeling;
- the efficacy and potential advantages over alternative treatments;
- the ability to offer our drug candidates for sale at competitive prices;
- relative convenience and ease of administration;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies;
- the strength of marketing and distribution support and the timing of market introduction of competitive products; and
- publicity concerning our products or competing products and treatments.

Even if a potential product displays a favorable efficacy and safety profile, market acceptance of the product will not be known until after it is launched. Our efforts to educate patients, the medical community, and third-party payors on the benefits of our drug candidates may require significant resources and may never be successful. Such efforts to educate the marketplace may require more resources than are required by conventional technologies marketed by our competitors.

If we are unable to obtain adequate reimbursement from third-party payors for any products that we may develop or acceptable prices for those products, our revenues and prospects for profitability will suffer.

Most patients rely on Medicare, Medicaid, private health insurers, and other third-party payors to pay for their medical needs, including any drugs we may market. If third-party payors do not provide adequate coverage or reimbursement for any products that we may develop, our revenues and prospects

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for profitability will suffer. Congress enacted a limited prescription drug benefit for Medicare recipients in the Medicare Prescription Drug, Improvement, and Modernization Act of 2003. While the program established by this statute may increase demand for our products if we were to participate in this program, our prices will be negotiated with drug procurement organizations for Medicare beneficiaries and are likely to be lower than we might otherwise obtain. Non-Medicare third-party drug procurement organizations may also base the price they are willing to pay on the rate paid by drug procurement organizations for Medicare beneficiaries or may otherwise negotiate the price they are willing to pay.

A primary trend in the United States healthcare industry is toward cost containment. In addition, in some foreign countries, particularly the countries of the European Union, the pricing of prescription pharmaceuticals is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take six months or longer after the receipt of regulatory marketing approval for a product. To obtain reimbursement or pricing approval in some countries, we may be required to conduct a clinical trial that compares the cost effectiveness of our drug candidates or products to other available therapies. The conduct of such a clinical trial could be expensive and result in delays in commercialization of our products. These further clinical trials would require additional time, resources, and expenses. If reimbursement of our products is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, our prospects for generating revenue, if any, could be adversely affected and our business may suffer.

In March 2010, the Patient Protection and Affordable Care Act and the Health Care and Education Reconciliation Act became law. These health care reform laws are intended to broaden access to health insurance; reduce or constrain the growth of health care spending, especially Medicare spending; enhance remedies against fraud and abuse; add new transparency requirements for health care and health insurance industries; impose new taxes and fees on certain sectors of the health industry; and impose additional health policy reforms. Among the new fees is an annual assessment on makers of branded pharmaceuticals and biologics, under which a company s assessment is based primarily on its share of branded drug sales to federal health care programs. Such fees could affect our future profitability. Although it is too early to determine the effect of the new health care legislation on our future profitability and financial condition, the new law appears likely to continue the pressure on pharmaceutical pricing, especially under the Medicare program, and may also increase our regulatory burdens and operating costs.

Third-party payors are challenging the prices charged for medical products and services, and many third-party payors limit reimbursement for newly-approved health care products. These third-party payors may base their coverage and reimbursement on the coverage and reimbursement rate paid by carriers for Medicare beneficiaries. Furthermore, many such payors are investigating or implementing methods for reducing health care costs, such as the establishment of capitated or prospective payment systems. Cost containment pressures have led to an increased emphasis on the use of cost-effective products by health care providers. In particular, third-party payors may limit the indications for which they will reimburse patients who use any products that we may develop. Cost control initiatives could limit the price we might establish for products that we or our current or future collaborators may develop or sell, which would result in lower product revenues or royalties payable to us.

We face a risk of product liability claims and may not be able to obtain insurance.

Our business exposes us to the risk of product liability claims that is inherent in the manufacturing, testing, and marketing of human therapeutic drugs. We face an inherent risk of product liability exposure related to the testing of our drug candidates in human clinical trials and will face an even greater risk if we commercially sell any products. Regardless of merit or eventual outcome, liability claims and product recalls may result in:

- decreased demand for our drug candidates and products;
- damage to our reputation;

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regulatory investigations that could require costly recalls or product modifications;

withdrawal of clinical trial participants;

costs to defend related litigation;

substantial monetary awards to clinical trial participants or patients, including awards that substantially exceed our product liability insurance, which we would then have to pay using other sources, if available, and would damage our ability to obtain liability insurance at reasonable costs, or at all, in the future;

loss of revenue;

the diversion of management s attention away from managing our business; and

the inability to commercialize any products that we may develop.

Although we have product liability and clinical trial liability insurance that we believe is adequate, this insurance is subject to deductibles and coverage limitations. We may not be able to obtain or maintain adequate protection against potential liabilities. If we are unable to obtain insurance at acceptable cost or otherwise protect against potential product liability claims, we will be exposed to significant liabilities, which may materially and adversely affect our business and financial position. These liabilities could prevent or interfere with our commercialization efforts.

Risks Related to This Offering and Ownership of Our Common Stock

Our corporate governance structure, including provisions in our certificate of incorporation and by-laws and Delaware law, may prevent a change in control or management that stockholders may consider desirable.

Section 203 of the Delaware General Corporation Law and our certificate of incorporation and by-laws contain provisions that might enable our management to resist a takeover of our company or discourage a third party from attempting to take over our company. These provisions include:

a classified board of directors;

limitations on the removal of directors;

limitations on stockholder proposals at meetings of stockholders;

the inability of stockholders to act by written consent or to call special meetings; and

the ability of our board of directors to designate the terms of and issue new series of preferred stock without stockholder approval.

As part of the financing we consummated in November 2012, we agreed that we would seek stockholder approval of an amendment to the Company s certificate of incorporation and bylaws to eliminate the classified board of directors.

In addition, Section 203 of the Delaware General Corporation Law imposes restrictions on our ability to engage in business combinations and other specified transactions with significant stockholders. These provisions could have the effect of delaying, deferring or preventing a change in control of us or a change in our management that stockholders may consider favorable or beneficial. These provisions could also discourage proxy contests and make it more difficult for you and other stockholders to elect directors and take other corporate actions. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock.

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The preferred stock and warrants issued to certain affiliates of Pillar Invest Corporation, our largest stockholder group, in connection with our Series D and Series E financing have rights, preferences and privileges that are not held by, and are preferential to the rights of, our common stockholders. As a result, the interests of Pillar and its affiliates may differ from the interests of our common stockholders.

In connection with our Series D redeemable convertible preferred stock financing we issued to Pillar Pharmaceuticals I, L.P., or Pillar I, 1,124,260 shares of our Series D redeemable convertible preferred stock, or Series D preferred stock, which shares are convertible into 6,266,175 shares of our common stock, and warrants exercisable for 2,810,650 shares of our common stock. In connection with our Series E convertible preferred stock financing we issued to Pillar Pharmaceuticals II, L.P., or Pillar II, and an affiliated second purchaser an aggregate of 424,242 shares of our Series E convertible preferred stock, or Series E preferred stock, which shares are convertible into 8,484,840 shares of our common stock, and warrants exercisable for 8,484,840 shares of our common stock. We refer to Pillar I, Pillar II and the affiliated second purchaser collectively as the Pillar Affiliates. As a result, the Pillar Affiliates are collectively our largest stockholder group. In addition, two members of our board of directors are affiliates of the Pillar Affiliates. In connection with their ownership of these securities, the Pillar Affiliates obtained various rights, preferences and privileges that are not held by the holders of our common stock and that in certain instances are preferential to the rights of the holders of our common stock. As a result, the interests of the Pillar Affiliates may differ from the interests of the holders of our common stock in material respects. Although there are contractual limitations on the beneficial ownership and voting rights of the Pillar Affiliates, the Pillar Affiliates may still be able to exert substantial influence over our business.

The securities issued in our Series D and Series E financings have certain rights, preferences and privileges that may adversely affect our common stockholders and that may adversely affect our ability to obtain financing in the future.

The rights, preferences and privileges of the Series D preferred stock and Series E preferred stock that we issued and sold in our November 2011 Series D financing and November 2012 Series E financing, respectively, provide the holders of such securities with significant rights, including preferential rights with respect to dividends, liquidation and, upon certain transactions, redemption, which are not provided to the holders of our common stock. The dividend rights of the Series D preferred stock and Series E preferred stock may adversely affect our liquidity. For example, our obligation to pay quarterly cash dividends to the holders of our preferred stock has reduced and will continue to reduce the funds that would otherwise be available to us for working capital and other general corporate purposes. In addition, under certain circumstances, we are entitled to pay dividends on our Series D preferred stock in shares of common stock. If we were to pay such dividends in common stock, our existing stockholders will experience dilution. In the event of a liquidation, dissolution or winding up of our company, the holders of our Series D preferred stock and Series E preferred stock will be entitled to receive an aggregate of up to approximately $15.3 million before any cash distribution may be made or any other assets may be distributed to the holders of our common stock. Further, pursuant to the redemption rights of the Series D preferred stock, upon the occurrence of specified fundamental changes such as mergers, consolidations, business combinations, stock purchases or similar transactions (and in lieu of any liquidation preference the Series D preferred stock may otherwise be entitled to), the holders of shares of our Series D preferred stock may require that we redeem the Series D preferred stock held by them at a cash price equal to the original Series D preferred stock purchase price (approximately $9.1 million in the aggregate) plus all accrued or declared but unpaid dividends thereon.

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On April 22, 2013, we entered into an agreement with Pillar I and Pillar II, which we refer to as the April 22, 2013 Pillar Agreement. Under the April 22, 2013 Pillar Agreement, Pillar I, as the sole holder of our Series D preferred stock, has irrevocably agreed to waive and not exercise these redemption rights. In addition, we and each of Pillar I and Pillar II have agreed to modify:

- the dividend provisions of the Series D Certificate of Designations to change the date after which we may elect to pay dividends in shares of our common stock from December 31, 2014 to October 1, 2013;
- the dividend provisions of the Series E Certificate of Designations to allow for the payment of dividends in shares of our common stock commencing October 1, 2013; and
- the dividend provisions of the Series D Certificate of Designations and Series E Certificate of Designations to allow for the payment of such dividends in shares of a to-be-created new series of non-voting preferred stock in the event that payment of such dividends may not be made in shares of our common stock as a result of the application of the beneficial ownership and voting power limitations set forth in the Series D Certificate of Designations and Series E Certificate of Designations, respectively.

In addition, on April 30, 2013, we entered into a second agreement with Pillar I, Pillar II and an entity affiliated with Pillar I and Pillar II, which we refer to collectively as the Pillar Entities. We refer to this agreement as the April 30, 2013 Pillar Agreement, and this agreement and the April 22, 2013 Pillar Agreement as the Pillar Agreements. Under the April 30, 2013 Pillar Agreement, each of the Pillar Entities has irrevocably agreed to waive the approximate $15.3 million liquidation preference described above in the event of a liquidation, dissolution or winding up of our company.

We have agreed to seek approval from our stockholders at our 2013 annual meeting of stockholders of amendments to the Series D Certificate of Designations and Series E Certificate of Designations to effect these changes to the dividend and liquidation provisions of our Series D preferred stock and Series E preferred stock, the redemption rights of the holders of our Series D preferred stock and the rights of the holders of our Series D preferred stock to distributions in the event of a sale of our company, and the Pillar Entities have agreed to vote in favor of these amendments.

The Pillar Agreements will become effective upon the consummation of a qualified financing, as defined in the Pillar Agreements, which would include the consummation of this offering. See Certain Relationships and Related Person Transactions for additional information about the terms of the Pillar Agreements.

The rights, preferences and privileges associated with our Series D preferred stock and Series E preferred stock may adversely affect our ability to obtain financing in the future, including potentially limiting the price that investors might be willing to pay in the future for shares of our common stock or our other securities.

Our stock price has been and may in the future be extremely volatile. In addition, because an active trading market for our common stock has not developed, our investors ability to trade our common stock may be limited. As a result, investors may lose all or a significant portion of their investment.

Our stock price has been volatile. During the period from January 1, 2011 to March 31, 2013, the closing sales price of our common stock ranged from a high of $3.25 per share to a low of $0.49 per share. The stock market has also experienced periods of significant price and volume fluctuations and the market prices of biotechnology companies in particular have been highly volatile, often for reasons that have been unrelated to the operating performance of particular companies. The market price for our common stock may be influenced by many factors, including:

- our cash resources;

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- timing and results of nonclinical studies and clinical trials of our drug candidates or those of our competitors;
- the regulatory status of our drug candidates;
- failure of any of our drug candidates, if approved, to achieve commercial success;
- the success of competitive products or technologies;
- regulatory developments in the United States and foreign countries;
- our success in entering into collaborative agreements;
- developments or disputes concerning patents or other proprietary rights;
- the departure of key personnel;
- our ability to maintain the listing of our common stock on the Nasdaq Capital Market or an alternative national securities exchange;
- variations in our financial results or those of companies that are perceived to be similar to us;
- the terms of any financing consummated by us;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors and issuance of new or changed securities analysts reports or recommendations; and
- general economic, industry, and market conditions.

In addition, our common stock has historically been traded at low volume levels and may continue to trade at low volume levels. As a result, any large purchase or sale of our common stock could have a significant impact on the price of our common stock and it may be difficult for investors to sell our common stock in the market without depressing the market price for the common stock or at all.

As a result of the foregoing, investors may not be able to resell their shares at or above the price they paid for such shares. Investors in our common stock must be willing to bear the risk of fluctuations in the price of our common stock and the risk that the value of their investment in our stock could decline.

You will experience immediate and substantial dilution in the net tangible book value per share of the common stock you purchase.

You will suffer immediate and dilution in the net tangible book value of the common stock you purchase in this offering. We expect that the public offering price of our common stock and related warrants in this offering will be higher than the net tangible book value per share of our outstanding common stock immediately after this offering. After giving effect to the issuance and sale in this offering of $15.0 million of shares of our common stock and warrants to purchase up to shares of our common stock, at an assumed combined public offering price of $0.73 per share of our common stock and related warrant, which price was the last reported sale price of our common stock on the Nasdaq Capital Market on April 29, 2013, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us and excluding the proceeds, if any, from the exercise of the warrants issued pursuant to this offering, our as adjusted net tangible book value as of December 31, 2012 would have been approximately $14.0 million, or approximately $0.29 per share of our common stock. As a result, purchasers of securities in this offering will experience immediate dilution of approximately $0.44 per share in net tangible book value of the common stock. If any shares of our common stock are issued upon exercise of the pre-funded warrants, purchasers of securities in this offering could experience dilution.

See Dilution for a more detailed description of the dilution to new investors in the offering.

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Our management will have broad discretion in the use of the net proceeds from this offering and may not use them effectively.

Our management will have broad discretion in the application of the net proceeds from this offering and our stockholders will not have the opportunity as part of their investment decision to assess whether the net proceeds are being used appropriately. Because of the number and variability of factors that will determine our use of the net proceeds from this offering, their ultimate use may vary substantially from their currently intended use. The failure by our management to apply these funds effectively could harm our business. Pending their use, we may invest the net proceeds from this offering in short-term, interest-bearing, investment grade securities. These investments may not yield a favorable return to our stockholders. See Use of Proceeds for a more detailed description of our proposed use of proceeds from this offering. We have broad discretion in the use of the net proceeds from this offering and may not use them effectively.

Because we do not intend to pay dividends on our common stock, your returns will be limited to any increase in the value of our stock.

We have never declared or paid any cash dividends on our common stock. We are required to obtain the prior written consent or affirmative vote of the holders of at least 51% of the then outstanding shares of our Series E preferred stock in order to declare or pay a cash dividend on our common stock. We currently intend to retain all available funds and any future earnings to support our operations and finance the growth and development of our business and do not anticipate declaring or paying any cash dividends on our common stock for the foreseeable future. Any return to stockholders will therefore be limited to the appreciation of their stock, if any.

There is no public market for the warrants to purchase shares of our common stock being offered by us in this offering.

There is no established public trading market for the warrants being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply to list the warrants on any national securities exchange or other nationally recognized trading system, including the Nasdaq Capital Market. Without an active market, the liquidity of the warrants will be limited.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents we incorporate by reference contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. All statements, other than statements of historical fact, included or incorporated in this report regarding our strategy, future operations, collaborations, intellectual property, cash resources, financial position, future revenues, projected costs, prospects, plans, and objectives of management are forward-looking statements. The words believes, anticipates, estimates, plans, expects, intends, may, could, should, potential, likely, projects, cont similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. We cannot guarantee that we actually will achieve the plans, intentions or expectations disclosed in our forward-looking statements and you should not place undue reliance on our forward-looking statements. There are a number of important factors that could cause our actual results to differ materially from those indicated or implied by forward-looking statements. These important factors include those set forth above under the heading Risk Factors. These factors and the other cautionary statements made in this prospectus and the documents we incorporate by reference should be read as being applicable to all related forward-looking statements whenever they appear in this prospectus and the documents we incorporate by reference. In addition, any forward-looking statements represent our estimates only as of the date that this prospectus is filed with the Securities and Exchange Commission, or the SEC, and should not be relied upon as representing our estimates as of any subsequent date. We do not assume any obligation to update any forward-looking statements. We disclaim any intention or obligation to update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.

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USE OF PROCEEDS

We estimate that the net proceeds to us of the sale of the common stock and warrants that we are offering will be approximately $13.3 million, based on an assumed combined public offering price of $0.73 per share of common stock and related warrant, which price was the last reported sale price of our common stock reported on the Nasdaq Capital Market on April 29, 2013, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us and excluding the proceeds, if any, from the exercise of the warrants issued pursuant to this offering.

We intend to use the net proceeds to us from this offering, together with our existing cash resources, to fund our planned Phase 2 clinical trial of IMO-8400 in patients with psoriasis and for working capital and other general corporate purposes.

This expected use of net proceeds from this offering represents our intentions based upon our current plans and business conditions. The amounts and timing of our actual expenditures may vary significantly depending on a number of factors, including the status of and results from clinical trials of IMO-8400 and whether regulatory authorities require us to perform additional clinical trials of IMO-3100 and IMO-8400 in order to obtain market approvals.

We believe that our available funds following this offering will be sufficient to enable us to conduct our planned Phase 2 clinical trial of IMO-8400 in patients with psoriasis and to plan for further clinical development of IMO-8400. We expect that these funds will not be sufficient to enable us to conduct, and we do not plan to conduct, any other clinical development of IMO-3100 or IMO-8400 or to conduct any other development of our other product candidates or technologies. It is also possible that we will not achieve the progress that we expect with respect to IMO-8400 because the actual costs and timing of clinical development activities are difficult to predict and are subject to substantial risks and delays.

We cannot estimate the amount of net proceeds to be used for the purposes described above. We may find it necessary or advisable to use the net proceeds for other purposes, and we will have broad discretion in the application of the net proceeds.

Pending use of the proceeds as described above, we intend to invest the proceeds in short-term, interest-bearing, investment grade securities.

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DIVIDEND POLICY

We have never declared or paid cash dividends on our common stock, and we do not expect to pay any cash dividends on our common stock in the foreseeable future. We are required to obtain the prior written consent or affirmative vote of the holders of at least 51% of the then outstanding shares of our Series E preferred stock in order to declare or pay a cash dividend on our common stock.

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CAPITALIZATION

The following table sets forth our cash and cash equivalents and capitalization as of December 31, 2012, as follows:

- on an actual basis; and
- on an as adjusted basis to reflect our issuance and sale in this offering of $15,000,000 of shares of common stock and warrants to purchase shares of our common stock at an assumed combined public offering price of $0.73 per share, which price was the last reported sale price of our common stock on the Nasdaq Capital Market on April 29, 2013, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us and excluding the proceeds, if any, from the exercise of the warrants issued pursuant to this offering.

You should read this information in conjunction with our financial statements and the related notes appearing at the end of this prospectus and the Management s Discussion and Analysis of Financial Condition and Results of Operations section and other financial information contained in this prospectus.

	As of December 31, 2012	
	Actual	As Adjusted
	(In thousands except per share data)	
Cash and cash equivalents	$ 10,096	$ 23,369
Series D Redeemable Convertible Preferred stock, $0.01 par value; 1,124 shares designated, issued and outstanding, actual and as adjusted; Redemption amount $9,149; Liquidation preference $9,338	$ 5,921	5,921
Non-redeemable Preferred Stock, Common Stock and Other Stockholders Equity:		
Preferred stock, $0.01 par value, Authorized 5,000 shares		
Series E Convertible Preferred stock, $0.01 par value; 424 shares designated, issued and outstanding, actual and as adjusted; Liquidation preference $5,980	3,701	3,701
Series A Convertible Preferred stock, $0.01 par value; 1,500 shares designated, 1 share issued and outstanding, actual and as adjusted		
Common stock, $0.001 par value; 140,000 shares authorized, 27,643 shares issued and outstanding, actual; 48,191 shares issued and outstanding, as adjusted	28	48
Additional paid-in capital	391,635	404,888
Accumulated deficit	(394,658)	(394,658)
Total stockholders equity	706	13,979
Total capitalization	$ 6,627	$ 19,900

The table above excludes the shares of common stock issuable upon the exercise of the warrants being offered by us in this offering and also excludes the following as of December 31, 2012:

- 5,657,256 shares of common stock issuable upon exercise of stock options outstanding as of December 31, 2012, at a weighted-average exercise price of $4.96 per share;
- 2,413,469 shares of common stock reserved as of December 31, 2012 for future issuance under our equity incentive plans;

1,926 shares of common stock reserved as of December 31, 2012 for issuance upon any conversion of our outstanding Series A preferred stock;

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6,266,175 shares of common stock reserved as of December 31, 2012 for issuance upon any conversion of our outstanding Series D preferred stock;

8,484,840 shares of common stock reserved as of December 31, 2012 for issuance upon any conversion of our outstanding Series E preferred stock; and

12,923,892 shares of common stock issuable upon exercise of warrants outstanding as of December 31, 2012, at a weighted average exercise price of $1.24 per share.

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DILUTION

If you invest in our securities in this offering, your ownership interest will be immediately diluted to the extent of the difference between the combined price per share of our common stock and related warrant in this offering and the as adjusted net tangible book value per share of our common stock upon closing of this offering. Net tangible book value per share of our common stock is determined at any date by subtracting our total liabilities from the amount of our total tangible assets (total assets less intangible assets) and dividing the difference by the number of shares of our common stock deemed to be outstanding at that date.

Our historical net tangible book value as of December 31, 2012 was approximately $706,000, or $0.03 per share of our outstanding common stock, based on 27,642,969 shares of common stock outstanding as of December 31, 2012.

Investors participating in this offering will incur immediate and significant dilution. After giving effect to the issuance and sale in this offering of $15.0 million of shares of our common stock and warrants to purchase up to shares of our common stock, at an assumed combined public offering price of $0.73 per share of our common stock and related warrant, which price was the last reported sale price of our common stock on the Nasdaq Capital Market on April 29, 2013, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us and excluding the proceeds, if any, from the exercise of the warrants issued pursuant to this offering, our as adjusted net tangible book value as of December 31, 2012 would have been approximately $14.0 million, or approximately $0.29 per share of our common stock. This amount represents an immediate increase in net tangible book value of $0.26 per share of our common stock to existing stockholders and an immediate dilution in net tangible book value of $0.44 per share of our common stock to new investors purchasing securities in this offering. The following table illustrates this dilution:

Assumed combined public offering price per share of common stock and related warrant		$ 0.73
Historical net tangible book value per share of our common stock as December 31, 2012	$ 0.03	
As adjusted increase in net tangible book value per share of our common stock attributable to investors participating in this offering	0.26	
As adjusted net tangible book value per share of our common stock after this offering		$ 0.29
Dilution of as adjusted net tangible book value per share to new investors		$ 0.44

If any shares of our common stock are issued upon exercise of outstanding options or warrants, you will experience further dilution.

Certain of our existing principal stockholders and their affiliated entities have indicated an interest in purchasing up to $2.5 million of shares of our common stock and warrants to purchase shares of our common stock in this offering at the public offering price. However, because indications of interest are not binding agreements or commitments to purchase, the underwriters could determine to sell more, less or no shares and warrants to any of these existing principal stockholders and any of these existing principal stockholders could determine to purchase more, less or no shares and warrants in this offering.

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SELECTED FINANCIAL DATA

You should read the following selected financial data in conjunction with Management s Discussion and Analysis of Financial Condition and Results of Operations and our financial statements and the related notes appearing elsewhere in this prospectus.

The statements of operations and comprehensive (loss) data for the years ended December 31, 2012, 2011 and 2010 and the balance sheet data at December 31, 2012 and 2011, are derived from our audited financial statements appearing elsewhere in this prospectus. The statements of operations and comprehensive income data for the years ended December 31, 2009 and 2008 and the balance sheet data at December 31, 2010, 2009 and 2008, are derived from our audited financial statements that are not included in this prospectus. Our historical results are not necessarily indicative of the results to be expected in any future period.

	Year Ended December 31,				
	2012	2011	2010	2009	2008
	(In thousands, except per share data)				
Statement of Operations and Comprehensive (Loss) Income Data:					
Alliance revenue	$ 51	$ 53	$ 16,110	$ 34,518	$ 26,450
Operating expenses:					
Research and development	13,673	17,969	24,226	18,570	16,152
General and administrative	6,279	7,939	9,867	8,561	9,798
Total operating expenses	19,952	25,908	34,093	27,131	25,950
(Loss) income from operations	(19,901)	(25,855)	(17,983)	7,387	500
Other income (expense):					
Decrease in fair value of warrant liability	675	1,974			
Investment income, net	9	30	116	145	1,344
Interest expense			(2)	(3)	(92)
Foreign currency exchange (loss) gain	(23)	75	(94)	(27)	(267)
(Loss) income before income taxes	(19,240)	(23,776)	(17,963)	7,502	1,485
Income tax benefit				44	24
Net (loss) income	$ (19,240)	$ (23,776)	$ (17,963)	$ 7,546	$ 1,509
Preferred stock accretion and dividends	3,210	4,548			
Net (loss) income applicable to common stockholders	$ (22,450)	$ (28,324)	$ (17,963)	$ 7,546	$ 1,509
Basic net (loss) income per share applicable to common stockholders	$ (0.81)	$ (1.03)	$ (0.71)	$ 0.32	$ 0.07
Diluted net (loss) income per share applicable to common stockholders	$ (0.81)	$ (1.03)	$ (0.71)	$ 0.31	$ 0.06
Shares used in computing basic net (loss) income per common share applicable to common stockholders (1)	27,639	27,623	25,139	23,420	22,655
Shares used in computing diluted net (loss) income per common share applicable to common stockholders (1)	27,639	27,623	25,139	24,079	25,331

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	Year Ended December 31,				
	2012	2011	2010	2009	2008
	(In thousands)				
Net (loss) income	(19,240)	(23,776)	(17,963)	7,546	1,509
Other comprehensive (loss) income:					
Decrease in unrealized gain on available for-sale securities		(13)	32	17	(44)
Other comprehensive (loss) income		(13)	32	17	(44)
Comprehensive (loss) income	$ (19,240)	$ (23,789)	$ (17,931)	$ 7,563	$ 1,465
Balance Sheet Data:					
Cash, cash equivalents and investments	$ 10,096	$ 24,571	$ 34,643	$ 40,207	$ 55,606
Working capital	6,163	18,741	32,100	23,054	32,099
Total assets	10,823	25,595	36,881	47,639	59,400
Capital lease obligations	12		8	28	49
Redeemable preferred stock	5,921	5,921			
Accumulated deficit	(394,658)	(375,418)	(351,642)	(333,679)	(341,225)
Total stockholders equity	706	12,024	33,101	33,105	22,167

(1) Computed on the basis described in Note 11 of notes to financial statements appearing elsewhere in this prospectus.

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MANAGEMENT S DISCUSSION AND ANALYSIS OF

FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion and analysis of our financial condition and results of operations together with our financial statements and the related notes and other financial information included elsewhere in this prospectus. Some of the information contained in this discussion and analysis or set forth elsewhere in this prospectus, including information with respect to our plans and strategy for our business, includes forward-looking statements that involve risks and uncertainties. You should review the Risk Factors section of this prospectus for a discussion of important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Overview

We are a clinical stage biotechnology company engaged in the discovery and development of novel synthetic DNA- and RNA-based drug candidates that are designed to modulate immune responses mediated through Toll-like Receptors, or TLRs. We are focusing our development efforts on the treatment of autoimmune and inflammatory diseases. We have two drug candidates, IMO-3100, a TLR7 and TLR9 antagonist, and IMO-8400, a TLR7, TLR8, and TLR9 antagonist, in clinical development for the treatment of autoimmune and inflammatory diseases. In December 2012, we announced top-line data from a Phase 2 clinical trial of IMO-3100 in patients with moderate to severe plaque psoriasis. We believe that the results of this trial provide clinical proof of concept for our approach of targeting specific TLRs for the treatment of psoriasis and potentially other autoimmune and inflammatory diseases.

TLRs are specific receptors present in immune system cells. Using a chemistry-based approach, we have created synthetic DNA- and RNA-based compounds that are targeted to TLR3, TLR7, TLR8, and TLR9. A TLR antagonist is a compound that blocks activation of an immune response through the targeted TLR. A TLR agonist is a compound that stimulates an immune response through the targeted TLR.

We believe that the modulation of immune responses through TLRs provides a rationale for the development of drug candidates to treat a broad range of diseases, including autoimmune and inflammatory diseases, cancer and respiratory diseases, and for use as vaccine adjuvants. We are a party to a collaboration alliance with Merck Sharp & Dohme Corp. (formerly Merck & Co., Inc.), or Merck & Co., for the use of agonists of TLR7, TLR8, and TLR9 as adjuvants in the development of vaccines for cancer, infectious diseases, and Alzheimer s disease. We are seeking to enter into additional collaborative alliances with third parties with respect to our TLR-targeted programs in oncology, hematological malignancies, respiratory diseases, and the use of TLR3 agonists as vaccine adjuvants.

At December 31, 2012, we had an accumulated deficit of $394.7 million. We expect to incur substantial operating losses in future periods. We do not expect to generate significant product revenue, sales-based milestones or royalties until we successfully complete development and obtain marketing approval for drug candidates, either alone or in collaborations with third parties, which we expect will take a number of years. In order to commercialize our drug candidates, we need to complete clinical development and to comply with comprehensive regulatory requirements.

We believe our available funds following this offering will be sufficient to enable us to conduct our planned Phase 2 clinical trial of IMO-8400 in patients with psoriasis and to plan for further clinical development of IMO-8400. We expect that these funds will not be sufficient to enable us to conduct, and we do not plan to conduct, any other clinical development of IMO-3100 or IMO-8400 or to conduct any other development of our other product candidates or technologies. It is also possible that we will not achieve the progress that we expect with respect to IMO-8400 because the actual costs and timing of clinical development activities are difficult to predict and are subject to substantial risks and delays. Accordingly, we will be required to obtain further funding through public or private equity offerings,

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debt financings, collaborations and licensing arrangements or other sources. Financing may not be available to us in the necessary timeframe, in the amounts that we need, on terms that are acceptable to us or at all. Our failure to raise capital as and when needed would have a negative impact on our financial condition and our ability to pursue our business strategy.

Critical Accounting Policies and Estimates

This management s discussion and analysis of financial condition and results of operations is based on our financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. On an ongoing basis, management evaluates its estimates and judgments, including those related to revenue recognition, stock-based compensation and our Series D redeemable convertible preferred stock, or Series D preferred stock, and related common stock warrants. Management bases its estimates and judgments on historical experience and on various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

We regard an accounting estimate or assumption underlying our financial statements as a critical accounting estimate where:

- the nature of the estimate or assumption is material due to the level of subjectivity and judgment necessary to account for highly uncertain matters or the susceptibility of such matters to change; and
- the impact of the estimates and assumptions on financial condition or operating performance is material.

Our significant accounting policies are described in Note 2 of the notes to our financial statements appearing elsewhere in this prospectus. Not all of these significant policies, however, fit the definition of critical accounting policies and estimates. We believe that our accounting policies relating to revenue recognition, stock-based compensation and convertible preferred stock and related common stock warrants fit the description of critical accounting estimates and judgments.

Revenue Recognition

An important part of our business strategy is to enter into research and development collaborations with biotechnology and pharmaceutical corporations that bring expertise and resources to the potential research and development and commercialization of drugs based on our technology. Under our research and development collaborations, we have generally licensed specified portions of our intellectual property and provided research and development services to the collaborator during the period of continued involvement in the early portion of the collaborations. Our collaborators have generally been responsible for drug development activities initiated after the collaboration is effective. Our collaborators are also generally responsible for any commercialization activities that may be initiated if any of the drug candidates receive marketing approval from the appropriate regulatory authority. The terms of our agreements have included non-refundable license fees, research and development funding, payments based upon achievement of clinical and preclinical development milestones and royalties on product sales.

The following revenue recognition policy incorporates Accounting Standard Update, or ASU, No. 2009-13, Multiple-Element Revenue Arrangements and ASU No. 2010-17, Milestone Method of Revenue Recognition both of which we adopted on January 1, 2011. These new accounting standards did not

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affect revenue that we earned through December 31, 2012. We plan to follow No. 2009-13 prospectively for any arrangements entered into or materially modified after the adoption date. We plan to follow ASU No. 2010-17 prospectively for any future milestones.

When evaluating multiple element arrangements, we consider whether the components of the arrangement represent separate units of accounting based on specified criteria such as whether the deliverable has standalone value to the collaborator. Any fixed or determinable payments that we expect to receive under the arrangement are allocated among the separate units of accounting and the appropriate revenue recognition criteria are applied to each of these separate units. Any item that does not qualify as a separate unit of accounting is combined with other appropriate items and the combined deliverable is treated as a separate unit of accounting.

Our allocation of fixed or determinable payments to the separate units of accounting is based on the relative-selling-price method, which is based on the following hierarchy used in determining the selling price for each unit of accounting: (1) vendor specific objective evidence, or VSOE, the price at which the item is regularly sold by the vendor on a standalone basis, is the preferred method; (2) third-party evidence, or TPE, of vendors selling similar goods to similarly situated customers on a standalone basis if VSOE of selling price of a product or service is not available; and (3) best estimate of selling price if neither VSOE nor TPE of selling price of a product or service is available.

Our timing of revenue recognition from upfront license fees received under collaboration agreements depends upon the terms of the agreement.

We recognize revenue from reimbursements earned in connection with research and development collaboration agreements as related research and development costs are incurred, and contractual services are performed, provided collectability is reasonably assured. We include amounts contractually owed to us under these research and development collaboration agreements, including any earned but unbilled receivables, in receivables in our balance sheets. Our principal costs under these agreements are generally for our personnel and related expenses of conducting research and development, as well as for research and development performed by outside contractors or consultants or related research and development materials provided by third parties or for clinical trials we conduct on behalf of a collaborator.

For payments that are contingent upon milestone events or achieving a specific result from the research and development efforts, we recognize these milestone payments as revenue in their entirety upon achieving the related milestone provided the milestone meets the criteria specified below. Milestones typically consist of significant events in the development life cycle of the related technology, such as initiating clinical trials, filing for approval with regulatory agencies, and obtaining approvals from regulatory agencies. We recognize revenue from milestone payments received under collaboration agreements in their entirety upon achieving the related milestone, provided that the milestone event is substantive, its achievability was not reasonably assured at the inception of the agreement, the amount attributed to the milestone is reasonable in relation to our performance and to the amounts attributed to the other deliverables in the arrangement and we have no further performance obligations relating to the milestone event. In the event that the agreement provides for payment to be made subsequent to our standard payment terms, we recognize revenue when payment becomes due.

Amounts received prior to satisfying the above revenue recognition criteria are recorded as deferred revenue in our balance sheets. We classify amounts that we expect to recognize in the next twelve months as short-term deferred revenue. We classify amounts that we do not expect to recognize within the next twelve months as long-term deferred revenue.

Although we follow detailed guidelines in measuring revenue, certain judgments affect the application of our revenue policy. For example, we record deferred revenue, if any, on our balance sheet as short-term

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or long-term deferred revenue based on our best estimate of when such amounts would be recognized. However, these estimates are based on our collaboration agreement and our then current operating plan and, if either should change, we could recognize a different amount of deferred revenue over the subsequent twelve-month period.

Our estimate of deferred revenue also reflects our estimate of the periods of our involvement in our collaborations and the estimated periods over which our performance obligations will be completed. In some instances, the timing of satisfying these obligations can be difficult to estimate. Accordingly, our estimates may change in subsequent periods. Such changes to estimates would result in a change in revenue recognition amounts. If these estimates and judgments change over the course of these agreements, it may affect the timing and amount of revenue that we recognize and record in subsequent periods.

Stock-Based Compensation

We recognize all share-based payments to employees and directors as expense in our statements of operations and comprehensive loss based on their fair values. We record compensation expense over an award s requisite service period, or vesting period, based on the award s fair value at the date of grant. Our policy is to charge the fair value of stock options as an expense, adjusted for forfeitures, on a straight-line basis over the vesting period, which is generally four years for employees and three years for directors. Prior to December 2011, the vesting of all of our stock options was based on the passage of time and the employees continued service. In December 2011 and January 2012, we granted performance based stock options to purchase 697,500 shares of common stock to employees. As of the grant date of such options, options to purchase 174,375 shares were to vest immediately upon the achievement of various performance conditions and options to purchase 523,125 shares were to vest over a three-year service period upon the achievement of the same performance conditions. During 2012 we achieved three of the specified performance conditions. As a result, options to purchase 80,213 shares vested immediately and options to purchase 240,640 shares began vesting over a three-year period in accordance with the terms of the performance-based options. In addition, during 2012, four of the specified performance conditions were not met by their deadlines resulting in the cancellation of 156,797 performance-based options. We recognize expense over the implicit and explicit service periods for awards with performance conditions when we determine the achievement of the performance conditions to be probable.

We use the Black-Scholes option pricing model to estimate the fair value of stock option grants. The Black-Scholes model relies on a number of key assumptions to calculate estimated fair values, including assumptions as to average risk-free interest rate, expected dividend yield, expected life and expected volatility. For the assumed risk-free interest rate, we use the U.S. Treasury security rate with a term equal to the expected life of the option. Our assumed dividend yield of zero is based on the fact that we have never paid cash dividends to common stockholders and have no present intention to pay cash dividends. We use an expected option life based on actual experience. Our assumption for expected volatility is based on the actual stock-price volatility over a period equal to the expected life of the option.

If factors change and we employ different assumptions for estimating stock-based compensation expense in future periods, or if we decide to use a different valuation model, the stock-based compensation expense we recognize in future periods may differ significantly from what we have recorded in the current period and could materially affect our operating income (loss), net income (loss) and earnings (loss) per share. It may also result in a lack of comparability with other companies that use different models, methods and assumptions. The Black-Scholes option pricing model was developed for use in estimating the fair value of traded options that have no vesting restrictions and are fully transferable. These characteristics are not present in our option grants. Although the Black-Scholes option pricing model is widely used, existing valuation models, including the Black-Scholes valuation model, may not provide reliable measures of the fair values of our stock-based compensation.

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We recorded charges of $2.1 million, $2.7 million, and $3.7 million in our statements of operations and comprehensive loss for the years ended December 31, 2012, 2011 and 2010, respectively, for stock compensation expense attributable to share-based payments made to employees and directors. The decrease in stock compensation expense for 2012, as compared to 2011, was primarily due to decreases in the expense associated with employee options granted before 2009 and director options granted before 2010. The decrease in stock compensation expense for 2011, as compared to 2010, was primarily due to decreases in the expense associated with employee options granted before 2008 and director options granted before 2009, as well as 2010 stock compensation expense associated with the modification of stock options during 2010 as a result of our adoption of policies on the treatment of options in connection with director or employee retirement.

Convertible Preferred Stock and Warrants

Series D Redeemable Convertible Preferred Stock and Warrants

On November 4, 2011, we received net proceeds of $9.1 million from the sale and issuance of shares of our Series D preferred stock and related warrants to purchase shares of our common stock, or Series D warrants. We first assessed these financial instruments under Accounting Standards Codification, or ASC, 480, Distinguishing Liabilities from Equity , and determined that neither financial instrument was within the scope of ASC 480. We then assessed these financial instruments under ASC 815, Derivatives and Hedging as follows:

Series D Warrants. We determined that the Series D warrants were a derivative instrument as they contained a price protection feature that causes the Series D warrants to not be considered indexed to the company s own stock and to therefore not be qualified for the exemption requirements in ASC 815-40. We recorded the Series D warrants as a liability at fair value as of the November 4, 2011 transaction date and marked the recorded amount to fair value through earnings each quarter. The fair value of the Series D warrants was $3.2 million on the November 4, 2011 transaction date and $1.2 million at December 31, 2011. The $2.0 million decrease in the fair value between November 4, 2011 and December 31, 2011 was recorded as non-operating income in 2011. The fair value of the Series D warrant liability decreased from $1.2 million at December 31, 2011 to $0.5 million at November 9, 2012, the date on which we sold shares of our Series E convertible preferred stock, or Series E preferred stock, and related warrants to purchase shares of our common stock, or Series E warrants, in a financing transaction, resulting in the recognition of $0.7 million in non-operating income in 2012. The sale of shares of Series E preferred stock and Series E warrants in our November 2012 Series E financing triggered an anti-dilution adjustment under the terms of the Series D warrants, resulting in the exercise price of the Series D warrants being reduced and fixed at the minimum price of $1.46 per share. As a result, the Series D warrants are no longer being subject to any anti-dilution adjustments and now meet the exception under ASC 815-40 as they were now considered indexed to the company s own stock and met certain criteria for equity classification. Accordingly, we marked the Series D warrants to fair value through earnings as of November 9, 2012, and reclassified the remaining $0.5 million balance of the Series D warrant liability to stockholders equity at that time.

Series D Redeemable Convertible Preferred Stock. We determined that the Series D preferred stock contained three embedded features: (1) optional redemption by the company; (2) optional redemption by the holder and (3) optional conversion by the holder. We determined that each of the embedded features met the definition of a derivative. We determined that the Series D preferred stock should be considered an equity host for the purposes of assessing the embedded derivatives for potential bifurcation. We noted the following regarding these embedded features:

Optional Redemption by the Company and Optional Redemption by the Holder. We assessed the redemption features under ASC 815-40 to determine if they were eligible for the exemption from

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derivative accounting. In order to meet the exemption the feature must be indexed to the company s own stock and meet specified criteria for equity classification. We determined that both redemption features met these requirements and were not bifurcated.

Optional Conversion by the Holder. We determined that the optional conversion by holder feature was clearly and closely related to the Series D preferred stock host. As such the conversion feature did not require bifurcation under ASC 815.

We then assessed the Series D preferred stock under ASC 470, Debt, to determine if there was a beneficial conversion feature, or BCF. We determined the value of the BCF by comparing (1) the $6.3 million financing proceeds allocated to the Series D preferred stock, computed by reducing the $9.5 million gross proceeds from the Series D financing by the $3.2 million fair value of the Series D warrants, to (2) the $10.7 million intrinsic value of the common stock that the Series D preferred stock could be converted into on the date of the Series D financing. Based on this comparison, we determined the BCF to be $4.4 million which we recorded in additional paid-in capital.

As the Series D preferred stock contains a contingent put feature that is outside of our control, it is considered redeemable and we have recorded it in temporary equity. The initial carrying value of the Series D preferred stock was $1.5 million, after discounts for the portion of the financing proceeds allocated to the warrant liability, the BCF and the financing transaction costs. Since the Series D preferred stock was immediately convertible, the $4.4 million discount related to the BCF was immediately accreted to preferred dividends in 2011, resulting in an increase in the carrying value of the Series D preferred stock to $5.9 million. The sale of shares of Series E preferred stock and Series E warrants in our November 2012 Series E financing triggered an anti-dilution adjustment under the terms of the Series D preferred stock, resulting in the conversion price of the Series D preferred stock being reduced and fixed at $1.46 per share, and such shares no longer being subject to any anti-dilution adjustments. The anti-dilution adjustment to the conversion price of the Series D preferred stock resulted in an additional $1.2 million discount on the purchase price of the Series D preferred stock and resulted in an additional BCF. The $1.2 million additional BCF was immediately accreted to preferred dividends in November 2012 which resulted in the carrying value of the Series D preferred stock remaining at $5.9 million. The holders of shares of Series D preferred stock then outstanding are entitled to require us to purchase such shares of Series D preferred stock for $9.1 million plus any accrued but unpaid dividends upon the occurrence of a fundamental change of the Company. Since we have determined that a fundamental change of the Company is not currently probable, the remaining discount of $3.2 million is not accreted to preferred stock dividends in our statements of operations and comprehensive loss. Such amount will only be accreted to preferred dividends in our statements of operations and comprehensive loss at the time that the redemption becomes probable, if ever.

If we had determined that the Series D preferred stock was a debt host rather than an equity host, the conversion feature would have been bifurcated and accounted for as a derivative. If the conversion feature had been accounted for as a derivative it would have been marked to fair value each quarter with the change in fair value being recorded in other income (expense) in our statements of operations and comprehensive loss. This would have materially affected our net loss available for common stockholders and loss per share.

On April 22, 2013, we entered into an agreement with Pillar Pharmaceuticals I, L.P., or Pillar I, and Pillar Pharmaceuticals II, L.P., or Pillar II, which we refer to as the April 22, 2013 Pillar Agreement. Under the April 22, 2013 Pillar Agreement, Pillar I, as the sole holder of our Series D preferred stock, has irrevocably agreed to waive and not exercise the contingent put feature described above effective upon the consummation of a qualified financing. Under the terms of the April 22, 2013 Pillar Agreement, a qualified financing is defined as the issuance and sale of our equity securities from and after the date of the April 22, 2013 Pillar Agreement in one or more closings resulting in aggregate gross proceeds to us of

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at least $12.5 million which would include the consummation of this offering. As a result of our agreement with Pillar I and Pillar II, we anticipate being able to reclassify our Series D preferred stock from temporary equity to permanent equity on our balance sheet in the same manner that we currently classify our Series E preferred stock. See Certain Relationships and Related Person Transactions for additional information about the terms of the April 22, 2013 Pillar Agreement.

Series E Convertible Preferred Stock

On November 9, 2012, we received net proceeds of $6.0 million from the sale and issuance of shares of our Series E preferred stock and Series E warrants to purchase shares of our common stock. We first considered the Series E preferred stock under ASC 480 and determined that it was not mandatorily redeemable. We then identified the following three embedded features within the Series E preferred stock: (1) optional conversion by the holder; (2) optional redemption by the company; and (3) an alternative redemption by the company. We determined that the Series E preferred stock was equity like. We was assessed the optional conversion by the holder to be clearly and closely related to the preferred stock and thus not subject to bifurcation under ASC 815. The optional redemption by us and the alternative redemption by us were both indexed to our own stock and met the criteria for equity classification under ASC 815-40 and thus were not required to be bifurcated.

We issued the Series E preferred stock together with Series E warrants to purchase up to 8,484,840 shares of common stock. Since the Series E preferred stock and the Series E warrants were classified in stockholders equity, the gross proceeds from the financing were allocated between the Series E preferred stock and the Series E warrants based on their relative fair values at the time of the November 9, 2012 Series E financing. We computed the fair value of the warrants using the Black Scholes Model and determined it to be $2.9 million. We recorded the $2.3 million prorated value of the warrants as additional paid-in capital.

We then considered the Series E preferred stock under ASC 470-20 to determine if a BCF existed. As of the transaction date, we computed a BCF of $1.3 million using the initial stated conversion rate. Since the conversion feature is immediately exercisable, we accreted the $1.3 million BCF immediately to preferred dividends

New Accounting Pronouncements

We adopted Financial Accounting Standards Board ASU No. 2011-04, Fair Value Measurement (Topic 820) on a prospective basis effective January 1, 2012. ASU No. 2011-04 updates the existing fair value measurement guidance currently included in the ASC to achieve common fair value measurement and disclosure requirements in United States Generally Accepted Accounting Principles, or U.S. GAAP, and International Financial Reporting Standards. ASU No. 2011-04 is generally consistent with the Company s previous fair value measurement policies but includes additional disclosure requirements, particularly for assets and liabilities that require the use of Level 3 inputs to measure fair value. The adoption of ASU No. 2011-04 did not have a material impact on the Company s financial position or results of operations.

Effective January 1, 2012, we adopted ASU No. 2011-05, Comprehensive Income , which requires companies to present the components of net income and other comprehensive income either as one continuous statement or as two consecutive statements. ASU No. 2011-05 is applied retroactively to all periods presented. ASU No. 2011-05 eliminates the option to present components of other comprehensive income as part of the statement of changes in stockholders (deficit) equity. The update does not change the items which must be reported in other comprehensive income, how such items are measured or when they must be reclassified to net income. The adoption of ASU No. 2011-05 did not have a material impact on the Company s financial position or results of operations.

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Results of Operations

Years ended December 31, 2012, 2011 and 2010

Alliance Revenue

Our alliance revenues are comprised primarily of revenue earned under various collaboration and licensing agreements which include license fees, research and development revenues, including reimbursement of internal and third-party expenses, milestones and patent-related reimbursements.

The following table is a summary of our alliance revenue earned under our collaboration and licensing agreements:

	Year Ended December 31,			Annual Percentage Change	
	2012	2011	2010	2012/2011	2012/2011
		(In millions)			
License fees	$	$	$ 12.2		(100)%
Research and development			0.1		(100)%
Milestones			3.8		(100)%
Other	0.1	0.1			
Total alliance revenue	$ 0.1	$ 0.1	$ 16.1		(99)%

License Fees. License fees primarily include license fee revenue recognized during 2010 under our collaborations with Merck & Co. and Merck KGaA, Darmstadt, Germany, or Merck KGaA. License fee revenue during 2010 was comprised of amortization of the upfront license fee payments under these collaborations. We recognized license fee revenue ratably over the expected period of our continuing involvement in the collaborations, which has generally represented the estimated research period of the agreement.

The following table is a summary of license fees recognized under our two collaborations during 2010:

Collaborator	Year Ended December 31, 2010 (In millions)
Merck KGaA	$ 7.3
Merck & Co.	4.8

We received a $40.0 million upfront payment from Merck KGaA in Euros in February 2008 of which we received $39.7 million due to foreign currency exchange rates in effect at the time. We recognized the $40.0 million upfront payment as revenue over the twenty eight-month research term that ended in June 2010. We received a $20.0 million upfront payment from Merck & Co. in December 2006. We recognized the $20.0 million upfront payment as revenue over the two-year initial research term and the two-year extension period that ended in December 2010. Since we completed the research portions of these collaborations during 2010, all of the upfront license fee payments were fully amortized by December 2010. Consequently, the amount of license fee revenue that we recognized under the Merck KGaA and Merck & Co. collaborations decreased in 2010 and we did not recognize any license fee revenue during 2011 and 2012.

Research and Development Revenue. Research and development revenues in 2010 consisted of reimbursement of us by Merck KGaA of costs incurred by us in connection with clinical trials under our

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collaboration agreement with Merck KGaA. By March 2010, Merck KGaA had assumed sponsorship of these clinical trials of IMO-2055 and we did not conduct any clinical trials of IMO-2055 after 2010. As a result, we did not incur any such costs or receive any such reimbursements in 2011 and 2012 and as such did not recognize any research and development revenue in 2011 and 2012.

Milestone Revenue. In 2011 and 2012, we received no milestone payments. In 2010, we received $3.8 million as a result of the initiation by Merck KGaA of a Phase 1b clinical trial of IMO-2055 in treatment of patients with squamous cell carcinoma of the head and neck, or SCCHN.

Other Revenue. Other revenue consisted of reimbursement by licensees of costs associated with patent maintenance.

Research and Development Expenses

Research and development expenses decreased by approximately $4.3 million, or 24%, from $18.0 million in 2011 to $13.7 million in 2012 and decreased by approximately $6.2 million, or 26%, from $24.2 million in 2010 to $18.0 million in 2011. In the following table, research and development expense is set forth in six categories which are discussed beneath the table:

	Year Ended December 31,			Annual Percentage Change	
	2012	2011	2010	2012/2011	2011/2010
	(In millions)				
IMO-3100 external development expense	$ 2.5	$ 1.7	$ 5.2	47%	(67)%
IMO-8400 external development expense	0.5				
IMO-2055 external development expense (cost of regaining rights to cancer program in 2011)		2.4		(100)%	
IMO-2125 external development expense	0.2	2.1	7.5	(90)%	(72)%
Other drug development expense	5.1	4.8	3.9	6%	23%
Basic discovery expense	5.4	7.0	7.6	(23)%	(8)%
	$ 13.7	$ 18.0	$ 24.2	(24)%	(26)%

IMO-3100 External Development Expenses. These expenses include external expenses that we have incurred in connection with IMO-3100 since November 2009, when we commenced clinical development of IMO-3100. These external expenses include payments to independent contractors and vendors for drug development activities conducted after the initiation of IMO-3100 clinical development but exclude internal costs such as payroll and overhead expenses. We incurred approximately $9.9 million in external development expenses from November 2009 through December 31, 2012, including costs associated with our clinical trials, manufacturing and process development activities related to the production of IMO-3100, and additional nonclinical toxicology studies.

The increase in IMO-3100 expenses in 2012, as compared to 2011, was primarily attributable to costs incurred in 2012 in connection with the preparation for and conduct of our Phase 2 clinical trial of IMO-3100 in patients with psoriasis that we initiated in April 2012 and for which we completed patient activities in December 2012. The increases in 2012 were partially offset by decreases in costs associated with nonclinical studies, the manufacture of IMO-3100 drug supply, costs incurred in the 2011 periods in preparation for a previously planned Phase 2 clinical trial, and data analysis of the completed Phase 1 clinical trials of IMO-3100.

The decrease in IMO-3100 expenses in 2011 as compared to 2010 was primarily attributable to lower costs in 2011 associated with nonclinical safety studies, lower expenses in 2011 associated with the

manufacture of additional IMO-3100 drug supplies, and the completion of all patient activities in 2010 with respect to our Phase 1 clinical trials. These reductions in 2011 expenses for IMO-3100 relative to 2010 expenses were partially offset by 2011 costs associated with the preparation for a planned Phase 2 clinical trial.

We expect IMO-3100 expenses in 2013 to decrease relative to 2012 expenses, due to the completion of patient activities in the Phase 2 trial in 2012.

IMO-8400 External Development Expenses. These expenses include external expenses that we have incurred in connection with IMO-8400 since October 2012, when we commenced clinical development of IMO-8400. These external expenses include payments to independent contractors and vendors for drug development activities conducted after the initiation of IMO-8400 clinical development but exclude internal costs such as payroll and overhead expenses. Since October 2012, we have incurred approximately $0.5 million in external development expenses through December 31, 2012, including costs associated with our Phase 1 clinical trial in healthy subjects that we initiated in 2012, and additional nonclinical studies. We classified the IMO-8400 external development expenses incurred prior to October 2012 as Other Drug Development Expenses.

In the fourth quarter of 2012, we initiated a Phase 1 clinical trial of IMO-8400 in healthy subjects. The first portion of this Phase 1 trial was a rising single-dose evaluation of IMO-8400 administered by subcutaneous injection. The second portion of this Phase 1 trial involved escalating dosages of IMO-8400 administered once per week for four weeks. The primary objectives of this Phase 1 clinical trial are to evaluate the safety, and pharmacodynamics of IMO-8400. This trial is being conducted at a single U.S. site.

Based on the clinical activity of IMO-3100 observed in our four-week Phase 2 clinical trial of IMO-3100 in patients with psoriasis, we have determined that the next step in our development program is to conduct a Phase 2 clinical trial in patients with psoriasis to, among other things, evaluate the clinical activity of IMO-8400 with a treatment period of up to 12 weeks. Based on our evaluation of the comparative profiles of IMO-3100 and IMO-8400, including the engagement of TLR8 by IMO-8400, we have determined to focus our resources on the development of IMO-8400 and to conduct this trial in patients with psoriasis with IMO-8400. In March 2013, we submitted to the regulatory authorities in the Netherlands for review the proposed protocol for this trial and we received a no objection clearance from the Centrale Commissie Mensgebonden Onderzoek. Under the protocol, 32 adult patients with moderate to severe plaque psoriasis, as indicated by a score of 12.5 or greater in the Psoriasis Area Severity Index, would be randomized into one of four cohorts and receive placebo or IMO-8400 at a dose level of 0.075, 0.15, or 0.3 mg/kg/week for 12 weeks, with a six-week follow-up period. We expect that we could initiate this trial as early as the second quarter of 2013 and could have top-line data by the end of 2013. However, we do not plan to initiate this trial unless and until we have completed this offering and raised the necessary proceeds to fund this trial and until we have confirmed the successful completion of our ongoing Phase 1 trial of IMO-8400.

We are also planning to initiate a signal-seeking Phase 2 clinical trial of IMO-8400 in patients with lupus and are considering conducting a proof-of-concept study of IMO-8400 in an orphan autoimmune disease indication. We expect to select the orphan autoimmune disease indication for further exploration in the second half of 2013. However, our plans to conduct the Phase 2 clinical trial of IMO-8400 in patients with lupus and the proof-of-concept study are subject to successful completion of our ongoing Phase 1 trial of IMO-8400 and our ability to raise additional funding beyond the proceeds of this offering to fund the conduct of this Phase 2 trial and proof-of-concept study. We expect to seek such funding through public or private equity offerings, debt financings, collaborations and licensing arrangements or other sources.

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IMO-2055 External Development Expenses. These expenses include external expenses that we have incurred in connection with IMO-2055. These external expenses include payments to independent contractors and vendors for drug development activities conducted after the initiation of IMO-2055 clinical development, but exclude internal costs such as payroll and overhead expenses. We commenced clinical development of IMO-2055 in 2003 and from 2003 through December 31, 2012 we incurred approximately $19.9 million in external development expenses, including costs associated with our clinical trials, manufacturing, process development activities related to the production of IMO-2055, additional nonclinical toxicology studies, and the cost of regaining our rights to IMO-2055 and follow-on compounds for use in the treatment of cancer, excluding cancer vaccines, under the termination agreement discussed below.

Under our collaboration with Merck KGaA, Merck KGaA was responsible for developing IMO-2055 for the treatment of cancer excluding vaccines. Merck KGaA refers to IMO-2055 as EMD 1201081. From December 2007 to March 2010, we conducted clinical trials of IMO-2055 under the collaboration and Merck KGaA reimbursed us. As of March 2010, Merck KGaA assumed sponsorship of all ongoing clinical trials of IMO-2055 for the treatment of cancer and responsibility for all further clinical development of IMO-2055 in the treatment of cancer. As a result of Merck KGaA s assumption of sponsorship of the trials, we did not incur significant expenses for IMO-2055 development in 2010 and 2011, except for costs associated with the termination agreement discussed below.

On November 30, 2011, we entered into an agreement to terminate our collaboration with Merck KGaA and to regain rights for developing TLR9 agonists for the treatment of cancer. In connection with the termination agreement, we agreed to reimburse Merck KGaA for up to 1.8 million ($2.4 million using a December 31, 2012 exchange rate) of Merck KGaA s costs for the third-party contract research organization that was coordinating Merck KGaA s Phase 2 trial of IMO-2055 in combination with cetuximab, payable in eleven installments commencing on March 1, 2012 including a final payment payable upon Merck KGaA s completion of certain specified activities. As of December 31, 2012, we have paid 0.8 of the 1.8 million ($1.1 million (using exchange rates in effect at the time that the payments were made) of the $2.4 million). We also agreed to pay to Merck KGaA one-time 1.0 million ($1.3 million using a December 31, 2012 exchange rate) milestone payments upon the occurrence of each of the following milestones: (i) partnering of IMO-2055 with any third party, (ii) initiation of any Phase 2 or Phase 3 clinical trial for IMO-2055 and (iii) regulatory submission of IMO-2055 in any country. We recorded, in research and development expense during 2011, 1.8 million ($2.4 million using a November 30, 2011 exchange rate) in installment payments which represents the cost of regaining our rights to IMO-2055 and our follow-on compounds for use in the treatment of cancer, excluding cancer vaccines. Under the agreement, Merck KGaA agreed to continue to conduct the Phase 2 trial of IMO-2055 in combination with cetuximab and other specified related activities and to complete and analyze all clinical trials that Merck KGaA had initiated or for which Merck KGaA had assumed sponsorship and to finalize clinical trial reports. As a result, we did not incur significant expenses for IMO-2055 development during 2012. Any milestone payments will be recorded at the time that any milestones are achieved.

We and, during the collaboration period, Merck KGaA, have conducted clinical trials of IMO-2055 alone or in combination with other anticancer agents in several cancer indications, including a Phase 1b trial of IMO-2055 in combination with erlotinib and bevacizumab in patients with advanced non-small cell lung cancer, a Phase 1b clinical trial of IMO-2055 in combination with cetuximab and the chemotherapy regimen FOLFIRI in patients with advanced colorectal cancer, a randomized Phase 2 trial of IMO-2055 in combination with cetuximab in patients with squamous cell carcinoma of the head and neck, and a Phase 2 trial of IMO-2055 monotherapy in patients with renal cell carcinoma.

We are seeking to enter into collaboration with one or more pharmaceutical companies to advance the use of IMO-2055 in the treatment of cancer.

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IMO-2125 External Development Expenses. These expenses include external expenses that we have incurred in connection with IMO-2125. These external expenses include payments to independent contractors and vendors for drug development activities conducted after the initiation of IMO-2125 clinical development, but exclude internal costs such as payroll and overhead expenses. We commenced clinical development of IMO-2125 in May 2007 and from May 2007 through December 31, 2012 we incurred approximately $16.6 million in external development expenses, including costs associated with our clinical trials manufacturing, process development activities related to the production of IMO-2125, and additional nonclinical toxicology studies.

The decrease in IMO-2125 external development expenses in 2012, as compared to 2011, reflects our determination to discontinue further development of IMO-2125 in the treatment of hepatitis C virus, or HCV, in the third quarter of 2011. IMO-2125 external development expenses during 2011 included costs associated with the conduct of nonclinical toxicology studies, costs associated with the Phase 1 clinical trial in null-responder HCV patients and the Phase 1 clinical trial in treatment-naive HCV patients, and costs associated with preparation for a Phase 2 clinical trial of IMO-2125 in treatment-naïve HCV patients that we had planned to initiate in the second quarter of 2011. IMO-2125 external development expenses during 2012 were related primarily to costs associated with the completion of nonclinical studies during the first half of 2012, costs associated with data analysis of a Phase 1 clinical trial in null-responder HCV patients, and costs associated with the maintenance of the clinical drug supply.

The decrease in IMO-2125 expenses in 2011 as compared to 2010 was attributable to decreases in costs associated with the Phase 1 clinical trial in null-responder HCV patients that we initiated in September 2007 and the Phase 1 clinical trial in treatment-naive HCV patients that we initiated in October 2009, manufacturing which occurred in 2010 but not in 2011, the preparation in 2010 for a Phase 2 clinical trial of IMO-2125 in non-responder HCV patients that we had planned to conduct, and a decrease in the cost of conducting additional nonclinical safety studies of IMO-2125. The decrease in 2011 was partially offset by costs incurred in the first half of 2011 associated with preparation for the Phase 2 clinical trial of IMO-2125 in treatment-naïve HCV patients that we had planned to initiate in the second quarter of 2011. We expect that IMO-2125 external development expenses will be significantly lower in future periods.

Other Drug Development Expenses. These expenses include external expenses associated with preclinical development of identified compounds in anticipation of advancing these compounds into clinical development. In addition, these expenses include internal costs, such as payroll and overhead expenses, associated with preclinical development and products in clinical development. The external expenses associated with preclinical compounds include payments to contract vendors for manufacturing and the related stability studies, preclinical studies, including animal toxicology and pharmacology studies, and professional fees. Internal expenses associated with products in clinical development include costs associated with our Autoimmune Disease Scientific Advisory Board.

The increase in other drug development expenses in 2012, as compared to 2011, was primarily due to costs of preclinical studies and manufacturing activities to support the Investigational New Drug application, or IND, for IMO-8400, which we submitted to the FDA in the third quarter of 2012, and was partially offset by the cost of obtaining from Novartis nonclinical and clinical trial data from studies of IMO-2134, a TLR9 agonist, which cost we accrued in 2011, costs associated with nonclinical studies and manufacturing of preclinical research compounds in 2011, and lower employee compensation during 2012.

The increase in other drug development expenses in 2011, as compared to 2010, was primarily due to increases in the cost of nonclinical studies of preclinical compounds, manufacturing expenses and consulting costs. These increases reflect costs associated with preclinical studies to support the planned submission of an IND for IMO-8400 and were partially offset by lower employee expenses in 2011. The

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increase in other drug development expenses during 2011 also reflects the cost of obtaining from Novartis nonclinical and clinical trial data from studies conducted by our former collaborative partner of IMO-2134.

Basic Discovery Expenses. These expenses include our internal and external expenses relating to our discovery efforts with respect to our TLR-targeted programs, including agonists and antagonists of TLR3, TLR7, TLR8, and TLR9, TLR antisense, and gene silencing oligonucleotides. These expenses reflect payments for laboratory supplies, external research, and professional fees, as well as payroll and overhead expenses. The decrease in basic discovery expenses in 2012, as compared to 2011, was primarily due to decreases in the cost of laboratory supplies and employee compensation reflecting reduced activity and reduced headcount resulting from our September 2011 re-assessment and prioritization of our drug development programs. The decrease in basic discovery expenses in 2011, as compared to 2010, was primarily due to decreases in the cost of laboratory supplies and employee expenses.

We do not know if we will be successful in developing any drug candidate from our research and development programs. At this time, and without knowing the outcome of our ongoing Phase 1 clinical trial of IMO-8400, and without an established plan for future clinical tests of drug candidates, we cannot reasonably estimate or know the nature, timing, and costs of the efforts that will be necessary to complete the remainder of the development of, or the period, if any, in which material net cash inflows may commence from, any drug candidate from our research and development programs. Moreover, the clinical development of any drug candidate from our research and development programs is subject to numerous risks and uncertainties associated with the duration and cost of clinical trials, which vary significantly over the life of a project as a result of unanticipated events arising during clinical development.

General and Administrative Expenses

General and administrative expenses decreased by approximately $1.6 million, or 20%, from $7.9 million in 2011 to $6.3 million in 2012 and decreased by approximately $2.0 million, or 20%, from $9.9 million in 2010 to $7.9 million in 2011. General and administrative expenses consist primarily of salary expense, stock compensation expense, consulting fees and professional legal fees associated with our patent applications and maintenance, our corporate regulatory filing requirements, our corporate legal matters, and our business development initiatives.

The $1.6 million decrease in general and administration expenses in 2012, as compared to 2011, was primarily due to lower legal costs associated with patent matters and lower employee compensation due to decreases in stock based compensation and the number of employees during 2012. These decreases were partially offset by higher corporate legal expenses associated with pursuing financing alternatives, including the financing arrangement we entered into with Cowen and Company LLC, or Cowen, in April 2012.

The $2.0 million decrease in general and administrative expenses in 2011, as compared to 2010, was primarily due to decreases in stock based compensation, employee cash compensation expenses and consulting fees associated with business and strategic initiatives in 2011. The decrease in stock compensation expense during 2011 was mainly due to higher recognized expense in 2010 associated with the modification of non-employee director stock options and lower expense recognized in 2011 due to options whose fair value had been fully amortized prior to the end of 2011. These decreases in general and administrative expenses were partially offset by increases in legal costs associated with patent matters in 2011.

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Decrease in Fair Value of Warrant Liability

During November 2011 we recorded a warrant liability of $3.2 million reflecting the fair value of the Series D warrants issued in our November 2011 Series D financing. We determined the Series D warrants to be a derivative instrument because they contained a specified anti-dilution provision that did not meet the indexed to the company s own stock exemption requirements in ASC 815-40, Derivatives and Hedging Contracts in an Entity s own Stock, ASC 815-40. The Series D warrants were classified as a liability, recorded at fair value as of the transaction date and were marked to fair value through earnings each quarter. The fair value of the Series D warrants decreased to $1.2 million at December 31, 2011 primarily due to a decrease in the price of our common stock. The reduction in the fair value of the Series D warrant liability resulted in the recognition of $2.0 million in non-operating income in 2011.

The fair value of the Series D warrant liability decreased from $1.2 million at December 31, 2011 to $0.5 million at November 9, 2012 primarily due to decreases in the market price of our common stock and the remaining term of the Series D warrants resulting in the recognition of $0.7 million in non-operating income in 2012. The sale of shares of Series E preferred stock and Series E warrants in our November 2012 Series E financing triggered an anti-dilution adjustment under the terms of the Series D warrants, resulting in the exercise price of the Series D warrants being reduced and fixed at the minimum $1.46 per share and the Series D warrants no longer being subject to any anti-dilution adjustments. Once the exercise price of the Series D warrants became fixed, the Series D warrants then met the exception under ASC 815-40 as they were now indexed to the company s own stock and met certain criteria for equity classification, thus we marked the Series D warrants to fair value through earnings as of November 9, 2012, and we then reclassified the remaining $0.5 million Series D warrant liability to stockholders equity at that time.

Investment Income, net

Investment income was a negligible amount in 2012 and 2011 because most of our invested funds have been deposited in a money market fund which pays minimal interest. Investment income decreased from $0.1 million in 2010 to a negligible amount in 2011 due to lower average investment balances and lower interest rates in 2011.

Foreign Currency Exchange Gain (Loss)

Our foreign currency exchange loss was a negligible amount in 2012 compared to a gain of $0.1 million in 2011 and a loss of $(0.1) million in 2010. The foreign currency exchange loss during 2012 was primarily due to the impact that the weakening value of the U.S. dollar had on our Euro-denominated accrued liabilities associated with the cost of re-gaining the rights to our cancer program and our clinical trial obligations. The foreign currency exchange gain during 2011 was primarily due to the impact that the strengthening value of the U.S. dollar had on our Euro-denominated accrued liabilities associated with the cost of re-gaining the rights to our cancer program and our clinical trial obligations. The foreign currency exchange loss during 2010 was primarily due to the impact that fluctuations in U.S. Dollar/Euro currency exchange rates had on the receipt of milestone payments under our Merck KGaA collaboration in the first and third quarters of 2010. In 2009, we earned a milestone for which we had a $4.3 million receivable at December 31, 2009. Merck KGaA paid us for this milestone in February 2010 and we received $4.1 million based on foreign exchange rates in effect at the time of payment as a result of the strengthening value of the U.S. dollar. Consequently, we incurred a foreign currency exchange loss of $0.2 million on the milestone payment during the first quarter of 2010. The foreign currency exchange loss during 2010 also reflects the impact that fluctuations in U.S. Dollar/Euro currency exchange rates have on payments under our clinical trial agreements that are denominated in Euros and on the receipt of the milestone payment in the third quarter of 2010 when we earned a $3.8 million milestone for which we received $4.1 million based on foreign exchange rates in effect at the time of payment as a result of the weakening value of the U.S. dollar, resulting in a foreign currency exchange gain of $0.3 million.

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Preferred Stock Accretion and Dividends

The $3.2 million in preferred stock accretion and dividends in 2012 consists of $1.3 million related to the BCF of the Series E preferred stock and $1.2 million related to the additional beneficial conversion feature of the Series D preferred stock that we have accreted to preferred dividends, as described under Critical Accounting Policies and Estimates, $0.7 million in dividends payable on shares of our Series D preferred stock and a negligible amount of dividends payable on shares of our Series E preferred stock.

The $4.5 million in preferred stock accretion and dividends in 2011 consists of $4.4 million related to the BCF of the Series D preferred stock that we have accreted to preferred dividends, as described under Critical Accounting Policies and Estimates, and $0.1 million in dividends payable on shares of our Series D preferred stock.

Net Loss Applicable to Common Stockholders

As a result of the factors discussed above, our net loss applicable to common stockholders was $22.4 million, $28.3 million and $18.0 million for the years ended December 31, 2012, 2011 and 2010, respectively. Since January 1, 2001, we have primarily been involved in the development of our TLR pipeline. From January 1, 2001 through December 31, 2012, we incurred losses of $134.5 million. We also incurred net losses of $260.2 million prior to December 31, 2000 during which time we were primarily involved in the development of non-TLR targeted antisense technology. Since our inception, we had an accumulated deficit of $394.7 million through December 31, 2012. We expect to continue to incur substantial operating losses in the future.

Net Operating Loss Carryforwards

As of December 31, 2012, we had cumulative net operating loss carryforwards, or NOLs, of approximately $173.3 million and $67.3 million available to reduce federal and state taxable income, which expire through 2032. In addition, we had cumulative federal and state tax credit carryforwards of $5.0 million and $5.2 million, respectively, available to reduce federal and state income taxes, which expire through 2032 and 2027, respectively. The Tax Reform Act of 1986 contains provisions, which limit the amount of NOLs and credit carryforwards that companies may utilize in any one year in the event of cumulative changes in ownership over a three-year period in excess of 50%. We have completed several financings since the effective date of the Tax Reform Act of 1986, which as of December 31, 2012, have resulted in ownership changes in excess of 50% and that will significantly limit our ability to utilize our NOL and tax credit carryforwards. Ownership changes in future periods may place additional limits on our ability to utilize net operating loss and tax credit carryforwards.

Liquidity and Capital Resources

Sources of Liquidity

We require cash to fund our operating expenses and to make capital expenditures. Historically, we have funded our cash requirements primarily through the following:

- equity and debt financing;
- license fees, research funding and milestone payments under collaborative and license agreements;
- interest income; and
- lease financings.

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Series E Preferred Stock and Warrant Financing

In November 2012, we entered into a Convertible Preferred Stock and Warrant Purchase Agreement, or Series E Purchase Agreement, for the issuance and sale of shares of Series E preferred stock and Series E warrants, with Pillar II and a second purchaser, which we refer to as the Series E purchasers. Pillar II is an investment partnership managed by two of our directors and one of our significant stockholders. Under the Series E Purchase Agreement, we issued and sold to the Series E purchasers, for an aggregate purchase price of approximately $7.0 million, 424,242 shares of Series E preferred stock and Series E warrants to purchase up to 8,484,840 shares of common stock. The shares of Series E preferred stock are convertible, subject to limitations, into an aggregate of 8,484,840 shares of common stock at a conversion price of $0.70 per share. The initial exercise price of the warrants is $0.70 per share. The warrants to purchase common stock are exercisable immediately, and will expire if not exercised on or prior to November 9, 2017. We have agreed to pay to the Series E preferred stockholders quarterly dividends payable in cash in arrears at the rate of 4.6% per annum with the first dividend payment being due on March 31, 2013. Under the terms of the Series D preferred stock, any dividends that we pay to the Series E preferred stockholders will also be paid to the Series D preferred stockholders on an as-converted to common stock basis. We have agreed that, at our 2013 annual meeting of stockholders, we will propose an amendment to the Certificate of Designations, Preferences and Rights of Series D Preferred Stock, or the Series D Certificate of Designations, which is described below, to, among other things, modify the terms of the Series D preferred stock that currently require payment of dividends to Series D preferred stockholders upon payment of dividends to Series E stockholders. If such amendment is approved by our stockholders, the Series E preferred stockholders would become entitled to receive dividends payable in cash quarterly in arrears at the rate of 8% per annum and the Series D preferred stockholders would cease to be entitled to corresponding dividends. If such amendment is submitted to our stockholders and it is not approved, the holders of our Series E preferred stock will no longer be entitled to receive dividends. The net proceeds to us from the Series E financing, excluding the proceeds of any future exercise of the Series E warrants, were approximately $6.0 million.

Under the terms of the Series E Purchase Agreement, we granted the Series E purchasers participation rights in future financings. In addition, we agreed to use our best efforts to file a preliminary proxy statement for our next annual meeting of stockholders that will, among other things, seek approval from our stockholders of the following matters:

- the issuance and sale by us to the Series E purchasers (together with all prior issuances and sales to Pillar I, an investment partnership managed by one of our directors and significant stockholders) of a number of shares of common stock (including securities convertible into or exercisable for common stock) that is greater than 19.99% of our outstanding common stock or our outstanding voting power after such issuance and sale in accordance with Nasdaq Listing Rule 5635(b), or the Nasdaq Proposal;

- an amendment to our restated certificate of incorporation and bylaws, as necessary, to eliminate the classification of our board of directors; and

- an amendment to the Series D Certificate of Designations for our Series D preferred stock, which is held by Pillar I, to modify the dividend provisions of the Series D Certificate of Designations so that dividends on the Series E preferred stock are not required to be paid to the holders of Series D preferred stock and to conform the beneficial ownership limitations applicable to the conversion of the Series D preferred stock to the beneficial ownership limitations applicable to the conversion of the Series E preferred stock.

Also under the terms of the Series E Purchase Agreement, each Series E purchaser agreed:

- for so long as the Series E purchaser and its affiliates beneficially own more than 19.99% (prior to the date our stockholders approve the Nasdaq Proposal) or 25% (effective upon the date that our

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stockholders approve the Nasdaq Proposal) of our outstanding common stock, that the Series E purchaser and its affiliates will vote any shares held by them in excess of the number of shares equal to 19.99% or 25%, as applicable, of the outstanding common stock (including the shares of common stock issuable upon conversion or exercise of securities that are convertible into or exercisable for shares of common stock held by such Series E purchaser and its affiliates) with respect to any matter put to a vote of the holders of common stock in the same manner and percentage as the holders of the common stock (other than the Series E purchasers) vote on such matter;

to certain restrictions on the transfer of any securities issued to such Series E purchaser pursuant to the Series E Purchase Agreement, including to not sell or transfer any such securities in one or a series of transactions if such transfer would, in the aggregate, result in the transfer more than 5% of the then outstanding combined voting power of our outstanding securities (excluding from this restriction certain transfers to permitted transferees or in connection with an underwritten public offering by us that has been approved by the board of directors); and

to be subject to a standstill provision that continues for so long as such Series E purchaser and its affiliates beneficially own more than 15% of our outstanding common stock.

After the later of November 9, 2014 and the date that no shares of Series D preferred stock remain outstanding, we may redeem all or a portion of the Series E preferred stock for a cash payment equal to the $14.00 original Series E preferred stock issue price per share plus any accrued or declared but unpaid dividends thereon following notice to the holders of the Series E preferred stock if the closing price of the Common Stock for 20 or more trading days in a period of 30 consecutive trading days is greater than or equal to 400% of the Series E preferred stock conversion price. We may not redeem any shares of Series E preferred stock from a holder that cannot convert such shares of Series E preferred stock into common stock as a result of the beneficial ownership limitations described above. In such event, we may redeem such nonredeemable shares pursuant to alternative redemption provisions set forth in the Certificate of Designations, Preferences and Rights of Series E Preferred Stock, or the Series E Certificate of Designations, following notice to the holders of the nonredeemable shares, for a cash payment equal to the greater of the 20 consecutive trading day average closing price per share of the common stock ending on the trading day immediately prior to redemption date plus any dividends accrued or declared but unpaid thereon and the Series E conversion price plus any dividends accrued or declared but unpaid thereon. After November 9, 2014, we may redeem the Series E warrants for $0.01 per share of common stock issuable on exercise of the Series D warrants following notice to the Series E purchasers if the closing price of the common stock for 20 or more trading days in a period of 30 consecutive trading days is greater than or equal to $2.80, subject to adjustment.

In connection with the Series E Purchase Agreement, we filed a registration statement that became effective on January 17, 2013, registering the resale of the shares of common stock issuable upon conversion of the Series E preferred stock and the shares of common stock issuable upon exercise of the Series E warrants.

Under the April 22, 2013 Pillar Agreement, we and each of Pillar I and Pillar II have agreed, among other things:

to modify the dividend provisions of the Series E Certificate of Designations to allow for the payment of dividends in shares of our common stock commencing October 1, 2013; and

to allow for the payment of dividends in shares of a to-be-created new series of non-voting preferred stock in the event that payment of such dividends may not be made in shares of our common stock as a result of the application of the beneficial ownership and voting power limitations set forth in the Series E Certificate of Designations.

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In addition, on April 30, 2013, we entered into a second agreement with Pillar I, Pillar II and an entity affiliated with Pillar I and Pillar II, which we refer to collectively as the Pillar Entities. We refer to this agreement as the April 30, 2013 Pillar Agreement. Under the April 30, 2013 Pillar Agreement, Pillar II and the entity affiliated with Pillar II, together the holders of 100% of the Series E preferred stock, have irrevocably agreed to waive the right of the holders of the Series E preferred stock under Section 2.1.1 of the Series E Certificate of Designations to receive, in the event of a Liquidation, an amount per share of Series E preferred stock equal to the original issue price of such share of Series E preferred stock plus any dividends accrued or declared but unpaid thereon to the extent such amount is greater than the amount that would have been payable with respect to such share had all shares of Series E preferred stock been converted into shares of our common stock immediately prior to such Liquidation, and that upon a Liquidation the holders of the Series E preferred stock will receive under Section 2.1 of the Series E Certificate of Designations an amount per share of Series E preferred stock equal to the amount that would be payable with respect to such share had all shares of Series E preferred stock been converted into shares of our common stock immediately prior to such Liquidation.

Under the April 30, 2013 Pillar Agreement and the April 22, 2013 Pillar Agreement, which we refer to together as the Pillar Agreements, we have agreed to seek approval from our stockholders at our 2013 annual meeting of stockholders of amendments to the Series E Certificate of Designations to effect these changes to the dividend and liquidation provisions of our Series E preferred stock, and Pillar II and its affiliated entity have agreed:

- to vote, and to cause its affiliates to vote, all shares of our voting stock held by Pillar II or its affiliates, and over which Pillar II or its affiliates has the power to vote, in favor of such amendments; and

- not to, and to cause its affiliates not to, sell or transfer any shares of our common stock or Series E preferred stock held by Pillar II or its affiliates to any person, entity or group unless such proposed transferee agrees in a written instrument executed by such transferee, Pillar II and us to take and hold such securities subject to, among other things, the Pillar Agreements and to be bound by the terms of the Pillar Agreements, including the waiver of rights, voting agreements and restrictions on transfer set forth therein.

The Pillar Agreements will become effective upon the consummation of a qualified financing, as defined in the Pillar Agreements, which would include the consummation of this offering. The Pillar Agreements will terminate in the event that a qualified financing is not consummated by October 1, 2013.

See Certain Relationships and Related Person Transactions for additional information about the terms of the Pillar Agreements.

Cowen Sales Agreement

In April 2012, we entered into a sales agreement with Cowen pursuant to which we may issue and sell shares of our common stock, having an aggregate offering price of up to $10.0 million from time to time through Cowen as our sales agent. Cowen may sell our common stock by methods deemed to be an at-the-market offering, as defined under the Securities Act, including sales made directly on the Nasdaq Capital Market, on any other existing trading market for our common stock or to or through a market maker other than on an exchange. With our prior written approval, Cowen may also sell our common stock by any other method permitted by law, including in privately negotiated transactions.

Cowen has agreed to offer the common stock subject to the terms and conditions of the sales agreement on a daily basis or as otherwise agreed upon by us and Cowen. Under the arrangement, we will designate the maximum amount of our common stock to be sold through Cowen on a daily basis or otherwise determine such maximum amount together with Cowen. Subject to the terms and conditions of the sales agreement,

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Cowen has agreed to use its commercially reasonable efforts to sell on our behalf all of the shares of common stock requested to be sold by us. We may instruct Cowen not to sell common stock if the sales cannot be effected at or above the price designated by us in any such instruction. We or Cowen may suspend the offering of the common stock being made through Cowen under the sales agreement upon proper notice to the other party. We and Cowen each have the right, by giving written notice as specified in the sales agreement, to terminate the sales agreement in each party s sole discretion at any time.

The sales agreement provides that Cowen will be entitled to aggregate compensation for its services equal to 3.0% of the gross sales price per share of all shares sold through Cowen under the sales agreement. We have no obligation to sell any shares under the sales agreement. We have agreed in the sales agreement to provide indemnification and contribution to Cowen against certain liabilities, including liabilities under the Securities Act. In addition, we have agreed, under certain circumstances, to reimburse a portion of the expenses of Cowen in connection with the offering of common stock up to a maximum of $50,000. The shares will be issued pursuant to our shelf registration statement on Form S 3 (File No. 333-169060).

We had not sold any shares under the sales agreement as of January 31, 2013.

Series D Preferred Stock and Warrant Financing

In November 2011, we entered into a Convertible Preferred Stock and Warrant Purchase Agreement, or Series D Purchase Agreement, with Pillar I. The Series D Purchase Agreement was amended in November 2012 in connection with the Series E financing. Under the Series D Purchase Agreement, we issued and sold to Pillar I, for an aggregate purchase price of $9.5 million, 1,124,260 shares of our Series D preferred stock and Series D warrants to purchase up to 2,810,650 shares of our common stock. The shares of Series D preferred stock were initially convertible, subject to limitations, into 5,621,300 shares of our common stock at an initial conversion price of $1.63. The initial exercise price of the warrants was $1.63 per share.

The net proceeds to us from the offering, excluding the proceeds of any future exercise of the Series D warrants, were approximately $9.1 million. No holder of the Series D preferred stock may convert its shares to the extent such conversion would result in the holder and its affiliates beneficially owning more than 19.99% of the common stock outstanding. As a result of the dilutive effect of our November 2012 Series E financing, the 1,124,260 shares of our Series D preferred stock became convertible, subject to limitations, into 6,266,175 shares of our common stock and the exercise price of the Series D warrants became fixed at $1.46 per share.

The Series D Purchase Agreement was amended in connection with the Series E financing to provide:

- for so long as Pillar I and its affiliates beneficially own more than 19.99% (prior to the date the stockholders of the Company approve the Nasdaq Proposal) or 25% (effective upon the date that the stockholders of the Company approve the Nasdaq Proposal) of the outstanding common stock, that Pillar I and its affiliates will vote any shares held by them in excess of the number of shares equal to 19.99% or 25%, as applicable, of the outstanding common stock (including the shares of common stock issuable upon conversion of securities convertible into or exercisable for shares of common stock held by Pillar I and its affiliates) with respect to any matter put to a vote of the holders of common stock in the same manner and percentage as the holders of the common stock (other than the Series E purchasers and their affiliates) vote on such matter; and

- for certain restrictions on the transfer of any securities issued to Pillar I (including securities convertible into or exercisable for common stock) pursuant to the Series D Purchase Agreement, including to not sell or transfer any such securities in one or a series of transactions if such transfer would, in the aggregate, result in the transfer of more than 5% of the then outstanding

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combined voting power of the outstanding securities of the Company (excluding from this restriction certain transfers to permitted transferees or in connection with an underwritten public offering by the Company that has been approved by our board of directors).

Series D preferred stockholders are entitled to receive dividends payable quarterly in arrears at the rate of 7% per annum. Such dividends shall be paid in cash through December 31, 2014 and thereafter in cash or with shares of common stock, as determined by us in our sole discretion, except that we may not pay any dividends to a holder of Series D preferred stock in shares of common stock to the extent the issuance of such shares would result in the holder of Series D preferred stock and its affiliates beneficially owning more than 19.99% (prior to the date the stockholders of the Company approve the Nasdaq Proposal) or 35% (effective upon the date that the stockholders of the Company approve the Nasdaq Proposal) of the common stock outstanding or the combined voting power of our securities outstanding immediately after giving effect to the issuance of such shares of common stock. We have agreed to pay to the Series E preferred stockholders quarterly dividends payable in cash in arrears at the rate of 4.6% per annum with the first dividend payment being due on March 31, 2013. Under the terms of the Series D preferred stock, any dividends that we pay to the Series E preferred stockholders will also be paid to the Series D preferred stockholders on an as-converted to common stock basis. We have agreed that, at our 2013 annual meeting of stockholders, we will propose an amendment to the Series D Certificate of Designations to, among other things, modify the terms of the Series D preferred stock that currently require payment of dividends to Series D preferred stockholders upon payment of dividends to Series E stockholders. If such amendment is approved by our stockholders, the Series E preferred stockholders would become entitled to receive dividends payable in cash quarterly in arrears at the rate of 8% per annum and the Series D preferred stockholders would cease to be entitled to corresponding dividends. If such amendment is submitted to our stockholders and it is not approved, the holders of the Series E preferred stock will no longer be entitled to receive dividends.

After November 4, 2013 and following written notice by us, we may redeem, for a cash payment equal to the $8.1375 original Series D preferred stock issue price per share plus any accrued or declared but unpaid dividends thereon, all or a portion of the Series D preferred stock if the closing price of our common stock for 20 or more trading days in a period of 30 consecutive trading days is greater than or equal to 200% of the Series D preferred stock conversion price. In addition, the holders of shares of Series D preferred stock then outstanding are entitled to require us to purchase the shares of Series D preferred stock at a price equal to the original Series D preferred stock purchase price per share plus all accrued or declared but unpaid dividends thereon upon the occurrence of specified fundamental changes such as mergers, consolidations, business combinations, stock purchases or similar transactions resulting in a person or group unaffiliated with any holder of Series D preferred stock owning 66.67% or more of the outstanding voting securities of the Company or successor entity.

Under the terms of the Series D Purchase Agreement, Pillar I agreed to be subject to a standstill provision that continues for so long as Pillar I and its affiliates beneficially own more than 15% of our outstanding common stock.

The sale of shares of Series E preferred stock and Series E warrants in our November 2012 Series E financing triggered an anti-dilution adjustment under the terms of the Series D warrants, resulting in the exercise price of the Series D warrants being reduced and fixed at the minimum $1.46 per share and the Series D warrants no longer being subject to any anti-dilution adjustments. The Series D warrants may be exercised at Pillar I s option at any time on or before November 4, 2016. The Series D warrants, as amended in connection with the November 2012 Series E financing, provide that the Series D warrants may not be exercised with respect to any portion of the warrants, to the extent that such exercise would result in Pillar I and its affiliates beneficially owning more than 19.99% of the number of shares of common stock outstanding or the combined voting power of our securities outstanding immediately after giving effect to the issuance of shares of common stock issuable upon exercise of the Series D warrants,

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unless our stockholders approve the Nasdaq Proposal, in which case, the 19.99% limitation will be increased, with respect to Pillar I, to 35%. After November 4, 2013, we may redeem the Series D warrants for $0.01 per share of common stock issuable on exercise of the Series D warrants following notice to Pillar I if the closing price of the common stock for 20 or more trading days in a period of 30 consecutive trading days is greater than or equal to $6.51, subject to adjustment.

In connection with the Series D Purchase Agreement, we also filed a registration statement that became effective on December 21, 2011, registering the resale of the shares of common stock issuable upon conversion of the Series D preferred stock and the shares of common stock issuable upon exercise of the Series D warrants. In February 2013, we filed a registration statement that became effective on February 8, 2013 covering the resale of additional shares of common stock issuable upon conversion of the Series D preferred stock.

Under the April 22, 2013 Pillar Agreement, Pillar I has irrevocably agreed to waive and not exercise the rights, powers, preferences and other terms of the Series D preferred stock under Section 6 of the Series D Certificate of Designations, including without limitation the right to require us to purchase all or any portion of the shares of our Series D preferred stock at a price equal to the original Series D preferred stock purchase price per share plus all accrued or declared but unpaid dividends thereon upon the occurrence of specified fundamental changes such as mergers, consolidations, business combinations, stock purchases or similar transactions resulting in a person or group unaffiliated with any holder of Series D preferred stock owning 66.67% or more of the outstanding voting securities of the Company or successor entity.

In addition, under the April 22, 2013 Pillar Agreement, we and each of Pillar I and Pillar II have agreed, among other things:

- to modify the dividend provisions of the Series D Certificate of Designations to change the date after which we may elect to pay dividends in shares of our common stock from December 31, 2014 to October 1, 2013, and to allow for the payment of such dividends in shares of a to-be-created new series of non-voting preferred stock in the event that payment of such dividends may not be made in shares of our common stock as a result of the application of the beneficial ownership and voting power limitations set forth in the Series D Certificate of Designations; and

- in connection with the waiver of the right to require us to purchase the Series D preferred stock upon the occurrence of specified fundamental changes, to modify the Series D Certificate of Designations to provide, in the event of a sale of our company, for the distribution of any assets that remain available for distribution to our stockholders, after payment to the holders of our Series A convertible preferred stock and any other class of our capital stock that ranks senior to our Series D preferred stock, to the holders of our Series D preferred stock on a pro rata basis with the holders of our common stock, Series E preferred stock and such new series of non-voting preferred stock.

Under the April 30, 2013 Pillar Agreement, Pillar I has irrevocably agreed to waive the right of the holders of the Series D preferred stock under Section 2.1 of the Series D Certificate of Designations to receive, in the event of a voluntary or involuntary liquidation, dissolution or winding up of the Company, or Liquidation, an amount per share of Series D preferred stock equal to the original issue price of such share of Series D preferred stock plus any dividends accrued or declared but unpaid thereon to the extent such amount is greater than the amount that would have been payable with respect to such share had all shares of Series D preferred stock been converted into shares of our common stock immediately prior to such Liquidation, and that upon a Liquidation the holders of the Series D preferred stock will receive an amount per share of Series D preferred stock equal to the amount that would be payable with respect to such share had all shares of Series D preferred stock been converted into shares of our common stock immediately prior to such Liquidation.

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In addition, under the Pillar Agreements, we have agreed to seek approval from our stockholders at our 2013 annual meeting of stockholders of amendments to the Series D Certificate of Designations to effect these changes to the dividend and liquidation provisions of our Series D preferred stock, the redemption rights of the holders of our Series D preferred stock and the rights of the holders of our Series D preferred stock to distributions in the event of a sale of our company, and Pillar I has agreed:

- to vote, and to cause its affiliates to vote, all shares of our voting stock held by Pillar I or its affiliates, and over which Pillar I or its affiliates has the power to vote, in favor of such amendments; and

- not to, and to cause its affiliates not to, sell or transfer any shares of our common stock or Series D preferred stock held by Pillar I or its affiliates to any person, entity or group unless such proposed transferee agrees in a written instrument executed by such transferee, Pillar I and us to take and hold such securities subject to, among other things, the Pillar Agreements and to be bound by the terms of the Pillar Agreements, including the waivers of rights, voting agreements and restrictions on transfer set forth therein.

The Pillar Agreements, including our obligations to issue the Pillar Warrants under the Pillar Agreements, will become effective upon the consummation of a qualified financing, which would include the consummation of this offering. The Pillar Agreements will terminate in the event that a qualified financing is not consummated by October 1, 2013.

See Certain Relationships and Related Person Transactions for additional information about the terms of the Pillar Agreements.

Registered Direct Financing

In August 2010, we raised $15.1 million in gross proceeds from a registered direct offering of our common stock and warrants to institutional investors. In the offering, we sold 4,071,005 shares of common stock and warrants to purchase 1,628,402 shares of common stock. The common stock and the warrants were sold in units at a price of $3.71 per unit, with each unit consisting of one share of common stock and warrants to purchase 0.40 shares of common stock. The warrants to purchase common stock have an exercise price of $3.71 per share, are exercisable immediately, and will expire if not exercised on or prior to August 5, 2015. The net proceeds to us from the offering, excluding the proceeds of any future exercise of the warrants, were approximately $14.1 million.

Collaboration Agreements

Under the terms of our collaboration with Merck KGaA, which was terminated in November 2011, we received in February 2008 a $40.0 million upfront license fee in Euros of which we received $39.7 million due to foreign currency exchange rates and approximately $12.1 million in milestone payments. In addition, Merck KGaA reimbursed us $4.5 million for expenses related to the development of IMO-2055. In connection with the termination of the collaboration, we agreed to reimburse Merck KGaA for up to 1.8 million ($2.4 million using a December 31, 2012 exchange rate) of Merck KGaA s costs for the third-party contract research organization that was coordinating Merck KGaA s Phase 2 trial of IMO-2055 in combination with cetuximab, payable in eleven installments commencing on March 1, 2012 including a final payment payable upon Merck KGaA s completion of certain specified activities. As of December 31, 2012, we have paid 0.8 of the 1.8 million ($1.1 million (using exchange rates in effect at the time that the payments were made) of the $2.4 million). We also agreed to pay to Merck KGaA one-time 1.0 million ($1.3 million using a December 31, 2012 exchange rate) milestone payments upon the occurrence of each of the following milestones: partnering of IMO-2055 with any third party, initiation of any Phase 2 or Phase 3 clinical trial for IMO-2055 and regulatory submission of IMO-2055 in any country.

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Under the terms of our collaboration with Merck & Co., Merck & Co. paid us a $20.0 million license fee in December 2006 and purchased 1,818,182 shares of our common stock for a price of $5.50 per share for an aggregate purchase price of $10.0 million. Since entering this agreement, we have also received $1.0 million in milestone payments and $3.4 million in research and development payments.

Cash Flows

As of December 31, 2012, we had approximately $10.1 million in cash and cash equivalents, a net decrease of approximately $14.5 million from December 31, 2011. Net cash used in operating activities totaled $19.9 million during 2012, reflecting our $19.2 million net loss for 2012, as adjusted for non-cash income and expenses, including stock-based compensation, depreciation and the $0.7 million decrease in the warrant liability that was credited to operations through November 9, 2012. It also reflects changes in our prepaid expenses and accounts payable, accrued expenses and other liabilities.

The $5.4 million net cash provided by financing activities during 2012 primarily reflects the $6.0 million in net proceeds from the sale of Series E preferred stock and Series E warrants in November 2012 and the proceeds received from employee stock purchases, offset, in part, by dividends paid on our Series D preferred stock and payments on our capital lease.

As of December 31, 2011, we had approximately $24.6 million in cash, cash equivalents and investments, a net decrease of approximately $10.0 million from December 31, 2010. Net cash used in operating activities totaled $19.2 million during 2011, reflecting our $23.8 million net loss for 2011, as adjusted for non-cash income and expenses, including the decrease in the warrant liability, stock-based compensation, the cost of regaining rights to our cancer program, depreciation expense and amortization. It also reflects changes in our prepaid expenses and accounts payable, accrued expenses and other liabilities.

The net cash provided by investing activities during 2011 of $17.6 million reflects the maturity of $18.6 million in available-for-sale securities and a $0.1 million decrease in restricted cash offset by the purchase of approximately $1.0 million of securities during 2011.

The $9.1 million net cash provided by financing activities during 2011 primarily reflects the $9.1 million in net proceeds from the sale of Series D preferred stock and Series D warrants in November 2011 and the proceeds received from employee stock purchases, offset, in part, by payments on our capital leases.

As of December 31, 2010, we had approximately $34.6 million in cash and cash equivalents and investments, a net decrease of approximately $5.6 million from December 31, 2009. Net cash used in operating activities totaled $19.6 million during 2010. The $19.6 million reflects our $18.0 million net loss for 2010, as adjusted for non-cash revenue and expenses, including the reduction in deferred revenue associated with the recognition of deferred revenue under our collaboration agreements, stock-based compensation, depreciation and amortization. It also reflects changes in our accounts receivable, prepaid expenses and accounts payable, accrued expenses and other liabilities.

The net cash used in investing activities during 2010 of $3.1 million reflects our purchase of approximately $10.3 million in securities offset by the proceeds of approximately $7.2 million from securities that matured in 2010. The net cash provided by investing activities also reflects a $0.1 million investment in laboratory, office and computer equipment and an increase in available cash of $0.1 million as a result of a reduction in our restricted cash requirements for a security deposit under the terms of the lease for our facility.

The net cash provided by financing activities during 2010 of $14.2 million primarily reflects the $14.1 million in net proceeds from the sale of common stock and warrants in August 2010 and $0.1 million in proceeds received from the exercise of common stock options and employee stock purchases during 2010 offset, in part, by payments under a capital lease.

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Funding Requirements

We have incurred operating losses in all fiscal years except 2002, 2008 and 2009, and we had an accumulated deficit of $394.7 million at December 31, 2012.

We have received no revenues from the sale of drugs. As of January 31, 2013, almost all of our revenues have been from collaboration and license agreements. We have devoted substantially all of our efforts to research and development, including clinical trials, and we have not completed development of any drugs. Because of the numerous risks and uncertainties associated with developing drugs, we are unable to predict the extent of any future losses, whether or when any of our products will become commercially available or when we will become profitable, if at all.

We do not expect to generate significant additional funds internally until we successfully complete development and obtain marketing approval for products, either alone or in collaboration with third parties, which we expect will take a number of years. In addition, we have no committed external sources of funds.

We had cash and cash equivalents of approximately $10.1 million at December 31, 2012. We believe that without the proceeds of this offering our existing cash and cash equivalents would only be sufficient to fund our operations at least into the third quarter of 2013 based on our current operating plan, including the completion of our ongoing Phase 1 clinical trial of IMO-8400 in healthy subjects that we initiated in the fourth quarter of 2012, and preparations for the further advancement of our autoimmune and inflammatory disease program. We believe, however, that the net proceeds of this offering, together with our existing cash and cash equivalents, will enable us to fund our operations at least through the fourth quarter of 2014. Specifically, we believe that our available funds following this offering will be sufficient to enable us to conduct our planned Phase 2 clinical trial of IMO-8400 in patients with psoriasis and to plan for further clinical development of IMO-8400. We expect that these funds will not be sufficient to enable us to conduct, and we do not plan to conduct, any other clinical development of IMO-3100 or IMO-8400 or to conduct any other development of our other product candidates or technologies. It is also possible that we will not achieve the progress that we expect with respect to IMO-8400 because the actual costs and timing of clinical development activities are difficult to predict and are subject to substantial risks and delays.

We expect that we will require substantial additional funds beyond the proceeds of this offering to conduct research and development, including preclinical testing and clinical trials of our drug candidates and to fund our operations. We expect to continue to seek additional funding through collaborations, the sale or license of assets or financings of equity or debt securities. We believe that the key factors that will affect our ability to obtain funding are:

- the results of our clinical and preclinical development programs, including the top-line results of the Phase 2 trial of IMO-3100 and the anticipated results of the Phase 1 clinical trial of IMO-8400, which we initiated in the fourth quarter of 2012;
- developments relating to our existing strategic collaboration with Merck & Co.;
- our ability to maintain the listing of our common stock on the Nasdaq Capital Market or an alternative national securities exchange;
- the cost, timing and outcome of regulatory reviews;
- competitive and potentially competitive products and technologies and investors receptivity to our drug candidates and the technology underlying them in light of competitive products and technologies;
- the receptivity of the capital markets to financings by biotechnology companies generally and companies with drug candidates and technologies such as ours specifically; and

our ability to enter into new strategic collaborations with biotechnology and pharmaceutical companies and the success of such collaborations.

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In addition, increases in expenses or delays in clinical development may adversely impact our cash position and require additional funds or further cost reductions. Financing may not be available to us when we need it or may not be available to us on favorable or acceptable terms. We could be required to seek funds through collaborative alliances or others that may require us to relinquish rights to some of our technologies, drug candidates or drugs that we would otherwise pursue on our own. In addition, if we raise additional funds by issuing equity securities, our then existing stockholders will experience dilution. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends, and are likely to include rights that are senior to the holders of our common stock. Any additional debt financing or equity that we raise may contain terms, such as liquidation and other preferences, or liens or other restrictions on our assets, which are not favorable to us or our stockholders. An equity financing that involves existing stockholders may cause a concentration of ownership. The terms of any financing may adversely affect the holdings or the rights of existing stockholders. If we are unable to obtain adequate funding on a timely basis or at all, we will be required to terminate, modify or delay preclinical or clinical trials of one or more of our drug candidates, significantly curtail or terminate discovery or development programs for new drug candidates, relinquish rights to portions of our technology, drug candidates and/or products, or terminate our operations and pursue a liquidation of the Company through a sale or license of assets or a possible bankruptcy.

Nasdaq Listing

Our common stock began trading on the Nasdaq Capital Market on February 7, 2013. In order to continue the listing of our common stock on the Nasdaq Capital Market, we are required to satisfy the $2.5 million stockholders equity requirement on or before May 22, 2013 and to otherwise meet the continued listing requirements of the Nasdaq Capital Market.

Prior to February 7, 2013, our common stock was traded on the Nasdaq Global Market where we were required to meet specified financial requirements, including requirements that we maintain a minimum closing bid price of at least $1.00 per share for our common stock and that we maintain a minimum stockholders equity of $10.0 million or a minimum market value of listed securities of $50.0 million. On June 7, 2012, we received a notification letter from the Nasdaq Listing Qualifications staff of the Nasdaq Stock Market advising us that we were not in compliance with the $50.0 million minimum market value of listed securities requirement for continued listing on the Nasdaq Global Market pursuant to Nasdaq Listing Rule 5450(b)(2)(A). Nasdaq also noted in its letter that we did not satisfy the alternative requirement under Nasdaq Listing Rule 5450(b)(1)(A), which requires registrants to maintain a minimum of $10.0 million in stockholders equity. Nasdaq also stated in its letter that, in accordance with Nasdaq Listing Rule 5810(c)(3)(C), we had been provided a compliance period of 180 calendar days, or until December 4, 2012, to regain compliance with the minimum $50.0 million market value continued listing requirement.

On December 5, 2012, we received a letter from the Listing Qualifications Staff of the Nasdaq Stock Market advising us that we had not regained compliance with the minimum $50.0 million market value of listed securities requirement set forth in Nasdaq Listing Rule 5450(b)(2)(A) or the minimum $10.0 million stockholders equity alternative continued listing requirement set forth in Nasdaq Listing Rule 5450(b)(1)(A), and that, unless we requested a hearing before the Panel trading in our common stock would be suspended at the opening of business on December 14, 2012, and our common stock would be delisted from the Nasdaq Global Market. We requested a hearing before the Nasdaq Listing Qualifications Hearing Panel, or the Panel, at which we requested continued listing pending our return to compliance. Our hearing request stayed the suspension of trading and delisting of our common stock pending the conclusion of the hearing process. On February 5, 2013, the Panel granted our request to transfer the listing of our common stock from the Nasdaq Global Market to the Nasdaq Capital Market and to continue the listing of our common stock on the Nasdaq Capital Market, provided that we have

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satisfied the $2.5 million stockholders equity requirement on or before March 31, 2013, and have otherwise met the continued listing requirements of the Nasdaq Capital Market. On March 5, 2013, we received a revised determination from the Panel indicating that the Panel had extended the date by which we are required to satisfy the $2.5 million stockholders equity requirement for continued listing on that market and otherwise meet the continued listing requirements of the Nasdaq Capital Market from March 31, 2013 to May 22, 2013. In addition, by May 22, 2013, we are required to provide the Panel with additional information regarding our projected burn-rate and stockholders equity through May 31, 2014.

In addition, on November 26, 2012, we received a letter from the Listing Qualifications Staff of the Nasdaq Stock Market indicating that, based on the closing bid price of our common stock for the 30 consecutive business days prior to November 26, 2012, we no longer satisfied the requirement that our common stock maintain a minimum bid price of $1.00 per share as required by Nasdaq Listing Rule 5450(a)(1). Nasdaq stated in its letter that in accordance with Nasdaq Listing Rule 5810(c)(3)(A), we had been provided 180 calendar days, or until May 28, 2013, to regain compliance with the minimum bid price requirement. The Nasdaq letter stated that if, at any time before May 28, 2013, the closing bid price of our common stock is at or above $1.00 per share for a minimum of 10 consecutive business days, we will be deemed to have regained compliance with the minimum bid price requirement and the matter will be closed. If we do not regain compliance with the minimum bid price requirement by May 28, 2013, Nasdaq will provide us with a written notification that our common stock is subject to delisting. We may be eligible to receive an additional 180 day grace period (for a total of 360 days from November 26, 2012) to regain compliance with the minimum bid price requirement provided that we satisfy the continued listing standard for market value of publicly held shares and all other applicable initial listing standards for the Nasdaq Capital Market, other than the minimum bid price requirement, as of May 28, 2013.

Contractual Obligations

As of December 31, 2012, our contractual commitments were as follows:

		Payments Due by Period			
Contractual Commitment	**Total**	**Less than 1 year**	**1-3 years**	**3-5 years**	**After 5 years**
			(In thousands)		
Operating lease	$ 2,116	$ 1,488	$ 628	$	$
License agreements	240	35	70	60	75
Total	$ 2,356	$ 1,523	$ 698	$ 60	$ 75

Our only material lease commitment relates to our facility in Cambridge, Massachusetts. Under our antisense technology in-license agreements, we are obligated to make milestone payments upon achieving specified milestones and to pay royalties to our licensors. In addition to the minimum license fees shown in the above table, there are contingent milestone and royalty payment obligations that are not included. Since we developed all of our TLR technology internally, there are no TLR technology in-license agreements.

The table above does not reflect our obligation to pay dividends to the holders of the Series D and Series E preferred stock. Under the terms of the Series D preferred stock, we are obligated to pay dividends quarterly in arrears at the rate of 7%, or $640,000, per annum. Such dividends shall be paid in cash through December 31, 2014 and thereafter we may pay them in cash or with shares of common stock, as determined by us in our sole discretion, except that we may not pay any dividends to a holder of Series D preferred stock in shares of common stock to the extent the issuance of such shares would result in the Series D preferred stockholder and its affiliates beneficially owning more than 19.99% of our common stock outstanding or the combined voting power of our securities outstanding immediately after giving

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effect to the issuance of such shares of common stock. Under the terms of the Series E preferred stock, we are obligated to pay cash dividends quarterly in arrears at the rate of 4.6%, or $273,000, per annum with the first dividend payment being due on March 31, 2013. Under the terms of the Series D preferred stock, any dividends that we pay to the Series E preferred stockholders will also be paid to the Series D preferred stockholder on an as-converted to common stock basis, which amount equals $202,000 per annum.

We have agreed that, at our 2013 annual meeting of stockholders, we will propose an amendment to the Series D Certificate of Designations to, among other things, modify the terms of the Series D preferred stock that require payment of dividends to Series D preferred stockholders upon payment of dividends to our Series E stockholders. If such amendment is approved by our stockholders, the holders of the Series E preferred stock will become entitled to receive dividends payable in cash quarterly in arrears at the rate of 8%, or $475,000, per annum and the Series D preferred stockholder would cease to be entitled to dividends upon payment of dividends to our Series E stockholders. If such amendment is submitted to our stockholders and it is not approved, the Series E preferred stockholders will no longer be entitled to receive dividends.

In addition, under the terms of the April 22, 2013 Pillar Agreement we have agreed that, at our 2013 annual meeting of stockholders, we will propose amendments to the Series D Certificate of Designations and the Series E Certificate of Designations to, among other things, modify the dividend provisions of the Series D Certificate of Designations and Series E Certificate of Designations, allow for the payment of dividends in shares of our common stock commencing October 1, 2013 and allow us to pay dividends in shares of a to-be-created new series of non-voting preferred stock in the event that payment of such dividends may not be made in shares of our common stock as a result of the application of the beneficial ownership and voting power limitations set forth in the Series D Certificate of Designations and the Series E Certificate of Designations, respectively. See Certain Relationships and Related Person Transactions for additional information about the terms of the April 22, 2013 Pillar Agreement.

As of December 31, 2012, we had no off-balance sheet arrangements. We do not expect to make any material capital expenditures in 2013.

Quantitative and Qualitative Disclosures about Market Risk.

Foreign currency exchange gains and losses may result from amounts to be paid under our Merck KGaA collaboration and termination agreements and payments under our clinical trial agreements that are denominated in Euros. As of December 31, 2012, we had net accrued obligations of 1.0 million, or $1.3 million. All other assets and liabilities are in U.S. dollars, which is our functional currency.

We maintain investments in accordance with our investment policy. The primary objectives of our investment activities are to preserve principal, maintain proper liquidity to meet operating needs and maximize yields. Although our investments are subject to credit risk, our investment policy specifies credit quality standards for our investments and limits the amount of credit exposure from any single issue, issuer or type of investment. We regularly review our investment holdings in light of the then current economic environment. We do not own auction rate securities or derivative financial investment instruments in our investment portfolio. At December 31, 2012, all of our invested funds were invested in a money market fund classified in cash and cash equivalents on the accompanying balance sheet.

Based on a hypothetical ten percent adverse movement in interest rates, the potential losses in future earnings, fair value of risk sensitive financial instruments, and cash flows are immaterial, although the actual effects may differ materially from the hypothetical analysis.

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BUSINESS

Overview

We are a clinical stage biotechnology company engaged in the discovery and development of novel synthetic DNA- and RNA-based drug candidates that are designed to modulate immune responses mediated through Toll-like Receptors, or TLRs. We are focusing our development efforts on the treatment of autoimmune and inflammatory diseases. We have two drug candidates, IMO-3100, a TLR7 and TLR9 antagonist, and IMO-8400, a TLR7, TLR8, and TLR9 antagonist, in clinical development for the treatment of autoimmune and inflammatory diseases. In December 2012, we announced top-line data from a Phase 2 clinical trial of IMO-3100 in patients with moderate to severe plaque psoriasis. We believe that the results of this trial provide clinical proof of concept for our approach of targeting specific TLRs for the treatment of psoriasis and potentially other autoimmune and inflammatory diseases.

TLRs are specific receptors present in immune system cells. Using a chemistry-based approach, we have created synthetic DNA- and RNA-based compounds that are targeted to TLR3, TLR7, TLR8, and TLR9. A TLR antagonist is a compound that blocks activation of an immune response through the targeted TLR. A TLR agonist is a compound that stimulates an immune response through the targeted TLR.

We believe that the modulation of immune responses through TLRs provides a rationale for the development of drug candidates to treat a broad range of diseases, including autoimmune and inflammatory diseases, cancer and respiratory diseases, and for use as vaccine adjuvants. We are a party to a collaboration alliance with Merck Sharp & Dohme Corp. (formerly Merck & Co., Inc.), or Merck & Co., for the use of agonists of TLR7, TLR8, and TLR9 as adjuvants in the development of vaccines for cancer, infectious diseases, and Alzheimer s disease. We are seeking to enter into additional collaborative alliances with third parties with respect to our TLR-targeted programs in oncology, hematological malignancies, respiratory diseases, and the use of TLR3 agonists as vaccine adjuvants.

Autoimmune and Inflammatory Disease Program. In December 2012, we announced top-line data from a randomized double-blinded, placebo-controlled Phase 2 clinical trial of IMO-3100 that we conducted in 44 adult patients with moderate to severe plaque psoriasis. In this Phase 2 trial, patients received doses of IMO-3100 once weekly for four weeks. In addition, In this Phase 2 trial, IMO-3100 showed clinical activity in patients with psoriasis. We believe that the results of this trial provide clinical proof of concept for our approach of targeting specific TLRs for the treatment of psoriasis and potentially other autoimmune and inflammatory diseases.

We are conducting a Phase 1 clinical trial to evaluate the safety and pharmacodynamics of IMO-8400 in healthy subjects. The first portion of the trial involved escalating single doses of IMO-8400 and the second portion of the trial involved four weekly doses of IMO-8400. We completed dosing in the escalating single-dose portion of this trial in the first quarter of 2013. In this portion of the trial, IMO-8400 was well-tolerated and showed target engagement of TLR7, TLR8, and TLR9 at three dosage levels in these subjects. In the second quarter of 2013, we completed dosing in the multiple-dose portion of the trial. We anticipate data from the multiple-dose portion of this trial later in the second quarter of 2013.

Based on the clinical activity of IMO-3100 observed in our four-week Phase 2 clinical trial of IMO-3100 in patients with psoriasis, we have determined that the next step in our development program is to conduct a Phase 2 clinical trial in patients with psoriasis with a treatment period of up to 12 weeks. Based on our evaluation of the comparative profiles of IMO-3100 and IMO-8400, including the engagement of TLR8 by IMO-8400, we have determined to focus our resources on the development of IMO-8400 and to conduct this trial in patients with psoriasis with IMO-8400. We expect that we could initiate this trial as early as the second quarter of 2013 and could have top-line data by the end of 2013.

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However, we do not plan to initiate this trial unless and until we have completed this offering and raised the necessary proceeds to fund this trial and until we have confirmed the successful completion of our ongoing Phase 1 trial of IMO-8400.

We are also planning to initiate a signal-seeking Phase 2 clinical trial of IMO-8400 in patients with lupus and are considering conducting a proof-of-concept study of IMO-8400 in an orphan autoimmune disease indication. We expect to select the orphan autoimmune disease indication for further exploration in the second half of 2013. However, our plans to conduct the Phase 2 clinical trial of IMO-8400 in patients with lupus and the proof-of-concept study are subject to successful completion of our ongoing Phase 1 trial of IMO-8400 and our ability to raise additional funding beyond the proceeds of this offering to fund the conduct of this Phase 2 trial and proof-of-concept study. We expect to seek such funding through public or private equity offerings, debt financings, collaborations and licensing arrangements or other sources.

Vaccine Adjuvant Collaboration. In January 2012, we announced that Merck & Co. had selected several of our TLR7, TLR8 or TLR9 agonists for evaluation and use as vaccine adjuvant candidates in the fields of cancer, infectious diseases, and Alzheimer s disease.

Additional Programs. In addition to our TLR program in autoimmune and inflammatory diseases, and our collaboration with Merck & Co. for the use of TLR7, TLR8, and TLR9 agonists as vaccine adjuvants, we have identified TLR drug candidates for applications in the treatment of cancer, hematological malignancies and respiratory diseases, and created TLR3 agonists for use as vaccine adjuvants. We have also created gene silencing oligonucleotides, or GSOs, which are designed to inhibit the production of disease-associated proteins by targeting RNA. We believe our GSO technology provides us with a platform from which drug candidates for multiple disease indications can be developed. We are seeking to enter into collaborations with third parties to advance these drug candidates and technology platform. Except in connection with collaborations, we do not plan to expend any additional resources on these programs.

Overview of the Human Immune System

The immune system protects the body by working through various mechanisms to recognize and eliminate bacteria, viruses and other infectious agents, referred to as pathogens, and abnormal cells such as cancer cells. These mechanisms initiate a series of signals resulting in stimulation of the immune system in response to the pathogens or abnormal cells. The activities of the immune system are undertaken by its two components: the innate immune system and the adaptive immune system.

The role of the innate immune system is to provide a rapid, non-specific response to a pathogen or to abnormal cells in the body and to activate the adaptive immune system. The innate immune system consists of specialized cells such as macrophages, dendritic cells and monocytes. When the body recognizes a pathogen, it activates these specialized cells of the innate immune system, resulting in a cascade of signaling events, referred to as Th1-type signaling events, that cause the production of proteins such as cytokines to fight the infection caused by the pathogen.

In contrast to the innate immune system, the adaptive immune system provides a pathogen-specific response to an infection. The adaptive immune system does this through the recognition by certain immune cells of specific proteins, called antigens, which are part of the pathogen or abnormal cell. Signals produced by the innate immune system initiate this process. Upon recognition of an antigen, which could come from pathogens or from cancer cells, the adaptive immune system produces antibodies and antigen-specific immune cells that specifically detect and destroy cells that contain the antigen.

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TLR-based Drug Discovery Technology

TLRs comprise a family of receptors of the immune system. Of the ten human TLRs identified to date, TLRs 3, 7, 8, and 9 are receptors which are present inside specific immune cells. These TLRs are activated upon recognition of RNA and DNA from pathogens. TLR9 is a receptor that specifically recognizes DNA of the pathogen, and TLR3, TLR7, and TLR8 are receptors that recognize RNA of the pathogen. Based on our extensive experience in DNA and RNA chemistry, we have created novel synthetic DNA- and RNA-based compounds targeted to TLRs. Some of our compounds are designed to be agonists of TLR3, TLR7, TLR8, or TLR9. Others of our compounds are designed to be antagonists to TLR7 and TLR9 or to TLR7, TLR8, and TLR9.

TLR7, TLR8, and TLR9 Antagonists

We have created novel classes of drug candidates that are designed to be antagonists of specific TLRs. Preclinical studies from independent researchers have suggested that TLR7, TLR8 and TLR9 may play a role in some autoimmune and inflammatory diseases. In cell-based experiments and animal models, our antagonist compounds have blocked immune stimulation mediated through TLR7 and TLR9, or through TLR7, TLR8, and TLR9. We have evaluated our TLR antagonist drug candidates in preclinical mouse models of human autoimmune and inflammatory diseases including lupus, rheumatoid arthritis, multiple sclerosis, psoriasis, colitis, pulmonary inflammation, and hyperlipidemia. In these models, treatment with our TLR antagonist drug candidates was associated with improvement in a number of disease associated parameters. IMO-3100 is an antagonist of TLR7 and TLR9. IMO-8400 is an antagonist of TLR7, TLR8, and TLR9.

TLR9 Agonists

Drug candidates that are agonists of TLR9 and induce immune responses through TLR9 may be useful for the treatment or prevention of infectious diseases, cancer, and asthma and allergies, and may be used as vaccine adjuvants. We have created our TLR9 agonist candidates to activate specific cells of the immune system and thereby produce cytokines and other proteins. These activated cells and the cytokines and other proteins they produce lead to stimulation of both the innate and the adaptive components of the immune system. IMO-2055, a compound which has been evaluated in a number of clinical trials for the treatment of cancer, and IMO-2134, a compound which was evaluated in a Phase 1 clinical trial for the treatment of respiratory diseases, are TLR9 agonists.

TLR7 and TLR8 Agonists

We have created novel synthetic RNA-based compounds that are agonists of TLR7 or dual agonists of TLR7 and TLR8. In preclinical studies in cell culture and animal models, these TLR7 and dual TLR7 and TLR8 agonists induced immune responses that we believe may be useful for the treatment of cancer and infectious diseases and as vaccine adjuvants. We have studied a dual TLR7 and TLR8 agonist, which we refer to as IMO-4200, in preclinical models of hematological cancers. In preclinical models, we have observed antitumor activity of IMO-4200 as a monotherapy and in combination with selected targeted drugs currently approved for cancer treatment.

TLR3 Agonists

We have created a novel class of double-stranded RNA-based compounds that act as agonists of TLR3 and have evaluated their potential use as vaccine adjuvants. Vaccines are composed of one or more antigens and one or more adjuvants in an appropriate formulation. The function of vaccine adjuvants is to enhance immune cell recognition of the vaccine antigens and increase the ability of the immune system to make antigen-specific antibodies. In preclinical models, our TLR3 agonists promoted increased production of antigen-specific antibodies and cytotoxic T cells compared to responses induced by the antigen alone in preclinical vaccination studies.

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Research and Development Programs

We are focusing our development efforts on our autoimmune and inflammatory disease program. We are seeking to enter into collaborative alliances with respect to each of our other programs, other than our program currently under collaboration with Merck & Co. Except in connection with collaborations, we do not plan to expend any additional resources on these programs. The following table summarizes the development status of our autoimmune and inflammatory disease program and the programs we seek to advance through collaborations.

RESEARCH AND DEVELOPMENT PROGRAMS

Drug Candidate(s)	Indication / Application	Development Status
Autoimmune and Inflammatory Diseases		
IMO-3100	Psoriasis	Phase 2 Clinical Trial Top-Line Results Announced December 2012
IMO-8400	Psoriasis/Lupus	Ongoing Phase 1 Clinical Trial
Program in Collaboration with Merck & Co.		
Vaccine Adjuvants		
TLR7, TLR8, and TLR9 Agonists	Cancer, Infectious Diseases, and Alzheimer s Disease	Research Being Conducted by Merck & Co. under Collaboration
Programs for Which We are Seeking Third-Party Collaborations		
Cancer		
IMO-2055 Plus Erlotinib and Bevacizumab	Non-Small Cell Lung Cancer	Phase 1b Clinical Trial Results Announced January 2012
IMO-2055 Plus Cetuximab	Squamous Cell, Head and Neck	Phase 2 Clinical Trial Results Announced May 2012
IMO-2055 Plus Cetuximab and FOLFIRI	Colorectal Cancer	Phase 1b Clinical Trial Results Announced May 2012
IMO-4200	Hematologic Malignancies	Research
Respiratory Diseases		
IMO-2134	Asthma and Allergy	Phase 1 Clinical Trial Results Announced May 2011
TLR3 Agonists	Infectious Diseases and Other Applications	Research
Gene Silencing Oligonucleotides	Inhibition of Gene Expression by Targeting RNA	Research

Cetuximab, erlotinib, and bevacizumab are marketed under the names Erbitux®, Tarceva®, and Avastin®, respectively.

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Autoimmune and Inflammatory Diseases

Overview

Autoimmune diseases are disorders where the body attacks its own organs. According to the NIH Autoimmune Diseases Coordinating Committee: Autoimmune Diseases Research Plan December 2002, approximately 14 million to 22 million people in the United States have an autoimmune disease, with psoriasis, lupus, and rheumatoid arthritis being the most prevalent. These diseases are chronic, requiring long-term treatment, and may be life-threatening. Current approaches for the treatment of autoimmune diseases include broad immunosuppression or agents that block specific cytokines or signaling pathways. For instance, methotrexate, which inhibits proliferation of immune system cells by interfering with nucleic acid synthesis, and cyclosporine, which inhibits proliferation and activation of immune system cells by interfering with interleukin 2 synthesis, are broad immunosuppressants since they suppress general immune cell growth and activity rather than a specific immune response.

These approaches are used in the treatment of psoriasis. For mild psoriasis, phototherapy and topical immunosuppressants are generally used, while for progressive disease physicians typically use systemic immunosuppressants, such as methotrexate and cyclosporine. Moderate to severe plaque psoriasis, which is an indication for which we are developing our product candidates, is primarily treated with biologics, including antibodies which block specific cytokines such as Enbrel, which is marketed by Amgen, Pfizer, Inc., or Pfizer, and Takeda Pharmaceutical Company Limited, or Takeda, Remicade, which is marketed by Janssen Biotech, Merck & Co., and Mitsubishi Tanabe Pharma, Humira, which is marketed by Abbott Laboratories, and Stelara, which is marketed by Janssen Biotech. In addition to these antibodies, several biologic therapies are currently in late stage development for the treatment of moderate to severe plaque psoriasis. We believe that there are approximately 1.5 million people in the United States with moderate to severe psoriasis.

While broad immunosuppressants and agents that block specific cytokines are widely used and can provide clinical benefit, long-term use of these treatments has been shown to have limitations due to adverse events and patient compliance. Additionally, treatment with biologics is expensive and may lose effectiveness over time. As a result, we believe there continues to be an unmet need for an improved therapeutic approach which can provide for the long-term treatment of autoimmune diseases without issues as to safety or patient compliance.

Use of TLRs Antagonists for the Treatment of Autoimmune and Inflammatory Diseases

In autoimmune and inflammatory diseases such as psoriasis, lupus, rheumatoid arthritis, Behçet s disease, non-infectious uveitis, and cardiovascular disease, the immune system forms autoantibodies, damage-associated molecular patterns, or DAMPs, and pathogen associated molecular patterns, or PAMPs. These autoantibodies, DAMPS, and PAMPs are recognized by TLR7, TLR8, and TLR9, which activate immune response and induce multiple cytokines and signaling cascades such as Th1, Th17, and inflammasome pathways. These in turn can further exacerbate disease.

Our approach is to block these TLRs and inhibit the induction of these cytokines and signaling pathways. Specifically, our TLR antagonists are designed to inhibit induction of immune responses to autoantibodies, DAMPs and PAMPs upstream from cytokine induction rather than to block the activity of any one specific cytokine. In preclinical models of psoriasis, lupus and rheumatoid arthritis, treatment with TLR antagonist candidates, such as IMO-3100 and IMO-8400, has been shown to block activation of immune response through TLR receptors and improve many disease associated parameters. Depending on the preclinical disease model, these candidates have been shown to inhibit Th1, Th17, and inflammasome pathways, leading to the reversal of disease-related changes in gene expression and suppression of cytokines such as TNF-*a* and interleukins IL-12, IL-6, IL-17, and IL-1ß.

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Preclinical data showing that our TLR antagonists inhibited Th1, Th17, and inflammasome pathways in models of psoriasis have been published in the Journal of Investigative Dermatology and were recently presented by Dr. James Krueger at the American Association of Dermatology 2013. Preclinical data showing that our TLR antagonists inhibit Th1, Th17, and inflammasome pathways in models of lupus were presented at the American Association of Immunologists in May 2012.

We believe that, since our TLR antagonist drug candidates may be effective at low dosages and are manufactured by customary chemical synthesis, treatment costs may be lower than with currently marketed biologics. More importantly, we further believe that, due to our TLR antagonist candidates targeting a specific upstream immune response that inhibits production of multiple cytokines involved in autoimmune disease, our approach may provide the potential for long-term disease remission and tolerability.

IMO-3100

IMO-3100 is an antagonist of TLR7 and TLR9. In November 2009, we submitted to the United States Food and Drug Administration, or FDA, an Investigational New Drug application, or IND, for the clinical evaluation of IMO-3100 in autoimmune diseases. Following submission of the IND, we conducted Phase 1 single-dose and multiple-dose clinical trials of IMO-3100 in healthy subjects. In the single-dose Phase 1 clinical trial in 36 healthy subjects, IMO-3100 was administered by subcutaneous injection at five dose levels, with six subjects per regimen, with an additional six subjects receiving placebo treatment. In the four-week multiple dose Phase 1 clinical trial in 24 healthy subjects, IMO-3100 was administered at two dose levels of either 0.64 mg/kg once per week or 0.32 mg/kg twice per week or placebo, with eight subjects per regimen. IMO-3100 was well tolerated at all dose levels in both trials, and there were no treatment-related discontinuations or serious adverse events. Mild injection site reactions were the most frequent adverse event. In both trials, the intended target engagement of TLR7 and TLR9 was observed in IMO-3100-treated subjects compared to placebo-treated subjects.

Following the Phase 1 trials, we selected psoriasis for the initial indication for clinical evaluation of IMO-3100. We selected psoriasis as the initial indication in order to conduct a placebo-controlled monotherapy trial in an autoimmune disease indication with well-established clinical activity endpoints. In June 2011, we submitted a Phase 2 protocol to the FDA to conduct a 12-week clinical trial of IMO-3100 in adult patients with moderate to severe plaque psoriasis. In July 2011, the FDA placed a clinical hold on the protocol that we had submitted. In October 2011, we submitted to the FDA a new Phase 2 protocol to evaluate IMO-3100 in adult patients with moderate to severe plaque psoriasis, randomized into three arms, over a four-week treatment period. In December 2011, the FDA removed the clinical hold.

In the second quarter of 2012, we initiated a randomized double-blind, placebo-controlled Phase 2 clinical trial of IMO-3100 in adult patients with moderate to severe plaque psoriasis. A total of 44 patients were enrolled in this trial and randomized on a 1:1:1 basis to receive IMO-3100 monotherapy at a dose level of either 0.16 or 0.32 mg/kg or placebo by subcutaneous injection once weekly for four weeks with a four-week follow-up period. Assessments of safety were performed throughout the treatment and follow-up periods. Multiple parameters were monitored to assess the clinical activity of IMO-3100, including Psoriasis Area Severity Index, or PASI, scores. In addition to the clinical assessments, although we recognized that a known limitation of skin biopsies after four weeks of treatment is that psoriatic plaques do not resolve in a uniform fashion, and therefore, biopsies may not provide a representative sampling of lesions, biopsies were evaluated for treatment-related changes in epidermal thickness and immune cell infiltrates. In December 2012, we announced top-line results from this Phase 2 trial:

- Of the 44 enrolled patients, 40 were clinically evaluable at the end of the four-week treatment period and 37 were evaluable following the four-week follow up period.

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- Treatment at both IMO-3100 dose levels was well tolerated, with no treatment-related discontinuations.

- Among evaluable patients, the median PASI scores at treatment initiation were 14.9, 16.1, and 12.5 in the 0.16 mg/kg, 0.32 mg/kg, and placebo cohorts, respectively.

- A treatment effect was demonstrated in measures of clinical efficacy in patients in both IMO-3100 dose cohorts; PASI score reductions at both dose levels were sustained throughout the four-week follow-up period.

- At the end of the four-week follow-up period, 48% of patients treated with either dose of IMO-3100 (12 of 25) demonstrated improvements of 35% to 90% from baseline PASI scores compared with 0 of 12 in the placebo cohort; this difference was statistically significant ($p<0.005$).

- This trial achieved the pre-specified clinical endpoint of reduction in PASI scores at the end of treatment in the 0.16 mg/kg dose cohort with statistical significance ($p<0.02$) compared to the placebo cohort, but not in the 0.32 mg/kg dose cohort.

- The 0.16 mg/kg cohort also achieved, with statistical significance ($p<0.02$), the pre-specified clinical endpoint of improvement in plaque induration, a measure of plaque thickness, at the end of treatment and during the follow-up period.

- At the end of the four-week follow-up period, 25% (3 of 12) of patients treated with 0.16 mg/kg dose and 31% (4 of 13) with 0.32 mg/kg dose achieved a reduction of 50% or more in PASI score, compared to 0 of 12 placebo patients achieving a reduction of 50% or more in PASI score.

Skin biopsies of a representative psoriatic lesion were collected from each patient at baseline and after completion of treatment to investigate changes in epidermal thickness and immune cell infiltrates. Change in epidermal thickness was the primary endpoint for this trial. Placebo treated patients had a median change in epidermal thickness of +7.7% compared to a median change of -6.4% among IMO-3100 treated patients. The histology endpoint in biopsy samples was not statistically significant and the primary endpoint of this trial was not achieved.

We have also analyzed RNA isolated from biopsy samples collected from patients during the Phase 2 trial. We believe that the top-line results demonstrated a significant improvement in the psoriasis disease-associated gene profile, including the IL-17 pathway, in the samples from patients treated with IMO-3100 compared to placebo. We expect data from this analysis will be presented at a future scientific meeting.

We believe that the results of this trial provide clinical proof of concept of our approach of targeting specific TLRs for the treatment of psoriasis and potentially other autoimmune and inflammatory diseases.

IMO-8400

IMO-8400 is an antagonist of TLR7, TLR8, and TLR9. In the first quarter of 2012, we selected IMO-8400 as the second drug candidate in our autoimmune and inflammatory disease program.

We submitted an IND to the FDA in the third quarter of 2012 and in the fourth quarter initiated a Phase 1 clinical trial at one site in the United States to assess the safety and the pharmacodynamic activity of IMO-8400 in healthy subjects. A total of 42 subjects received single or multiple ascending doses of IMO-8400 in this trial. The single-dose portion of this trial involved three escalating dose levels of 0.1, 0.3, and 0.6 mg/kg of IMO-8400. Six subjects received IMO-8400 by subcutaneous injection at each dose level of 0.1, 0.3, and 0.6 mg/kg, and an additional six subjects received placebo. IMO-8400 treatment was well tolerated, and the intended target engagement of TLR7, TLR8, and TLR9 was observed in IMO-8400-treated subjects compared to placebo-treated subjects.

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In the second quarter of 2013, we completed dosing in the multiple-dose portion of this trial. The multiple-dose portion of this trial involved two dose levels of IMO-8400, 0.3 and 0.6 mg/kg, with six subjects at each dose level receiving four weekly doses of IMO-8400 and a total of six subjects receiving placebo. We expect data from the multiple-dose portion of this trial to be available later in the second quarter of 2013.

Next Steps

Based on the clinical activity of IMO-3100 observed in our four-week Phase 2 clinical trial of IMO-3100 in patients with psoriasis, we have determined that the next step in our development program is to conduct a Phase 2 clinical trial in patients with psoriasis to, among other things, evaluate the clinical activity of IMO-8400 with a treatment period of up to 12 weeks. Based on our evaluation of the comparative profiles of IMO-3100 and IMO-8400, including the engagement of TLR8 by IMO-8400, we have determined to focus our resources on the development of IMO-8400 and to conduct this trial in patients with psoriasis with IMO-8400. In March 2013, we submitted to the regulatory authorities in the Netherlands for review the proposed protocol for this trial and we received a no objection clearance from the Centrale Commissie Mensgebonden Onderzoek. Under the protocol, 32 adult patients with moderate to severe plaque psoriasis, as indicated by a PASI score of 12.5 or greater, would be randomized into one of four cohorts and receive placebo or IMO-8400 at a dose level of 0.075, 0.15, or 0.3 mg/kg/week for 12 weeks, with a six-week follow-up period. We expect that we could initiate this trial as early as the second quarter of 2013 and could have top-line data by the end of 2013. However, we do not plan to initiate this trial unless and until we have completed this offering and raised the necessary proceeds to fund this trial and until we have confirmed the successful completion of our ongoing Phase 1 trial of IMO-8400.

We are also planning to initiate a signal-seeking Phase 2 clinical trial of IMO-8400 in patients with lupus and are considering conducting a proof-of-concept study of IMO-8400 in an orphan autoimmune disease indication. We expect to select the orphan autoimmune disease indication for further exploration in the second half of 2013. However, our plans to conduct the Phase 2 clinical trial of IMO-8400 in patients with lupus and the proof-of-concept study are subject to successful completion of our ongoing Phase 1 trial of IMO-8400 and our ability to raise additional funding beyond the proceeds of this offering to fund the conduct of this Phase 2 trial and proof-of-concept study. We expect to seek such funding through public or private equity offerings, debt financings, collaborations and licensing arrangements or other sources.

Vaccine Adjuvants TLR7, TLR8, and TLR9 Agonists

Vaccines are composed of one or more antigens and one or more adjuvants in an appropriate formulation. The function of the adjuvants is to enhance immune recognition of the antigens and increase the ability of the immune system to make antigen-specific antibodies.

In preclinical animal models, our TLR7, TLR8, and TLR9 agonists have shown adjuvant activity when combined with various types of antigens. Preclinical studies that we conducted with our TLR7, TLR8, and TLR9 agonists and various antigens have shown improvements in several measures of antigen recognition, such as achievement of higher antibody levels, higher ratios of specific to nonspecific antibodies, and a reduction in the number of doses required to achieve effective antibody levels. Based in part on these results, we believe that agonists of TLR7, TLR8, and TLR9 have the potential to be used as adjuvants in vaccines.

In December 2006, we entered into a research collaboration with Merck & Co., and granted Merck & Co. an exclusive license to develop and commercialize our TLR7, TLR8, and TLR9 agonists by incorporating them in therapeutic and prophylactic vaccines being developed by Merck & Co. for

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cancer, infectious diseases, and Alzheimer s disease. The original term of the research collaboration was two years and Merck & Co. extended the research collaboration for two additional years to December 2010. During the four-year research collaboration period, multiple TLR agonists were created by us and evaluated by Merck & Co. against the criteria established in the license agreement. In January 2012, in accordance with the research collaboration, Merck & Co. selected multiple novel TLR7, TLR8, and TLR9 agonists for Merck & Co. s exclusive evaluation and use as vaccine adjuvants under the current license agreement.

Additional TLR Programs

In addition to our TLR programs in autoimmune and inflammatory diseases, and our collaboration with Merck & Co. for the use of TLR7, TLR8, and TLR9 agonists as vaccine adjuvants, we have identified TLR drug candidates for applications in the treatment of cancer, hematological malignancies and respiratory diseases, and created TLR3 agonists for use as vaccine adjuvants. We are seeking to enter into collaborations with third parties to advance these programs. Except in connection with collaborations, we do not plan to expend any additional resources on these programs.

Cancer. The immune system is capable of recognizing cancer cells as abnormal cells, leading to an immune response. However, the body s immune response to cancer cells may be weak or absent. We believe that agonists of TLR7, TLR8, and TLR9 can enhance the body s immune response to cancer cells because TLRs are involved in stimulation of both innate and adaptive immunity.

In December 2007, we entered into an exclusive, worldwide license agreement with Merck KGaA, Darmstadt, Germany, or Merck KGaA, to research, develop, and commercialize products containing our TLR9 agonists, including IMO-2055, for the treatment of cancer, excluding cancer vaccines. In November 2011, as part of an agreed-upon termination of our collaboration with Merck KGaA, we regained global rights to IMO-2055 and our other TLR9 agonists, including preclinical lead drug candidates selected for further evaluation under the collaboration, for the treatment of cancer.

We and, during the collaboration period, Merck KGaA, conducted clinical trials of IMO-2055 alone or in combination with other anticancer agents in several cancer indications, including the following:

- a Phase 1b clinical trial of IMO-2055 in combination with erlotinib and bevacizumab in patients with advanced non-small cell lung cancer, or NSCLC;
- a Phase 1b clinical trial of IMO-2055 in combination with cetuximab and the chemotherapy regimen FOLFIRI in patients with advanced colorectal cancer;
- a randomized Phase 2 clinical trial of IMO-2055 in combination with cetuximab in patients with squamous cell carcinoma of the head and neck, or SCCHN; and
- a Phase 2 clinical trial of IMO-2055 monotherapy in patients with renal cell carcinoma, or RCC.

During 2012 and pursuant to our agreement with respect to the termination of our collaboration with Merck KGaA, Merck KGaA completed the two Phase 1b clinical trials and the randomized Phase 2 clinical trial of IMO-2055 on our behalf.

Hematological Malignancies. In December 2010, we selected IMO-4200 as a lead TLR7 and TLR8 agonist candidate for the treatment of hematological malignancies. In preclinical models of lymphoma, IMO-4200 in combination with approved cancer treatments increased antitumor activity. We have conducted preclinical studies in mouse models combining IMO-4200 with ofatumumab, an anti-CD20 antibody, and, in separate experiments, with rituximab, an anti-CD20 antibody, plus a chemotherapy agent, fludarabine or bendamustine. In all of these combinations, IMO-4200 improved antitumor activity, increased survival, and enhanced the immunological mechanism of action of the antibody in preclinical models.

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Respiratory Diseases. Asthma and allergy conditions are characterized by an imbalance of the immune system. Currently approved agents for the treatment of asthma and allergy conditions, including steroids and antibodies, are generally designed to suppress symptoms of asthmatic or allergic response. Our TLR9 agonists, by comparison, are designed to induce immune responses that could be useful in restoring immune system balance. In preclinical studies conducted by us and our collaborators, our TLR9 agonists caused improvements in multiple indices of allergic conditions. One of our TLR9 agonists, IMO-2134, was evaluated by our former collaborator, Novartis Pharmaceuticals, Ltd., or Novartis, in a Phase 1 clinical trial.

Vaccine Adjuvants. We have created proprietary TLR3 agonists for potential use as vaccine adjuvants. In preclinical models, our TLR3 agonists stimulated immune responses, including promoting an increased production of antigen-specific antibodies and cytotoxic T cells as compared to responses induced by the antigen alone in preclinical vaccination studies.

Gene Silencing Oligonucleotides

Through our expertise in nucleic acid chemistry, we have designed and created a new class of molecules to inhibit gene expression. These GSOs are single-stranded RNA or DNA constructs that are complementary to targeted mRNA sequences of therapeutic interest. In preclinical studies, our GSOs have inhibited in vivo gene expression without requiring a delivery enhancement technology.

Collaborative Alliances

An important part of our business strategy is to enter into research and development collaborations, licensing agreements, and other strategic alliances with biotechnology and pharmaceutical corporations that bring expertise and resources to the potential development and commercialization of drugs based on our technology. We are currently party to a collaboration with Merck & Co. We were a party to a collaboration with Merck KGaA that was terminated in November 2011.

Merck & Co.

In December 2006, we entered into an exclusive license and research collaboration agreement with Merck & Co. to research, develop and commercialize vaccine products containing our TLR7, TLR8, and TLR9 agonists in the fields of cancer, infectious diseases and Alzheimer s disease. Under the terms of the agreement, we granted Merck & Co. worldwide exclusive rights to a number of our TLR7, TLR8, and TLR9 agonists for use in combination with Merck & Co. s therapeutic and prophylactic vaccines under development in the fields of cancer, infectious diseases, and Alzheimer s disease. There is no limit under the agreement to the number of vaccines to which Merck & Co. can apply our agonists within these fields. We also agreed with Merck & Co. to engage in a two-year research collaboration to generate novel agonists targeting TLR7 and TLR8 and incorporating both Merck & Co. s and our chemistry for use in vaccines in the defined fields. Under the terms of the agreement, Merck & Co. extended the research collaboration for two additional years to December 2010. Under the terms of the agreement:

Merck & Co. paid us a $20.0 million upfront license fee;

Merck & Co. purchased $10.0 million of our common stock at $5.50 per share;

Merck & Co. agreed to fund the research and development collaboration through its term;

Merck & Co. agreed to pay us milestone payments as follows:

- up to $165.0 million if vaccines containing our TLR9 agonist compounds are successfully developed and marketed in each of the oncology, infectious disease and Alzheimer s disease fields;

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- up to $260.0 million if vaccines containing our TLR9 agonist compounds are successfully developed and marketed for follow-on indications in the oncology field and if vaccines containing our TLR7 or TLR8 agonists are successfully developed and marketed in each of the oncology, infectious disease, and Alzheimer s disease fields; and

- if Merck & Co. develops and commercializes additional vaccines using our agonists, we would be entitled to receive additional milestone payments; and

Merck & Co. agreed to pay us mid to upper single-digit royalties on net product sales of vaccines using our TLR agonist technology that are developed and marketed, with the royalty rates being dependent on disease indication and the TLR agonist employed. Under the agreement, Merck & Co. is obligated to pay us royalties, on a product-by-product and country-by-country basis, until the later of the expiration of the patent rights licensed to Merck & Co. and the expiration of regulatory-based exclusivity for the vaccine product. If the patent rights and regulatory-based exclusivity expire in a particular country before the 10th anniversary of the product s first commercial sale in such country, Merck & Co. s obligation to pay us royalties will continue at a reduced royalty rate until such anniversary, except that Merck & Co. s royalty obligation will terminate upon the achievement of a specified market share in such country by a competing vaccine containing an agonist targeting the same toll-like receptor as that targeted by the agonist in the Merck & Co. vaccine. In addition, the applicable royalties may be reduced if Merck & Co. is required to pay royalties to third parties for licenses to intellectual property rights, which royalties exceed a specified threshold. Merck & Co. s royalty and milestone obligations may also be reduced if Merck & Co. terminates the agreement based on specified uncured material breaches by us.

Merck & Co. may terminate the collaborative alliance without cause upon 90 days written notice to us. Either party may terminate the collaborative alliance upon the other party s filing or institution of bankruptcy, reorganization, liquidation or receivership proceedings, or for a material breach if such breach is not cured within 60 days after delivery of written notice.

In January 2012, in accordance with the agreement, Merck & Co. selected multiple novel TLR7, TLR8, and TLR9 agonists for Merck & Co. s exclusive evaluation and use as vaccine adjuvants.

Merck KGaA

In December 2007, we entered into an exclusive, worldwide license agreement with Merck KGaA to research, develop and commercialize products containing our TLR9 agonists for the treatment of cancer, excluding cancer vaccines. Under the terms of the agreement, we granted Merck KGaA worldwide exclusive rights to our lead TLR9 agonists, IMO-2055 and IMO-2125, and to a specified number of novel follow-on TLR9 agonists to be identified by Merck KGaA and us under a research collaboration that ended in June 2010, for use in the treatment, cure and delay of the onset or progression of cancer in humans. Under the terms of the agreement:

In February 2008, Merck KGaA paid us a $40.0 million upfront license fee in Euros of which we received $39.7 million due to foreign currency exchange rates;

Merck KGaA agreed to reimburse future development costs for certain of our on-going IMO-2055 clinical trials, which we continued to conduct on behalf of Merck KGaA until September 2009;

Merck KGaA agreed to pay us up to 264 million in development, regulatory approval, and commercial success milestone payments if products containing our TLR9 agonist compounds are successfully developed and marketed for treatment, cure and/or delay of the onset or progression of cancer in humans; and

Merck KGaA agreed to pay mid single-digit to low double-digit royalties on net sales of products containing our TLR9 agonists that are marketed.

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In February 2009, we amended the license agreement with Merck KGaA so that we could initiate and conduct on behalf of Merck KGaA additional clinical trials of IMO-2055, until such time as Merck KGaA had filed an IND application with the FDA for IMO-2055 and assumed sponsorship of these trials. Under the amendment, Merck KGaA agreed to reimburse us for costs associated with any additional trials that we initiated and conducted. As of March 2010, Merck KGaA had assumed sponsorship of all clinical trials of IMO-2055 for the treatment of cancer and had taken responsibility for all further clinical development of IMO-2055 in the treatment of cancer, excluding vaccines.

In November 2011, we and Merck KGaA entered into a termination agreement terminating the license agreement. Under the termination agreement,

- The license agreement was terminated and we regained all rights for developing TLR9 agonists for the treatment of cancer, including all rights to IMO-2055 and any follow-on TLR9 agonists;

- Merck KGaA agreed to continue to conduct the Phase 2 trial of IMO-2055 in combination with cetuximab that was then ongoing and other specified related activities;

- Merck KGaA agreed to complete and analyze all clinical trials that Merck KGaA had initiated or for which Merck KGaA had assumed sponsorship and to finalize clinical study reports;

- We gained the rights to the data from the Phase 2 trial of IMO-2055 in combination with cetuximab, as well as to the data from the Phase 1 trials conducted in other cancer indications;

- We agreed to reimburse Merck KGaA a maximum of 1.8 million ($2.4 million using a December 31, 2012 exchange rate) of Merck KGaA s costs for the third-party contract research organization that is coordinating the Phase 2 trial of IMO-2055 in combination with cetuximab, payable in eleven installments comprised of ten monthly installments to be invoiced by Merck KGaA to us commencing on March 1, 2012 and a final payment payable by us to Merck KGaA upon Merck KGaA s completion of certain specified activities. As of December 31, 2012, we have paid 0.8 million of the 1.8 million ($1.1 million (using exchange rates in effect at the time that the payments were made) of the $2.4 million);

- We agreed to pay to Merck KGaA one-time 1.0 million ($1.3 million using a December 31, 2012 exchange rate) milestone payments upon occurrence of each of the following milestones: (i) partnering of IMO-2055 between us and any third party, (ii) initiation of any Phase 2 or Phase 3 clinical trial for IMO-2055 and (iii) regulatory submission of IMO-2055 in any country; and

- Merck KGaA granted us an option to obtain a license to certain manufacturing and formulation know-how owned or developed by Merck KGaA under the License Agreement and to Merck KGaA s IMOxine trademark. Our option to license the IMOxine trademark has expired. If we elect to exercise our option with respect to the manufacturing and formulation know-how, we have agreed to pay a low single digit royalty on net sales of IMO-2055, with respect to such license.

Antisense Technology

We have been a pioneer in the development of antisense technology. We have used our antisense expertise and technology to validate potential targets in the TLR signaling pathway. Antisense compounds may assist us in identifying drug candidates. We also believe that our antisense technology may be useful to pharmaceutical and biotechnology companies that are seeking to develop drug candidates that down-regulate gene targets discovered by, or proprietary to, such companies. Antisense drug candidates are designed to bind to RNA targets through hybridization, and decrease production of the specific protein encoded by the target RNA. We believe that drugs based on antisense technology may be more effective and cause fewer side effects than conventional drugs in applications with well-defined RNA targets because antisense drugs are designed to intervene in a highly specific fashion in the production of proteins, rather than after the proteins are made.

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We have licensed specified rights related to antisense technology to certain parties. We also have in-licensed certain rights related to antisense technology.

Out-licenses. In 2001 we entered into an agreement with Isis Pharmaceuticals, Inc., or Isis, under which we granted Isis a license (with the right to sublicense) to our antisense chemistry and delivery patents and patent applications, but we retained the right to use these patents and applications in our own drug discovery and development efforts and in collaborations with third parties. Isis paid us $15.0 million in cash and issued 857,143 shares of its common stock having an aggregate fair market value on the dates on which title to the shares was received of $17.3 million and agreed to pay us a mid double-digit percentage of specified sublicense income it receives from some types of sublicenses of our patents and patent applications. As of December 31, 2012, we have received $0.3 million in sublicense income from Isis. Also under the agreement, we licensed from Isis specified antisense patents and patent applications, principally Isis suite of RNase H patents and patent applications. We paid to Isis $0.7 million and issued 1,005,499 shares of our common stock having a fair market value of approximately $1.2 million on the date of issuance for this license and are obligated to pay Isis an annual patent maintenance fee and low single-digit royalties on net sales of antisense products sold that are covered by Isis s patent rights. We have the right to use these patents and patent applications in our drug discovery and development efforts and in some types of third-party collaborations. As of December 31, 2012, we have only paid Isis annual maintenance fees and have not paid any royalties. The agreement may be terminated for an uncured material breach by either party. The licenses granted under the Isis agreement terminate upon the last to expire of the patents and patent applications licensed under the agreement. We may terminate at any time the sublicense by Isis to us of the patents and patent applications.

In addition, we are party to two other license agreements involving the license of our antisense patents and patent applications for antisense chemistry and delivery and for specific gene targets, under which we generally are entitled to receive license fees, sublicensing income, research payments, payments upon achievement of developmental milestones, and royalties on product sales. As of December 31, 2012, we had received a total of $1.5 million under these agreements.

In-licenses. Our principal in-license related to antisense technology is with University of Massachusetts Medical Center for antisense chemistry and for certain gene targets. Under the terms of our license agreement with University of Massachusetts Medical Center, we are the worldwide, exclusive licensee under a number of U.S. issued patents and various patent applications owned by University of Massachusetts Medical Center relating to the chemistry of antisense oligonucleotides and their use. Many of these patents and patent applications have corresponding applications on file or corresponding patents in other major industrial countries. The patents licensed to us by University of Massachusetts Medical Center expire at dates ranging from 2013 to 2014. This license expires upon the expiration of the last to expire of the patents covered by the license. Under the agreement, we have agreed to pay a low single-digit royalty on net product sales, a low double-digit percentage of any sublicense license income we receive, and a small annual license maintenance fee. Since 1999, we have paid approximately $1.7 million to University of Massachusetts Medical Center under this license agreement.

Additionally, we have entered into five other royalty-bearing license agreements under which we have acquired rights to antisense related patents, patent applications, and technology. Under all of these in-licenses, we are obligated to pay low to mid single-digit royalties on our net sales of products or processes covered by a valid claim of a licensed patent or patent application. Under some of these in-licenses, we are required to pay a low double-digit percentage of any sublicense income. All of our in-licenses impose various commercialization, sublicensing, insurance, and other obligations on us, and our failure to comply with these requirements could result in termination of the in-licenses.

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Academic and Research Collaborations

We have entered into research collaborations with scientists at leading academic research institutions. These research collaborations allow us to augment our internal research capabilities and obtain access to specialized knowledge and expertise.

In general, our research collaborations may require us to supply compounds and pay various amounts to support the research. Under these research agreements, if a collaborator, solely or jointly with us, creates any invention, we may own exclusively such invention, have an automatic paid-up, royalty-free non-exclusive license or have an option to negotiate an exclusive, worldwide, royalty-bearing license to such invention. Inventions developed solely by our scientists in connection with research collaborations are owned exclusively by us. These collaborative agreements are non-exclusive and may be terminated with limited notice.

Research and Development Expenses

For the years ended December 31, 2012, 2011 and 2010, we spent approximately $13.7 million, $18.0 million, and $24.2 million on research and development activities.

Patents, Proprietary Rights and Trade Secrets

Our success depends in part on our ability to obtain and maintain proprietary protection for our drug candidates, technology and know-how, to operate without infringing the proprietary rights of others and to prevent others from infringing our proprietary rights. We use a variety of methods to seek to protect our proprietary position, including filing U.S. and foreign patent applications related to our proprietary technology, inventions and improvements that are important to the development of our business. We also rely on trade secrets, know-how, continuing technological innovation, and in-licensing opportunities to develop and maintain our proprietary position.

We have devoted and continue to devote a substantial amount of our resources into establishing intellectual property protection for:

Novel chemical entities that function as agonists of TLR3, TLR7, TLR8 or TLR9;

Novel chemical entities that function as antagonists of TLR7, TLR8 or TLR9; and

Use of our novel chemical entities and chemical modifications to treat and prevent a variety of diseases.

As of January 31, 2013, we owned more than 50 U.S. patents and patent applications and more than 100 patents and patent applications throughout the rest of the world for our TLR-targeted immune modulation technologies. These patents and patent applications include novel chemical compositions of matter and methods of use for our immune modulatory compounds, including IMO-3100, IMO-8400, and IMO-2055. As of January 31, 2013, all of our intellectual property covering immune modulatory compositions and methods of their use is based on discoveries made solely by us. These patents expire at various dates ranging from 2017 to 2031. With respect to IMO-3100, we have issued U.S. patents that cover the chemical composition of matter of IMO-3100 and methods of its use that will expire at the earliest in 2026. With respect to IMO-8400, we have U.S. patent applications that cover the chemical composition of matter of IMO-8400 and methods of its use that will expire at the earliest in 2031. With respect to IMO-2055, we have issued U.S. patents that cover the chemical composition of matter of IMO-2055 and methods of its use, including in combination with marketed cancer products, with the earliest composition claims in the United States expiring in 2023.

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As of January 31, 2013, we also own three U.S. patent applications and six corresponding worldwide patent application for our GSO compounds and methods of their use. Patents issuing from these applications, if any, would expire at their earliest in 2030.

In addition to our TLR-targeted patent portfolio, we are the owner or hold licenses of patents and patent applications related to antisense technology. As of January 31, 2013, our antisense patent portfolio included more than 75 U.S. patents and patent applications and more than 75 patents and patent applications throughout the rest of the world. These antisense patents and patent applications include novel compositions of matter, the use of these compositions for various genes, sequences and therapeutic targets, and oral and other routes of administration. Some of the patents and patent applications in our antisense portfolio were in-licensed. These in-licensed patents expire at various dates ranging from 2013 to 2021.

Because patent applications in the United States and many foreign jurisdictions are typically not published until 18 months after filing, or in some cases not at all, and because publications of discoveries in the scientific literature often lag behind actual discoveries, we cannot be certain that we were the first to make the inventions claimed in each of our issued patents or pending patent applications, or that we were the first to file for protection of the inventions set forth in these patent applications.

Litigation may be necessary to defend against or assert claims of infringement, to enforce patents issued to us, to protect trade secrets or know-how owned by us, or to determine the scope and validity of the proprietary rights of others or to determine the appropriate term for an issued patent. In addition, the United States Patent and Trademark Office, or USPTO, may declare interference proceedings to determine the priority of inventions with respect to our patent applications or reexamination or reissue proceedings to determine if the scope of a patent should be narrowed. Litigation or any of these other proceedings could result in substantial costs to and diversion of effort by us, and could have a material adverse effect on our business, financial condition and results of operations. These efforts by us may not be successful.

In January 2010, we filed a lawsuit against the USPTO in the United States District Court for the District of Columbia. In light of recent decisions in that court and the Court of Appeals for the Federal Circuit, we believe the USPTO assigned a shorter patent term to some of our U.S. patents than was allowed by law. We filed the lawsuit to obtain a determination of the appropriate patent term for these patents. This case has been stayed pending the final decision in an earlier case filed by another company with a similar fact pattern and seeking the same resolution.

We may rely, in some circumstances, on trade secrets and confidentiality agreements to protect our technology. Although trade secrets are difficult to protect, wherever possible, we use confidential disclosure agreements to protect the proprietary nature of our technology. We regularly implement confidentiality agreements with our employees, consultants, scientific advisors, and other contractors and collaborators. However, there can be no assurance that these agreements will not be breached, that we will have adequate remedies for any breach, or that our trade secrets and/or proprietary information will not otherwise become known or be independently discovered by competitors. To the extent that our employees, consultants or contractors use intellectual property owned by others in their work for us, disputes may also arise as to the rights in related or resulting know-how and inventions.

Government Regulation

Government authorities in the United States, at the federal, state and local level, and in other countries extensively regulate, among other things, the research, development, testing, manufacture, including any manufacturing changes, packaging, storage, recordkeeping, labeling, advertising, promotion, distribution, marketing, post-approval monitoring and reporting, import and export of pharmaceutical products, such as those we are developing.

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United States drug approval process

In the United States, the FDA regulates drugs under the Federal Food, Drug, and Cosmetic Act, or FDCA, the Public Health Service Act and implementing regulations. The process of obtaining regulatory approvals and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations requires the expenditure of substantial time and financial resources. Failure to comply with the applicable U.S. requirements at any time during the product development process, approval process or after approval, may subject an applicant to a variety of administrative or judicial sanctions, such as the FDA s refusal to approve pending applications, withdrawal of an approval, imposition of a clinical hold, issuance of warning letters, product recalls, product seizures, total or partial suspension of production or distribution injunctions, fines, refusals of government contracts, restitution, disgorgement of profits or civil or criminal penalties.

The process required by the FDA before a drug may be marketed in the United States generally involves the following:

- completion of nonclinical laboratory tests, animal studies and formulation studies in compliance with the FDA s good laboratory practice, or GLP, regulations;
- submission to the FDA of an IND, which must become effective before human clinical trials may begin;
- approval by an independent institutional review board, or IRB, for each clinical site before each trial may be initiated;
- performance of adequate and well-controlled human clinical trials in accordance with good clinical practices, or GCP, to establish the safety and efficacy of the proposed drug for each indication;
- submission to the FDA of a new drug application, or NDA;
- satisfactory completion of an FDA advisory committee review, if applicable;
- satisfactory completion of an FDA inspection of the manufacturing facility or facilities at which the product is produced to assess compliance with current good manufacturing practices, or cGMP, requirements and to assure that the facilities, methods and controls are adequate to preserve the drug s identity, strength, quality and purity; and
- FDA review and approval of the NDA.

Nonclinical studies

Nonclinical studies include laboratory evaluation of product chemistry and formulation, as well as *in vitro* and animal studies to assess the potential for adverse events and in some cases to establish a rationale for therapeutic use. The conduct of nonclinical studies is subject to federal regulations and requirements, including GLP regulations for safety/toxicology studies. An IND sponsor must submit the results of the nonclinical tests, together with manufacturing information, analytical data, any available clinical data or literature and plans for clinical studies, among other things, to the FDA as part of an IND. Additional nonclinical testing, such as animal tests of reproductive adverse events and carcinogenicity, may continue after the IND is submitted. An IND automatically becomes effective 30 days after receipt by the FDA, unless before that time the FDA raises concerns or questions related to one or more proposed clinical trials and places the trial on clinical hold. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. As a result, submission of an IND may not result in the FDA allowing clinical trials to commence.

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Clinical trials

Clinical trials involve the administration of the investigational new drug to human subjects under the supervision of qualified investigators in accordance with GCP requirements, which include, among other things, the requirement that all research subjects provide their informed consent in writing before their participation in any clinical trial. Clinical trials are conducted under written study protocols detailing, among other things, the objectives of the trial, the parameters to be used in monitoring safety and the effectiveness criteria to be evaluated. A protocol for each clinical trial and any subsequent protocol amendments must be submitted to the FDA as part of the IND. In addition, an IRB for each institution participating in the clinical trial must review and approve the plan for any clinical trial before it commences at that institution, and the IRB must conduct continuing review. The IRB must review and approve, among other things, the trial protocol and informed consent information to be provided to study subjects. An IRB must operate in compliance with FDA regulations. Information about certain clinical trials must be submitted within specific timeframes to the National Institutes of Health for public dissemination on their ClinicalTrials.gov website.

Human clinical trials are typically conducted in three sequential phases, which may overlap or be combined:

Phase 1: The drug is initially introduced into healthy human subjects or patients with the target disease or condition and tested for safety, dosage tolerance, absorption, metabolism, distribution, excretion and, if possible, to gain an early indication of its effectiveness.

Phase 2: The drug is administered to a limited patient population to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product for specific targeted diseases and to determine dosage tolerance and optimal dosage.

Phase 3: The drug is administered to an expanded patient population in adequate and well-controlled clinical trials to generate sufficient data to statistically confirm the efficacy and safety of the product for approval, to establish the overall risk-benefit profile of the product and to provide adequate information for the labeling of the product.

Progress reports detailing the results of the clinical trials must be submitted at least annually to the FDA and more frequently if serious adverse events occur. Phase 1, Phase 2 and Phase 3 clinical trials may not be completed successfully within any specified period, or at all. Furthermore, the FDA or the sponsor may suspend or terminate a clinical trial at any time on various grounds, including a finding that the research subjects are being exposed to an unacceptable health risk. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB s requirements or if the drug has been associated with unexpected serious harm to patients.

Marketing approval

Assuming successful completion of the required clinical testing, the results of the nonclinical and clinical studies, together with detailed information relating to the product s chemistry, manufacture, controls and proposed labeling, among other things, are submitted to the FDA as part of an NDA requesting approval to market the product for one or more indications. Under federal law, the submission of most NDAs is additionally subject to a substantial application user fee, currently exceeding $1.9 million, and the sponsor of an approved NDA is also subject to annual product and establishment user fees, currently exceeding $98,000 per product and $520,000 per establishment. These fees are typically increased annually.

The FDA conducts a preliminary review of all NDAs within the first 60 days after submission before accepting them for filing to determine whether they are sufficiently complete to permit substantive review. The FDA may request additional information rather than accept an NDA for filing. In this event,

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the application must be resubmitted with the additional information. The resubmitted application is also subject to review before the FDA accepts it for filing. Once the submission is accepted for filing, the FDA begins an in-depth substantive review. The FDA has agreed to specified performance goals in the review of NDAs. Under these goals, the FDA has committed to review most such applications for non-priority products within 10 months of submission, and most applications for priority review products, that is, drugs that the FDA determines represent a significant improvement over existing therapy, within six months of submission. If the drug is considered to be a new molecular entity, or NME, these time periods are measured from the official filing date rather than the date of submission, which generally adds two months to the review period. The review process may be extended by the FDA for three additional months to consider certain information or clarification regarding information already provided in the submission. The FDA may also refer applications for novel drugs or products that present difficult questions of safety or efficacy to an advisory committee, typically a panel that includes clinicians and other experts, for review, evaluation and a recommendation as to whether the application should be approved. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions.

Before approving an NDA, the FDA typically will inspect the facility or facilities where the product is manufactured. The FDA will not approve an application unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. In addition, before approving an NDA, the FDA will typically inspect one or more clinical sites to assure compliance with GCP and integrity of the clinical data submitted.

The testing and approval process requires substantial time, effort and financial resources, and each may take many years to complete. Data obtained from clinical activities are not always conclusive and may be susceptible to varying interpretations, which could delay, limit or prevent regulatory approval. The FDA may not grant approval on a timely basis, or at all. We may encounter difficulties or unanticipated costs in our efforts to develop our product candidates and secure necessary governmental approvals, which could delay or preclude us from marketing our products.

After the FDA s evaluation of the NDA and inspection of the manufacturing facilities, the FDA may issue an approval letter or a complete response letter. An approval letter authorizes commercial marketing of the drug with specific prescribing information for specific indications. A complete response letter generally outlines the deficiencies in the submission and may require substantial additional testing or information in order for the FDA to reconsider the application. If and when those deficiencies have been addressed to the FDA s satisfaction in a resubmission of the NDA, the FDA will issue an approval letter. The FDA has committed to reviewing such resubmissions in two or six months depending on the type of information included. Even with submission of this additional information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval and refuse to approve the NDA.

Even if the FDA approves a product, it may limit the approved indications for use for the product, require that contraindications, warnings or precautions be included in the product labeling, require that post-approval studies, including Phase 4 clinical trials, be conducted to further assess a drug s safety after approval, require testing and surveillance programs to monitor the product after commercialization, or impose other conditions, including distribution restrictions or other risk management mechanisms, which can materially affect the potential market and profitability of the product. The FDA may prevent or limit further marketing of a product based on the results of post-market studies or surveillance programs. After approval, some types of changes to the approved product, such as adding new indications, manufacturing changes and additional labeling claims, are subject to further testing requirements and FDA review and approval.

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Fast track designation

The FDA is required to facilitate the development and expedite the review of drugs that are intended for the treatment of a serious or life-threatening disease condition for which there is no effective treatment and which demonstrate the potential to address unmet medical needs for the disease condition. Under the fast track program, the sponsor of a new drug candidate may request the FDA to designate the product for a specific indication as a fast track product concurrent with or after the filing of the IND for the product candidate. The FDA must determine if the product candidate qualifies for fast track designation within 60 days after receipt of the sponsor s request.

In addition to other benefits, such as the ability to use surrogate endpoints and have greater interactions with the FDA, the FDA may initiate review of sections of a fast track product s NDA before the application is complete. This rolling review is available if the applicant provides and the FDA agrees to a schedule for the submission of the remaining information and the applicant pays applicable user fees. However, the FDA s time period goal for reviewing a fast track application does not begin until the last section of the NDA is submitted. In addition, the fast track designation may be withdrawn by the FDA if the FDA believes that the designation is no longer supported by data emerging in the clinical trial process.

Priority review

Under FDA policies, a product candidate may be eligible for priority review, or review within a six-month time frame from the time a complete application is submitted (for non-NMEs) or filed (for NMEs). Products regulated by the FDA s Center for Drug Evaluation and Research, or CDER, are eligible for priority review if they provide a safe and effective therapy where no satisfactory alternative exists or a significant improvement compared to marketed products in the treatment, diagnosis or prevention of a disease. A fast track designated product candidate would ordinarily meet the FDA s criteria for priority review.

Accelerated approval

Under the FDA s accelerated approval regulations, the FDA may approve a drug for a serious or life-threatening illness that provides meaningful therapeutic benefit to patients over existing treatments based upon a surrogate endpoint that is reasonably likely to predict clinical benefit or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity or prevalence of the condition and the availability or lack of alternative treatments. In clinical trials, a surrogate endpoint is a measurement of laboratory or clinical signs of a disease or condition that substitutes for a direct measurement of how a patient feels, functions or survives. Surrogate endpoints can often be measured more easily or more rapidly than clinical endpoints. A product candidate approved on this basis is subject to rigorous post-marketing compliance requirements, including the completion of Phase 4 or post-approval clinical trials to verify and describe the predicted effect on irreversible morbidity or mortality or other clinical endpoint. Failure to conduct required post-approval studies, or verify and describe the predicted effect on irreversible morbidity or mortality or other clinical endpoint during post-marketing studies, would allow the FDA to withdraw the drug from the market on an expedited basis. All promotional materials for drug candidates approved under accelerated regulations are subject to prior review by the FDA.

Breakthrough designation

Under the provisions of the new Food and Drug Administration Safety and Innovation Act, or FDASIA, enacted in 2012, a sponsor can request designation of a product candidate as a breakthrough therapy. A breakthrough therapy is defined as a drug that is intended, alone or in combination with one or more

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other drugs, to treat a serious or life-threatening disease or condition, and preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. Drugs designated as breakthrough therapies are also eligible for accelerated approval. The FDA must take certain actions, such as holding timely meetings and providing advice, intended to expedite the development and review of an application for approval of a breakthrough therapy.

Orphan drugs

Under the Orphan Drug Act, the FDA may grant orphan drug designation to drugs intended to treat a rare disease or condition, which is generally defined as a disease or condition that affects fewer than 200,000 individuals in the United States. Orphan drug designation must be requested before submitting an NDA. After the FDA grants orphan drug designation, the generic identity of the drug and its potential orphan use are disclosed publicly by the FDA. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process. The first NDA applicant to receive FDA approval for a particular active ingredient to treat a particular disease with FDA orphan drug designation is entitled to a seven-year exclusive marketing period in the United States for that product, for that indication. During the seven-year exclusivity period, the FDA may not approve any other applications to market the same drug for the same orphan indication, except in limited circumstances, such as a showing of clinical superiority to the product with orphan drug exclusivity in that it is shown to be safer, more effective or makes a major contribution to patient care. Orphan drug exclusivity does not prevent the FDA from approving a different drug for the same disease or condition, or the same drug for a different disease or condition. Among the other benefits of orphan drug designation are tax credits for certain research and a waiver of the NDA application user fee.

Pediatric information

Under the Pediatric Research Equity Act, as amended, an NDA or supplement to an NDA must contain data that are adequate to assess the safety and effectiveness of the drug for the claimed indications in all relevant pediatric subpopulations, and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. The FDA may, on its own initiative or at the request of the applicant, grant deferrals for submission of some or all pediatric data until after approval of the product for use in adults, or full or partial waivers from the pediatric data requirements. Unless otherwise required by regulation, the pediatric data requirements do not apply to products with orphan drug designation.

The Hatch-Waxman Act

Abbreviated new drug applications

In seeking approval for a drug through an NDA, applicants are required to list with the FDA each patent with claims that cover the applicant s product or a method of using the product. Upon approval of a drug, each of the patents listed in the application for the drug is then published in the FDA s Approved Drug Products with Therapeutic Equivalence Evaluations, commonly known as the Orange Book. Drugs listed in the Orange Book can, in turn, be cited by potential competitors in support of approval of an abbreviated new drug application, or ANDA. Generally, an ANDA provides for marketing of a drug product that has the same active ingredients in the same strengths, dosage form and route of administration as the listed drug and has been shown to be bioequivalent through *in vitro* or *in vivo* testing or otherwise to the listed drug. ANDA applicants are not required to conduct or submit results of preclinical or clinical tests to prove the safety or effectiveness of their drug product, other than the requirement for bioequivalence testing. Drugs approved in this way are commonly referred to as generic equivalents to the listed drug, and can often be substituted by pharmacists under prescriptions written for the original listed drug.

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The ANDA applicant is required to certify to the FDA concerning any patents listed for the approved product in the FDA s Orange Book, except for patents covering methods of use for which the ANDA applicant is not seeking approval. Specifically, the applicant must certify with respect to each patent that:

the required patent information has not been filed;

the listed patent has expired;

the listed patent has not expired, but will expire on a particular date and approval is sought after patent expiration; or

the listed patent is invalid, unenforceable or will not be infringed by the new product.

A certification that the new product will not infringe the already approved product s listed patents or that such patents are invalid or unenforceable is called a Paragraph IV certification. If the applicant does not challenge the listed patents or indicate that it is not seeking approval of a patented method of use, the ANDA application will not be approved until all the listed patents claiming the referenced product have expired.

If the ANDA applicant has provided a Paragraph IV certification to the FDA, the applicant must also send notice of the Paragraph IV certification to the NDA and patent holders once the ANDA has been accepted for filing by the FDA. The NDA and patent holders may then initiate a patent infringement lawsuit in response to the notice of the Paragraph IV certification. The filing of a patent infringement lawsuit within 45 days after the receipt of notice of a Paragraph IV certification automatically prevents the FDA from approving the ANDA until the earlier of 30 months, expiration of the patent, settlement of the lawsuit or a decision in the infringement case that is favorable to the ANDA applicant.

The ANDA also will not be approved until any applicable non-patent exclusivity period, such as exclusivity for obtaining approval of a new chemical entity, for the referenced product has expired. Federal law provides a period of five years following approval of a drug containing no previously approved active moiety during which ANDAs for generic versions of those drugs cannot be submitted unless the submission contains a Paragraph IV challenge to a listed patent, in which case the submission may be made four years following the original product approval. Federal law provides for a period of three years of exclusivity during which the FDA cannot grant effective approval of an ANDA if a listed drug contains a previously approved active moiety, but FDA requires as a condition of approval new clinical trials conducted by or for the sponsor. This three-year exclusivity period often protects changes to a previously approved drug product, such as a new dosage form, route of administration, combination or indication. Under the Best Pharmaceuticals for Children Act, federal law also provides that periods of patent and non-patent marketing exclusivity listed in the Orange Book for a drug may be extended by six months if the NDA sponsor conducts pediatric studies identified by the FDA in a written request. For written requests issued by the FDA after September 27, 2007, the date of enactment of the FDAAA, the FDA must grant pediatric exclusivity no later than nine months prior to the date of expiration of patent or non-patent exclusivity in order for the six-month pediatric extension to apply to that exclusivity period.

Section 505(b)(2) new drug applications

Most drug products obtain FDA marketing approval pursuant to a full NDA or an ANDA. A third alternative is a special type of NDA, commonly referred to as a Section 505(b)(2) NDA, which enables the applicant to rely, in part, on the FDA s previous approval of a similar product, or published literature, in support of its application.

505(b)(2) NDAs often provide an alternate path to FDA approval for new or improved formulations or new uses of previously approved products. Section 505(b)(2) permits the filing of an NDA where at least some of the information required for approval comes from studies not conducted by or for the applicant

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and for which the applicant has not obtained a right of reference. If the 505(b)(2) applicant can establish that reliance on the FDA s previous approval is scientifically appropriate, it may eliminate the need to conduct certain preclinical or clinical studies of the new product. The FDA may also require companies to perform additional studies or measurements to support the change from the approved product. The FDA may then approve the new product candidate for all or some of the label indications for which the referenced product has been approved, as well as for any new indication sought by the Section 505(b)(2) applicant.

To the extent that the Section 505(b)(2) applicant is relying on studies conducted for an already approved product, the applicant is required to certify to the FDA concerning any patents listed for the approved product in the Orange Book to the same extent that an ANDA applicant would. As a result, approval of a 505(b)(2) NDA can be stalled until all the listed patents claiming the referenced product have expired, until any non-patent exclusivity, such as exclusivity for obtaining approval of a new chemical entity, listed in the Orange Book for the referenced product has expired, and, in the case of a Paragraph IV certification and subsequent patent infringement suit, until the earlier of 30 months, settlement of the lawsuit or a decision in the infringement case that is favorable to the Section 505(b)(2) applicant.

Other regulatory requirements

Any drug manufactured or distributed by us pursuant to FDA approvals are subject to pervasive and continuing regulation by the FDA, including, among other things, requirements relating to recordkeeping, periodic reporting, product sampling and distribution, advertising and promotion and reporting of adverse experiences with the product. After approval, most changes to the approved product, such as adding new indications or other labeling claims are subject to prior FDA review and approval.

The FDA may impose a number of post-approval requirements as a condition of approval of an NDA. For example, the FDA may require post-marketing testing, including Phase 4 clinical trials, and surveillance to further assess and monitor the product s safety and effectiveness after commercialization. Regulatory approval of oncology products often requires that patients in clinical trials be followed for long periods to determine the overall survival benefit of the drug.

In addition, drug manufacturers and other entities involved in the manufacture and distribution of approved drugs are required to register their establishments with the FDA and state agencies, and are subject to periodic unannounced inspections by the FDA and these state agencies for compliance with cGMP requirements. Changes to the manufacturing process are strictly regulated and often require prior FDA approval before being implemented. FDA regulations also require investigation and correction of any deviations from cGMP and impose reporting and documentation requirements upon us and any third-party manufacturers that we may decide to use. Accordingly, manufacturers must continue to expend time, money and effort in the areas of production and quality control to maintain cGMP compliance.

Once an approval is granted, the FDA may withdraw the approval if compliance with regulatory requirements and standards is not maintained or if problems occur after the product reaches the market. Later discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or with manufacturing processes, or failure to comply with regulatory requirements, may result in revisions to the approved labeling to add new safety information, imposition of post-market studies or clinical trials to assess new safety risks or imposition of distribution or other restrictions under a Risk Evaluation and Mitigation Strategy program. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of the product, complete withdrawal of the product from the market or product recalls;

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fines, warning letters or holds on post-approval clinical trials;

refusal of the FDA to approve pending applications or supplements to approved applications, or suspension or revocation of product license approvals;

product seizure or detention, or refusal to permit the import or export of products; or

consent decrees, injunctions or the imposition of civil or criminal penalties.

The FDA strictly regulates marketing, labeling, advertising and promotion of products that are placed on the market. Drugs may be promoted only for the approved indications and in accordance with the provisions of the approved label. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off label uses, and a company that is found to have improperly promoted off label uses may be subject to significant liability.

Additional provisions

Anti-kickback and false claims laws

In addition to FDA restrictions on marketing of pharmaceutical products, several other types of state and federal laws have been applied to restrict certain marketing practices in the pharmaceutical industry in recent years. These laws include anti-kickback statutes and false claims statutes. The federal healthcare program anti-kickback statute prohibits, among other things, knowingly and willfully offering, paying, soliciting or receiving remuneration to induce or in return for purchasing, leasing, ordering or arranging for or recommending the purchase, lease or order of any healthcare item or service reimbursable under Medicare, Medicaid or other federally financed healthcare 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 healthcare 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. Recently, several pharmaceutical and other healthcare companies have been prosecuted under these laws for allegedly inflating drug prices they report to pricing services, which in turn were used by the government to set Medicare and Medicaid reimbursement rates, and for allegedly providing free product to customers with the expectation that the customers would bill federal programs for the product. In addition, certain marketing practices, including off-label promotion, may also be found to violate false claims laws. The majority of states also have statutes or regulations similar to the federal anti-kickback law 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.

Physician drug samples

As part of the sales and marketing process, pharmaceutical companies frequently provide samples of approved drugs to physicians. The Prescription Drug Marketing Act, or the PDMA, imposes requirements and limitations upon the provision of drug samples to physicians, as well as prohibits states from licensing distributors of prescription drugs unless the state licensing program meets certain federal guidelines that include minimum standards for storage, handling and record keeping. In addition, the PDMA sets forth civil and criminal penalties for violations.

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Foreign regulation

In order to market any product outside of the United States, we would need to comply with numerous and varying regulatory requirements of other countries regarding safety and efficacy and governing, among other things, clinical trials, marketing authorization, commercial sales and distribution of our products. Whether or not we obtain FDA approval for a product, we would need to obtain the necessary approvals by the comparable regulatory authorities of foreign countries before we can commence clinical trials or marketing of the product in those countries. The approval process varies from country to country and can involve additional product testing and additional administrative review periods. The time required to obtain approval in other countries might differ from and be longer than that required to obtain FDA approval. Regulatory approval in one country does not ensure regulatory approval in another, but a failure or delay in obtaining regulatory approval in one country may negatively impact the regulatory process in others.

New legislation and regulations

From time to time, legislation is drafted, introduced and passed in Congress that could significantly change the statutory provisions governing the testing, approval, manufacturing and marketing of products regulated by the FDA. For example, the FDAAA discussed above was enacted in 2007. In addition to new legislation, FDA regulations and policies are often revised or interpreted by the agency in ways that may significantly affect our business and our products. It is impossible to predict whether further legislative changes will be enacted or whether FDA regulations, guidance, policies or interpretations changed or what the effect of such changes, if any, may be.

Pharmaceutical coverage, pricing and reimbursement

Significant uncertainty exists as to the coverage and reimbursement status of any drug products for which we might obtain regulatory approval. Sales of any of our product candidates, if approved, will depend, in part, on the extent to which the costs of the products will be covered by third-party payors, including government health programs such as Medicare and Medicaid, commercial health insurers and managed care organizations. The process for determining whether a payor will provide coverage for a drug product may be separate from the process for setting the price or reimbursement rate that the payor will pay for the drug product once coverage is approved. Third-party payors may limit coverage to specific drug products on an approved list, or formulary, which might not include all of the approved drugs for a particular indication.

In order to secure coverage and reimbursement for any product that might be approved for sale, we may need to conduct expensive pharmacoeconomic studies in order to demonstrate the medical necessity and cost-effectiveness of the product, in addition to the costs required to obtain FDA or other comparable regulatory approvals. Our product candidates may not be considered medically necessary or cost-effective. A payor s decision to provide coverage for a drug product does not imply that an adequate reimbursement rate will be approved. Third-party reimbursement may not be sufficient to enable us to maintain price levels high enough to realize an appropriate return on our investment in product development.

The containment of healthcare costs has become a priority of federal, state and foreign governments, and the prices of drugs have been a focus in this effort. Third-party payors are increasingly challenging the prices charged for medical products and services and examining the medical necessity and cost-effectiveness of medical products and services, in addition to their safety and efficacy. If these third-party payors do not consider our products to be cost-effective compared to other available therapies, they may not cover our products after approval as a benefit under their plans or, if they do, the level of payment may not be sufficient to allow us to sell our products at a profit. The U.S. government, state legislatures and foreign governments have shown significant interest in implementing cost containment programs to

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limit the growth of government-paid health care costs, including price controls, restrictions on reimbursement and requirements for substitution of generic products for branded prescription drugs. Adoption of such controls and measures, and tightening of restrictive policies in jurisdictions with existing controls and measures, could limit payments for pharmaceuticals such as the drug candidates that we are developing and could adversely affect our net revenue and results.

Pricing and reimbursement schemes vary widely from country to country. Some countries provide that drug products may be marketed only after a reimbursement price has been agreed. Some countries may require the completion of additional studies that compare the cost-effectiveness of a particular product candidate to currently available therapies. For example, the European Union provides options for its member states to restrict the range of drug products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. European Union member states may approve a specific price for a drug product or may instead adopt a system of direct or indirect controls on the profitability of the company placing the drug product on the market. Other member states allow companies to fix their own prices for drug products, but monitor and control company profits. The downward pressure on health care costs in general, particularly prescription drugs, has become very intense. As a result, increasingly high barriers are being erected to the entry of new products. In addition, in some countries, cross-border imports from low-priced markets exert competitive pressure that may reduce pricing within a country. There can be no assurance that any country that has price controls or reimbursement limitations for drug products will allow favorable reimbursement and pricing arrangements for any of our products.

The marketability of any products for which we might receive regulatory approval for commercial sale may suffer if the government and third-party payors fail to provide adequate coverage and reimbursement. In addition, an increasing emphasis on managed care in the United States has increased and we expect will continue to increase the pressure on drug pricing. Coverage policies, third-party reimbursement rates and drug pricing regulation may change at any time. In particular, the Patient Protection and Affordable Care Act was enacted in the United States in March 2010 and contains provisions that may reduce the profitability of drug products, including, for example, increased rebates for drugs sold to Medicaid programs, extension of Medicaid rebates to Medicaid managed care plans, mandatory discounts for certain Medicare Part D beneficiaries and annual fees based on pharmaceutical companies share of sales to federal health care programs. Even if favorable coverage and reimbursement status is attained for one or more products for which we receive regulatory approval, less favorable coverage policies and reimbursement rates may be implemented in the future.

Manufacturing

We do not currently own or operate manufacturing facilities for the production of clinical or commercial quantities of any of our drug candidates. We currently rely and expect to continue to rely on other companies for the manufacture of our drug candidates for preclinical and clinical development. We currently source our bulk drug manufacturing requirements from a limited number of contract manufacturers through the issuance of work orders on an as-needed basis. We depend and will continue to depend on our contract manufacturers to manufacture our drug candidates in accordance with cGMP regulations for use in clinical trials. We will ultimately depend on contract manufacturers for the manufacture of our products for commercial sale. Contract manufacturers are subject to extensive governmental regulation.

Under our collaborative agreement with Merck & Co., Merck & Co. is responsible for manufacturing the drug candidates.

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Competition

We are developing our TLR-targeted drug candidates for use in the treatment of autoimmune and inflammatory diseases and for use as vaccine adjuvants. We have two drug candidates in clinical development in our autoimmune and inflammatory disease program. We are also collaborating with Merck & Co. for the use of agonists of TLR7, TLR8, and TLR9 as vaccine adjuvants for cancer, infectious diseases and Alzheimer s disease. In addition, we are seeking to enter into collaborative alliances with pharmaceutical companies to advance our TLR-targeted programs in oncology and respiratory diseases, and for the use of TLR3 agonists as vaccine adjuvants, as well as applications of our GSO technology platform. For all of these disease areas, there are many other companies, public and private, that are actively engaged in discovery, development, and commercializing products and technologies that may compete with our drug candidates and programs, including TLR targeted compounds as well as non-TLR targeted therapies.

Our principal competitor developing TLR-targeted compounds for autoimmune and inflammatory diseases is Dynavax Technologies Corporation, or Dynavax, with its collaborator, GlaxoSmithKline plc., or GlaxoSmithKline. Merck & Co. s vaccines using our TLR7, TLR8 or TLR9 agonists as adjuvants may compete with vaccines using TLR agonists as adjuvants being developed or marketed by GlaxoSmithKline, Novartis, Dynavax, VaxInnate, Inc., Intercell AG, and Cytos Biotechnology AG.

We are developing drug candidates for the treatment of moderate to severe plaque psoriasis. There are a number of well-known immune suppressors and biologics that are currently being widely used for the treatment of moderate to severe plaque psoriasis, including methotrexate and cyclosporine, which are both immune suppressors, and biologics like Enbrel, which is marketed by Amgen, Pfizer and Takeda, Remicade, which is marketed by Janssen Biotech, Merck & Co. and Mitsubishi Tanabe Pharma, Humira, which is marketed by Abbott Laboratories, and Stelara, which is marketed by Janssen Biotech. In addition to existing treatments, we are also aware of additional compounds for the treatment of moderate to severe plaque psoriasis that are currently in late stage development, including apremilast, which is being developed by Celgene Corporation, tofacitinib, which is being developed by Pfizer, secukinumab, which is being developed by Novartis, ixekizumab, which is being developed by Eli Lilly and Company, and brodalumab, which is being developed by Amgen, AstraZeneca PLC and Kyowa Hakko Kirin Co., Ltd. We believe that our drug candidates, if approved for the treatment of moderate to severe plaque psoriasis, will compete with these products on the basis of improved long-term disease remission and long-term tolerability, as well as potentially lower treatment costs due to lower dosage requirements and a simpler manufacturing process.

Some of the potentially competitive products have been in development or commercialized for years, in some cases by large, well established pharmaceutical companies. Many of the marketed products have been accepted by the medical community, patients, and third-party payors. Our ability to compete may be affected by the previous adoption of such products by the medical community, patients, and third-party payors. Additionally, in some instances, insurers and other third-party payors seek to encourage the use of generic products, which makes branded products, such as our drug candidates, potentially less attractive, from a cost perspective, to buyers.

We recognize that other companies, including large pharmaceutical companies, may be developing or have plans to develop products and technologies that may compete with ours. Many of our competitors have substantially greater financial, technical, and human resources than we have. In addition, many of our competitors have significantly greater experience than we have in undertaking preclinical studies and human clinical trials of new pharmaceutical products, obtaining FDA and other regulatory approvals of products for use in health care and manufacturing, and marketing and selling approved products. Our competitors may discover, develop or commercialize products or other novel technologies that are more effective, safer or less costly than any that we are developing. Our competitors may also obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours.

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We anticipate that the competition with our products and technologies will be based on a number of factors including product efficacy, safety, availability, and price. The timing of market introduction of our products and competitive products will also affect competition among products. We expect the relative speed with which we can develop products, complete the clinical trials, and approval processes and supply commercial quantities of the products to the market to be important competitive factors. Our competitive position will also depend upon our ability to attract and retain qualified personnel, to obtain patent protection or otherwise develop proprietary products or processes, and protect our intellectual property, and to secure sufficient capital resources for the period between technological conception and commercial sales.

Employees

As of January 31, 2013, we employed 18 individuals, nine of whom are engaged in research and development and 10 of whom hold a Ph.D., M.D., or equivalent degree. None of our employees are covered by a collective bargaining agreement, and we consider relations with our employees to be good.

Properties

We lease approximately 26,000 square feet of laboratory and office space located in Cambridge, Massachusetts. The lease expires on May 31, 2014, subject to a five-year renewal option exercisable by us. We have specified rights to sublease this facility.

Legal Proceedings

None.

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MANAGEMENT

Executive Officers and Directors

The following table sets certain information regarding our executive officers and directors as of as of January 31, 2013.

Name	Age	Position
Sudhir Agrawal, D. Phil.	59	Chairman of the Board of Directors, President and Chief Executive Officer
Louis J. Arcudi III, M.B.A.	52	Senior Vice President of Operations, Chief Financial Officer, Treasurer and Secretary
Timothy M. Sullivan, Ph.D.	58	Vice President, Development Programs and Alliance Management
Robert D. Arbeit, M.D.	65	Vice President, Clinical Development
Youssef El Zein[2],[3]	64	Director
C. Keith Hartley[1],[3]	70	Director
Robert W. Karr, M.D.[1]	64	Director
Malcolm MacCoss, Ph.D.[2]	65	Director
William S. Reardon[1],[3]	66	Director
Eve E. Slater[2]	67	Director
Abdul-Wahab Umari	45	Director

(1) Member of the audit committee.
(2) Member of the compensation committee.
(3) Member of the nominating and corporate governance committee.

Sudhir Agrawal, D. Phil., a director since 1993, has been the chairman of our board of directors since September 2010, our President since September 2008 and our Chief Executive Officer since August 2004. He also served as our Chief Scientific Officer from January 1993 until September 2010, as our President from February 2000 to October 2005 and as Acting Chief Executive Officer from February 2000 until September 2001. Dr. Agrawal joined us in 1990 and served in various capacities before his appointment as Chief Scientific Officer, including Vice President of Discovery and Senior Vice President of Discovery. Prior to joining us, Dr. Agrawal served as a Foundation Scholar at the Worcester Foundation for Experimental Biology and carried out his post-doctoral research at the Medical Research Council s Laboratory of Molecular Biology in Cambridge, England from 1985 to 1986. We believe that Dr. Agrawal s qualifications to sit on our board of directors include his unique insights into our challenges, opportunities and operations that he has as a result of the roles he has played with us since our founding, including scientific founder, chief scientific officer, chief executive officer and chairman.

Louis J. Arcudi, III, M.B.A., has been our Senior Vice President of Operations since April 2011 and our Chief Financial Officer, Treasurer and Secretary since he joined us in December 2007. Prior to joining us, Mr. Arcudi served as Vice President of Finance and Administration and Treasurer for Peptimmune, Inc., a biotechnology company, from 2003 to 2007. From 2000 to 2003 Mr. Arcudi was Senior Director of Finance and Administration at Genzyme Molecular Oncology Corporation, a division of Genzyme Corporation, a biotechnology company. He was Director of Finance Business Planning and Operations International at Genzyme from 1998 to 2000. Prior to joining Genzyme, he held finance positions with increasing levels of responsibility at Cognex Corporation, a supplier of machine vision systems, Millipore Corporation, a provider of technologies, tools and services for bioscience, research and biopharmaceutical manufacturing, and General Motors Corporation, an automobile manufacturer. Mr. Arcudi received a M.B.A. from Bryant College and a B.S. in accounting and information systems from the University of Southern New Hampshire.

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Timothy M. Sullivan, Ph.D., has been our Vice President, Development Programs and Alliance Management since April 2010 and was our Vice President, Development Programs from August 2004 until April 2010. He joined us in 2002 as Senior Director, Preclinical Drug Development. His prior professional experience includes positions as Executive Director of Non-clinical Drug Safety Evaluation for Purdue Pharma L.P., a pharmaceutical company, from 1999 to 2002, and Vice President of Eastern Operations for Oread, Inc., a contract drug development organization, from 1997 to 1999. Prior to 1997, Dr. Sullivan held a variety of technical management roles with other pharmaceutical companies and contract research organizations, including Adria, Battelle, Roma Toxicology Centre, and in veterinary medicine, including International Minerals & Chemical. Dr. Sullivan earned his B.S. in microbiology from Michigan State University in 1975. His graduate studies were at Purdue University, where he earned a M.S. degree in health physics in 1978 and a Ph.D. in toxicology in 1981.

Robert D. Arbeit, M.D., joined us in August 2009 as Vice President, Clinical Development. Prior to joining us, Dr. Arbeit was Vice President, Clinical Development, from July 2007 to July 2009, and Executive Director, Clinical Development, from February 2003 until July 2007, at Paratek Pharmaceuticals, Inc., a pharmaceutical company. Prior to that, from January 2001 to January 2003, he served at Cubist Pharmaceuticals, Inc., a pharmaceutical company, as Executive Medical Director. From 1979 to 2000, Dr. Arbeit held positions with increasing levels of responsibility at the VA Medical Center in Boston, where his last position was Associate Chief of Staff for Research. Dr. Arbeit received his B.A. from Williams College and earned an M.D. at Yale University School of Medicine. He completed a medical residency at Yale-New Haven Hospital, CT and a Clinical Fellowship in Infectious Diseases at Beth Israel Hospital, Boston, MA.

Youssef El Zein, a director since 1992, has been the Managing Partner of Pillar Invest Corporation, a Cayman Island company that has founded and is the General Partner of a family of funds, including Pillar Pharmaceuticals I, L.P. and Pillar Pharmaceuticals II, L.P. since 2011. Mr. El Zein has been the chairman and CEO of Pillar Invest (offshore) SAL since 2009. Mr. El Zein has been managing partner of Pillar Investment Limited, a private investment firm, since 1991. Mr. El Zein obtained his Bachelor of Arts in Economics from the American University of Beirut in 1970 and a postgraduate degree in Economics from St Catherine s College, Oxford University in 1973. We believe that Mr. El Zein s qualifications to sit on our board of directors include his knowledge of our industry, his financial experience and significant role in various financings we have conducted recently and during his 20 years of service on our board of directors.

C. Keith Hartley, a director since 2000, has been President of Hartley Capital Advisors, a financial consulting firm, since June 2000. Mr. Hartley was Managing Partner of Forum Capital Markets LLC, an investment banking firm, from August 1995 to May 2000. Mr. Hartley also serves as a director of Universal Display Corporation, a publicly traded company that develops organic light emitting diodes for use in flat panel displays and lighting applications. We believe that Mr. Hartley s qualifications to sit on our board of directors include his business and finance background, his investment banking background and knowledge of the capital markets and his relationship with us since 1997 when his investment banking firm led a debt financing for us.

Robert W. Karr, M.D., a director since 2005, has been Managing Member of StartUp Partners International LLC, a consulting firm serving pharmaceutical and biotechnology clients since January 2010. Dr. Karr has served as managing director of Karr Pharm Consulting LLC since January 2008. Dr. Karr served as our President from December 2005 until December 2007. Prior to joining us, Dr. Karr was an independent consultant. From June 2000 through December 2004, Dr. Karr was a senior executive in Global Research & Development for Pfizer, Inc., a pharmaceutical company, where he served as Senior Vice President, Strategic Management from 2003 to 2004 and Vice President, Strategic Management from 2000 to 2003. Prior to its merger with Pfizer, Dr. Karr served as Vice President, Research & Development Strategy for Warner-Lambert Company, a pharmaceutical company. He also

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served on the board of directors of GTx, Inc., a publicly-traded biotechnology company, from 2005 to 2011. We believe that Dr. Karr s qualifications to sit on our board of directors include his broad managerial and scientific experience in the pharmaceutical industry, his understanding of our company given his role as our former President and his continuing role as a director, and his contribution to the board of directors in discussions of our drug discovery programs, clinical development strategy and clinical programs.

Malcolm MacCoss, Ph.D., a director since 2010, founded Bohicket Pharma Consulting LLC in January 2010. In this position, Dr. MacCoss consults for several pharmaceutical companies worldwide on drug discovery issues. Previously, Dr. MacCoss served as the Group Vice President for Chemical Research at the Schering-Plough Research Institute of Schering-Plough Corporation, a pharmaceutical company that is now part of Merck & Co., Inc., from August 2008 to January 2010. In this role he served as the Head of Chemistry at the Schering-Plough Kenilworth, New Jersey site and as the chair of the Schering-Plough Global Chemistry Council, a forum for formulating global chemistry strategies. From 1999 to August 2008, Dr. MacCoss served as Vice President, Basic Chemistry at the Rahway, New Jersey site of Merck Research Laboratories, of Merck & Co., Inc., a pharmaceutical company. He also served as the Vice President of Basic Chemistry and Drug Discovery Sciences, as the Deputy Site-Head of the Rahway site and as the Chairman of the Merck World-Wide Chemistry Council. Dr. MacCoss is a Fellow of the Royal Society of Chemistry, and in 2009 he was admitted into the American Chemical Society Medicinal Chemistry Hall of Fame. In 2010 he received the ACS Division of Medicinal Chemistry National Award. He also serves on the Advisory Committee of the Executive Dean for the School of Arts and Sciences, Rutgers University. We believe that Dr. MacCoss qualifications to sit on our board of directors include his extensive scientific background, his 20 plus years experience with pharmaceutical companies, and his contribution to the board of directors in discussions of our drug discovery programs, clinical development strategy and clinical programs.

William S. Reardon, C.P.A., a director since 2002, has been lead independent director of our board of directors since September 2010. He was an audit partner at PricewaterhouseCoopers LLP, where he led the Life Science Industry Practice for New England and the Eastern United States from 1986 until his retirement from the firm in July 2002. Mr. Reardon served on the board of the Emerging Companies Section of the Biotechnology Industry Organization from June 1998 to June 2000 and the board of directors of the Massachusetts Biotechnology Council from April 2000 to April 2002. He serves as a director of Synta Pharmaceuticals, Inc., a publicly-traded biopharmaceutical company, and he served as a director of Oscient Pharmaceuticals Corporation, a publicly-traded pharmaceutical company from March 2003 to March 2010. Mr. Reardon has also served as a trustee of closed-end mutual funds H&Q Healthcare Investors and H&Q Life Sciences Investors since April 2010. We believe that Mr. Reardon s qualifications to sit on our board of directors include his accounting and financial experience, including as a partner at a leading accounting firm leading its life science practice, his role in keeping the board of directors and senior management team abreast of current accounting regulations and his experience as a member of several boards of directors of biotechnology companies. Additionally, we value Mr. Reardon s role in leading the Board on matters of corporate governance, both as lead independent director and prior to his appointment to that position.

Eve E. Slater, M.D., a director since 2010, is currently Associate Professor of Clinical Medicine at Columbia University College of Physicians and Surgeons, where she has taught in various positions since 1983. Dr. Slater was Senior Vice President, Worldwide Policy at Pfizer, Inc. from May 2007 until June 2009. Dr. Slater was the Assistant Secretary for Health, United States Department of Health and Human Services from 2002 until 2003, and was the Acting Assistant Secretary for Health from 2001 until her confirmation by the United States Senate in 2002. Dr. Slater held senior management positions at Merck Research laboratories from 1983 to 2001, including Senior Vice President of External Policy, Vice President of Corporate Public Affairs, Senior Vice President of Clinical and Regulatory Development, Executive Director of Biochemistry and Molecular Biology, and Senior Director of Biochemical

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Endocrinology. Dr. Slater was trained in Internal Medicine and Cardiology at Massachusetts General Hospital, is board certified in Internal Medicine and Cardiology and is a Fellow of the American College of Cardiology. We believe that Dr. Slater s qualifications to sit on our board of directors include her extensive scientific and medical background, significant public company board experience, and years of service with pharmaceutical companies and governmental institutions.

Abdul-Wahab Umari, a director since November 2012, has been a managing partner of Pillar Investment Limited, a private investment firm, since 2003. Prior to joining Pillar, Mr. Umari was the Founder, Chairman and Chief Executive Officer of Transmog Inc. SAL, a telecommunications company headquartered in Lebanon from 1995 to 2001. From 1989 to 1993, Mr. Umari was a Lead Systems Engineer at Bechtel Power Corporation in Gaithersburg, Maryland. Mr. Umari has been a member of the external advisory board of the American University of Beirut since 2003 and he served on the advisory board of Foundation Henri Cartier-Bresson, a non-profit organization, from 1998 to 2008. Mr. Umari obtained an M.B.A. from New York University s Leonard N. Stern School of Business in 1995. Mr. Umari completed his undergraduate studies in Mechanical Engineering at Boston University in 1990. We believe that Mr. Umari s qualifications to sit on our board of directors include his knowledge of our industry, his financial experience and his role in various financings that we have conducted.

Family Relationships

There are no family relationships among any of our directors or executive officers.

Composition of the Board of Directors

Our board of directors currently consists of eight members. In accordance with the terms of our restated certificate of incorporation and bylaws, our board of directors is divided into three classes, class I, class II and class III, with each class serving staggered three-year terms. Upon the expiration of the term of a class of directors, directors in that class will be eligible to be elected for a new three-year term at the annual meeting of stockholders in the year in which their term expires. The members of the classes are divided as follows:

Class III: Sudhir Agrawal, Dr. Eve Slater and Youssef El Zein and their term expires at the annual meeting of stockholders to be held in 2013;

Class I: C. Keith Hartley, William S. Reardon and Abdul-Wahab Umari and their term expires at the annual meeting of stockholders to be held in 2014; and

Class II: Robert Karr and Malcolm MacCoss and their term expires at the annual meeting of stockholders to be held in 2015.

Our restated certificate of incorporation and amended and restated bylaws provide that the authorized number of directors may be changed only by resolution of the board of directors. Our restated certificate of incorporation and amended and restated bylaws also provide that our directors may be removed only for cause by the affirmative vote of the holders of at least two-thirds of the votes that all our stockholders would be entitled to cast in an annual election of directors, and that any vacancy on our board of directors, including a vacancy resulting from an enlargement of our board of directors, may be filled only by vote of a majority of our directors then in office.

In connection with our Series E preferred stock financing that closed in November 2012, we agreed that, at our 2013 annual meeting of stockholders, we would seek stockholder approval of an amendment to the Company s certificate of incorporation and bylaws to eliminate the classification of our board of directors.

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We have no formal policy regarding board diversity. Our priority in selection of board members is identification of members who will further the interests of our stockholders through his or her established record of professional accomplishment, the ability to contribute positively to the collaborative culture among board members, knowledge of our business and understanding of the competitive landscape.

Director Independence

Under applicable Nasdaq rules, a director will only qualify as an independent director if, in the opinion of our board of directors, that person does not have a relationship which would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. Our board of directors has determined that Mr. Hartley, Dr. Karr, Dr. MacCoss, Mr. Reardon, Dr. Slater, Mr. Umari and Mr. El Zein and all of the members of each of the audit, compensation and nominating and corporate governance committees are independent as defined under applicable Nasdaq rules including, in the case of all members of the audit committee, the independence requirements contemplated by Rule 10A-3 under the Securities Exchange Act of 1934, as amended.

Board Committees

Our board of directors has established three standing committees: audit, compensation and nominating and corporate governance. Each of these committees operates under a charter that has been approved by our board of directors. Our board of directors has also adopted corporate governance guidelines to assist our board in the exercise of its duties and responsibilities.

Audit Committee

Our audit committee s responsibilities include:

- appointing, approving the compensation of, and assessing the independence of our registered public accounting firm;
- overseeing the work of our registered public accounting firm, including through the receipt and consideration of certain reports from such accounting firm;
- reviewing and discussing with management and the registered public accounting firm our annual and quarterly financial statements and related disclosures;
- monitoring our internal control over financial reporting, disclosure controls and procedures and code of business conduct and ethics;
- discussing our risk management policies;
- establishing procedures for the receipt and retention of accounting related complaints and concerns;
- reviewing and approving related party transactions;
- meeting independently with our registered public accounting firm and management; and
- preparing the audit committee report required by SEC rules.

The current members of our audit committee are Mr. Reardon (Chairman), Mr. Hartley and Dr. Karr. Our board of directors has determined that all three members of the audit committee are audit committee financial experts within the meaning of SEC rules and regulations.

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Compensation Committee

Our compensation committee s responsibilities include:

- annually reviewing and approving corporate goals and objectives relevant to compensation for our executive officers;
- determining the compensation of our senior executives;
- overseeing the evaluation of our senior executives;
- overseeing and administering our cash and equity incentive plans;
- reviewing and making recommendations to the board of directors with respect to director compensation;
- reviewing and discussing annually with management the compensation discussion and analysis required by the SEC rules; and
- preparing the compensation committee report required by SEC rules.

The current members of our compensation committee are Dr. MacCoss (Chairman), Mr. El Zein, and Dr. Slater.

Nominating and Corporate Governance Committee

Our nominating and corporate governance committee s responsibilities include:

- identifying individuals qualified to become members of our board of directors;
- recommending to our board of directors the persons to be nominated for election as directors or to fill vacancies on our board of directors, and the persons to be appointed to each of the committees of the board of directors;
- reviewing and making recommendations to the board of directors with respect to management succession planning;
- developing and recommending to the board of directors corporate governance principles; and
- overseeing periodic evaluations of the board of directors.

The current members of our nominating and corporate governance committee are Mr. Hartley (Chairman), Mr. El Zein and Mr. Reardon.

Compensation Committee Interlocks and Insider Participation

Our compensation committee currently consists of Mr. El Zein, Dr. MacCoss and Dr. Slater. No member of our compensation committee was at any time during 2012, or was formerly, an officer or employee of ours. No member of our compensation committee engaged in any related person transaction involving our company during 2012 other than Mr. El Zein. See Certain Relationships and Related Person Transactions for information about the terms of the transaction we engaged in with affiliates of Mr. El Zein. None of our executive officers has served as a director or member of the compensation committee (or other committee serving the same function as the compensation committee) of any other entity, while an executive officer of that other entity served as a director or member of our compensation committee.

Code of Ethics and Code of Conduct

We have adopted a written code of business conduct and ethics that applies to our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing

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similar functions. We have posted a current copy of the Code of Business Conduct and Ethics in the Investors Corporate Governance section of our website, which is located at www.iderapharma.com. We intend to satisfy the disclosure requirements under Item 5.05 of Form 8-K regarding an amendment to, or waiver from, a provision of our code of business conduct and ethics by posting such information on our website at www.iderapharma.com.

Board Leadership Structure

Our board does not have a policy on whether the offices of chairman of the board and chief executive officer should be separate and, if they are to be separate, whether the chairman of the board should be selected from among the independent directors or should be an employee of the company. Our board believes that it should have the flexibility to make these determinations at any given point in time in the way that it believes best to provide appropriate leadership for our company at that time. The roles of chairman of the board and chief executive officer were held by the same person from August 1991 until February 2000. From February 2000 until September 2010, the positions of chairman of the board of directors and chief executive officer were separate. Since September 2010, the positions of chairman of the board and chief executive officer have both been held by Dr. Agrawal. Concurrent with the appointment of Dr. Agrawal as chairman, Mr. Reardon was appointed as lead independent director.

In September 2010, the nominating and corporate governance committee and the full board discussed whether to appoint a new independent chairman, to unify the chairman and chief executive officer positions and/or to appoint a lead independent director. The committee and the board recognized that the company s bylaws do not require that our chairman and chief executive officer positions be separate, that no single leadership model is right for all companies and at all times, and that depending on the circumstances, other leadership models, such as a combined chairman and chief executive officer, might be appropriate. The committee and the board also noted that pursuant to our corporate governance guidelines, if the chairman is not an independent director, the board may elect a lead director from its independent directors. In such case, the chairman and chief executive officer would consult periodically with the lead director on board matters and on issues facing our company. In addition, the lead director would serve as the principal liaison between the chairman of the board and the independent directors and would preside at any executive session of independent directors.

The nominating and corporate governance committee recommended, and the board approved, Dr. Agrawal, our chief executive officer, as chairman of the board and Mr. Reardon as lead independent director. The board believes that Dr. Agrawal s deep knowledge of our industry and our company, his scientific leadership of our company since 1990 and his strategic leadership of the company make him best suited to serve as both chairman and chief executive officer. At the same time, the board believes that the lead independent director function and its committees of independent directors provide the appropriate level of independent oversight. The board also believes that the lead independent director position includes responsibilities similar to those performed by a chairman of the board of directors who is not also the company s chief executive officer. The board believes that Mr. Reardon, as lead independent director, provides appropriate balance as a corporate governance matter and that the current structure is in the best interest of stockholders at this time.

Board s Role in Risk Oversight

Our board of directors, as a whole, has responsibility for risk oversight, with reviews of certain areas being conducted by relevant committees that report directly to the board of directors. The oversight responsibility of the board of directors and its committees is enabled by management reporting processes that are designed to provide visibility to the board of directors about the identification, assessment and management of critical risks and management s risk mitigation strategies. These areas of focus include competitive, economic, operational, financial (accounting, credit, liquidity and tax), legal, regulatory, compliance, health, safety, environmental, political and reputational risks. Our board of directors

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regularly reviews information regarding our strategy, operations, credit and liquidity, as well as the risks associated with each. Our compensation committee is responsible for overseeing risks relating to our executive compensation plans and arrangements. Our audit committee is responsible for overseeing financial risks and risks associated with related party transactions. Our nominating and corporate governance committee is responsible for overseeing risks associated with the independence of the board of directors. While each committee is responsible for evaluating certain risks and overseeing the management of such risks, our entire board of directors is regularly informed through committee reports about such risks.

Director Compensation

We use a combination of cash and equity-based compensation to attract and retain candidates to serve on our board of directors. We do not compensate directors who are also our employees for their service on our board of directors. As a result, Dr. Agrawal does not receive any compensation for his service on our board of directors, including any compensation he might otherwise receive for his service as chairman of the board of directors. We periodically review our cash and equity-based compensation for non-employee directors.

Under our director compensation program, we pay our non-employee directors retainers in cash. Each director receives a cash retainer for service on the board of directors and for service on each committee on which the director is a member. The chairmen of the board and of each committee receive higher retainers for such service. These fees are payable quarterly in arrears. The fees paid to non-employee directors for service on the board of directors and for service on each committee of the board of directors on which the director is a member are as follows:

	Member Annual Fee	Chairman Annual Fee
Board of Directors	$ 35,000	$
Audit Committee	$ 7,000	$ 15,000
Compensation Committee	$ 7,000	$ 15,000
Nomination and Corporate Governance Committee	$ 3,500	$ 7,500
Scientific Committee[1]	$ 7,000	$ 15,000
Service as Lead Director	$ 17,500	$

(1) This committee was eliminated as of January 1, 2013.

We also reimburse our directors for travel and other related expenses for attendance at meetings.

Our director compensation program includes a stock-for-fees policy, under which directors have the right to elect to receive common stock in lieu of cash fees. These shares of common stock are issued under our 2008 Stock Incentive Plan. The number of shares to be issued to participating directors is determined on a quarterly basis by dividing the cash fees to be paid through the issuance of common stock by the fair market value of our common stock, which is the closing price of our common stock, on the first business day of the quarter following the quarter in which the fees were earned. In 2012, Dr. MacCoss received 1,216 shares of our common stock in lieu of $1,425 in cash fees. No other director elected to receive common stock in lieu of cash fees during 2012.

Under our director compensation program, upon their initial election to the board of directors, new non-employee directors receive an initial option grant to purchase 30,000 shares, and all non-employee directors receive an annual option grant to purchase 20,000 shares. The annual grants are made on the date of the annual meeting of stockholders.

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These options vest quarterly over three years from the date of grant, subject to continued service as a director, and are granted under our 2008 Stock Incentive Plan. These options are granted with exercise prices equal to the fair market value of our common stock, which is the closing price of our common stock on the date of grant, and become immediately exercisable in full if there is a change in control of our company.

Under our retirement policy for non-employee members of the board, if a non-employee director is deemed to retire, then

- all outstanding options held by such director will automatically vest in full; and
- the period during which such director may exercise the options will be extended to the expiration of the option under the plan.

Under the policy, a member of the board of directors will be deemed to have retired if:

- the director resigns from the board or determines not to stand for re-election and has served as a director for more than 10 years; or
- the director does not stand for re-election or is not nominated for re-election due to the fact that he or she is or will be older than 75 at the end of such director s term.

The following table sets forth a summary of the compensation we paid to our non-employee directors who served on our board in 2012.

DIRECTOR COMPENSATION FOR 2012

Name	Fees Earned or Paid in Cash ($)	Option Awards ($)[1]	Total ($)
Youssef El Zein	$ 53,500	$ 9,882	$ 63,382
C. Keith Hartley	$ 49,500	$ 9,882	$ 59,382
Robert W. Karr	$ 49,000 [2]	$ 9,882	$ 58,882
Malcolm MacCoss	$ 57,000 [2] [3]	$ 9,882	$ 66,882
William S. Reardon	$ 71,000	$ 9,882	$ 80,882
Eve E. Slater	$ 49,000 [2]	$ 9,882	$ 58,882
Abdul-Wahab Umari[4]	$ 8,750	$ 10,770	$ 19,520

(1) These amounts represent the aggregate grant date fair value of option awards made to each listed director in 2012 as computed in accordance with Financial Accounting Standards Board Accounting Standards Codification Topic 718, Stock Compensation (ASC 718). These amounts do not represent the actual amounts paid to or realized by the directors during 2012. See Note 2(j) to the financial statements in this prospectus regarding assumptions we made in determining the fair value of option awards. As of December 31, 2012, our non-employee directors held options to purchase shares of our common stock as follows: Mr. El Zein: 104,752; Mr. Hartley: 107,252; Dr. Karr: 185,375; Dr. MacCoss: 66,000; Mr. Reardon: 107,252; Dr. Slater: 56,000; and Mr. Umari: 30,000.

(2) These amounts include cash meeting fees for service on our scientific committee, which was eliminated as of January 1, 2013.

(3) Includes cash meeting fees of $1,425 in lieu of which Dr. MacCoss elected to receive 1,216 shares of our common stock.

(4) Mr. Umari joined our board of directors in November 2012.

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EXECUTIVE COMPENSATION

Compensation Discussion and Analysis

Executive Summary

The compensation committee of our board of directors is responsible for establishing compensation policies with respect to our executive officers, including our chief executive officer and our other executive officers who are listed in the Summary Compensation table below and who we refer to as named executive officers. Our compensation committee makes compensation decisions relating to our executive officers after consultation with our board of directors.

This section discusses the principles underlying our executive compensation policies and decisions and the most important factors relevant to an analysis of these policies and decisions. It provides qualitative information regarding the manner and context in which compensation is awarded to and earned by our named executive officers. As further discussed in this section, our compensation and benefit programs help us attract, retain and motivate individuals who will maximize our business results by working to meet or exceed established company or individual objectives. In addition, we reward our executive officers for meeting certain developmental milestones, such as completing advancements in product candidate development, strategic partnerships or other financial transactions that add to our capital resources or create value for stockholders. We also decline to increase salaries, make bonus awards or issue equity compensation in the event that the company s performance falls below expectations or developmental milestones are not met.

Compensation Philosophy and Objectives

The compensation committee seeks to achieve the following broad goals in connection with our executive compensation programs and decisions regarding individual compensation:

- attract, retain and motivate the best possible executive talent;
- ensure executive compensation is aligned with our corporate strategies and business objectives, including our short-term operating goals and longer-term strategic objectives;
- promote the achievement of key strategic and financial performance measures by linking short- and long-term cash and equity incentives to the achievement of measurable corporate and individual performance goals; and
- align executives incentives with the creation of stockholder value.

To achieve these objectives, the compensation committee evaluates our executive compensation program with the goal of setting compensation at levels the committee believes are competitive with those of other companies in our industry and our region that compete with us for executive talent. In addition, our executive compensation program ties a substantial portion of each executive officer s overall compensation to key strategic, financial, research and operational goals such as clinical trial and regulatory progress, intellectual property portfolio development, establishment and maintenance of key strategic relationships and exploration of business development opportunities, as well as our financial and operational performance. We also provide a portion of our executive compensation in the form of stock options or other stock awards that vest over time from the time of the grant of the option awards and from the time of achievement of performance milestones, which we believe helps to retain our executives and align their interests with those of our stockholders by allowing them to participate in the longer term success of our company as reflected in stock price appreciation.

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During 2011 and 2012, our compensation committee engaged Radford Surveys + Consulting, or Radford, to provide advice and recommendations regarding the amount and form of executive compensation, equity incentive programs and compensation generally. Radford did not provide any services to our company during 2011 or 2012 other than pursuant to its engagement by the compensation committee.

As part of its engagement in November 2010, Radford provided data on executive compensation from a peer group of publicly traded companies developed by the committee with Radford in November 2010. The committee selected these companies at that time in the belief that these companies had business life cycles, growth profiles, market capitalizations, products, research and development investment levels and number/capabilities of employees that were then comparable to ours. In working with Radford to develop the peer group, the committee and Radford generally targeted companies ranging from one-third to three times Idera Pharmaceuticals size in terms of number of employees and market capitalization, with lead drug candidates typically in Phase 2 or Phase 3. The companies included in the peer group were:

Achillion Pharmaceuticals, Inc.	Anadys Pharmaceuticals, Inc.	ARIAD Pharmaceuticals, Inc.
ArQule, Inc.	AVI BioPharma, Inc.	BioCryst Pharmaceuticals, Inc.
Celldex Therapeutics, Inc.	Cyclacel Pharmaceuticals, Inc.	Cytokinetics, Incorporated
CytRx Corp.	Dynavax Technologies Corp.	GenVec, Inc.
Infinity Pharmaceuticals, Inc.	Micromet, Inc.	Myrexis, Inc.
Novavax, Inc.	Peregrine Pharmaceuticals, Inc.	Sangamo BioSciences, Inc.
Synta Pharmaceuticals Corp.		

In November 2010, Radford also provided compensation survey data from the Radford Global Life Science Survey, a survey of U.S. biotech companies. Our compensation committee reviews a blend of the peer group and survey data in its determinations regarding executive compensation. We refer to this blended data as the market compensation data.

Our compensation committee considered this blended data in December 2010 in connection with the establishment of base salaries for our named executive officers in 2011 and in December 2011 in connection with its determination of option grants for our named executive officers in December 2011 and January 2012.

Our compensation committee intends that if the company achieves its goals and the executive performs at the level expected, then the executive should have the opportunity to receive compensation that is competitive with industry norms. Accordingly, our compensation committee generally targets overall compensation for executives towards the 50th percentile of the market compensation data. However, the compensation committee from time to time targets a different percentile for individual elements of compensation or specific individuals based on experience, performance levels and potential performance levels of the executive and changes in duties and responsibilities.

In order to accomplish its objectives consistent with its philosophy for executive compensation, our compensation committee typically takes the following actions annually:

- reviews executive officer performance;
- reviews all components of executive officer compensation, including base salary, cash bonuses, equity compensation, the dollar value to the executive and cost to us of all health and life insurance and other employee benefits and the estimated payout obligations under severance and change in control scenarios;

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seeks input from our chief executive officer on the performance of all other executive officers;

consults with an independent compensation consultant;

holds executive sessions (without our management present);

reviews information regarding the performance and executive compensation of other companies; and

reviews all of the foregoing with the board of directors.

Under our annual performance review program for our executives, annual performance goals are determined for our company as a whole and for each executive individually. Annual corporate goals are proposed by management and approved by the compensation committee. These corporate goals target the achievement of specific research, clinical, operational and financial milestones.

Annual individual goals focus on contributions that facilitate the achievement of the corporate goals and are closely aligned with the corporate goals. Individual goals are proposed by each executive and approved by the chief executive officer. Typically, the compensation committee sets the chief executive officer s goals and reviews and discusses with the chief executive officer the goals for all other executive officers. The individual performance goals of each named executive officer consist primarily of the key objectives and goals from our annual business plan that relate to the functional area for which the named executive officer is responsible. The individual performance goals for the chief executive officer are largely coextensive with the corporate goals.

Generally, at the end of each year, the compensation committee evaluates corporate and individual performance. The compensation committee considers the achievement of the corporate goals and individual performance as factors in determining annual salary increases, annual bonuses and annual stock option awards granted to our executives, although because of their high level of responsibility within our company, the determination of annual bonuses for our executive officers, including our named executive officers, is heavily weighted on our corporate performance. In assessing corporate performance, the committee evaluates corporate performance alongside the approved corporate goals for the year and also evaluates other aspects of corporate performance, including achievements and progress made by the company outside of the corporate goals. In assessing individual performance, the compensation committee evaluates corporate performance in the areas of each officer s responsibility and relies on the chief executive officer s evaluation of each officer. The chief executive officer prepares evaluations of the other executives and in doing so compares individual performance to the individual performance goals. The chief executive officer recommends annual executive salary increases, annual stock option awards and bonuses, if any, which are then reviewed and approved by the compensation committee. In the case of the chief executive officer, the compensation committee conducts his individual performance evaluation. During this process, the compensation committee consults with its compensation consultant and, prior to approving compensation for executive officers, consults with the board of directors.

For all executives, annual base salary increases, if any, are implemented during the first calendar quarter of the year. Annual stock option awards and bonuses, if any, are granted as determined by the compensation committee, typically in the fourth quarter of the applicable year.

The compensation committee does not plan to approve annual equity grants to employees, including named executive officers, at a time when our company is in possession of material non-public information. We do not award stock options to named executive officers concurrently with the release of material non-public information.

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In light of continued uncertainties with respect to our clinical development plan, results of our ongoing clinical trials and our financial condition, in November 2012 the compensation committee determined not to conduct the compensation and performance review for our named executive officers that it generally conducts at the end of the year. Instead, the compensation committee agreed to defer such review until the results of our phase 2 clinical trial of IMO-3100 and our phase 1 clinical trial of IMO-8400 were known and we had sought and obtained additional financing.

Elements of Executive Compensation

The compensation program for our executives generally consists of five elements based upon the foregoing objectives:

- base salary;
- annual cash bonuses;
- stock option awards;
- health care and life insurance and other employee benefits; and
- severance and change in control benefits.

The value of our variable, performance-based compensation is split between short-term compensation in the form of a cash bonus and long-term compensation in the form of stock option awards that vest over time from the time of the grant of the option awards and from the time of achievement of performance milestones. The annual cash bonus is intended to provide an incentive to our executives to achieve near-term operational objectives. The stock option awards provide an incentive for our executives to achieve longer-term strategic business goals, which should lead to higher stock prices and increased stockholder value. We have not had any formal or informal policy or target for allocating compensation between long-term and short-term compensation, between cash and non-cash compensation or among the different forms of non-cash compensation. Instead, the compensation committee, after reviewing industry information and our cash resources, determines subjectively what it believes to be the appropriate level and mix of the various compensation components.

We do not have any defined benefit pension plans or any non-qualified deferred compensation plans.

We entered into a multi-year employment agreement with our chief executive officer, Dr. Agrawal, in October 2005, which was amended in 2008 to ensure compliance with Section 409A of the Internal Revenue Code of 1986, as amended. In August 2011, we entered into an amendment to our employment offer letter with our senior vice president of operations and chief financial officer, Mr. Arcudi, and in December 2011, we entered into an amended and restated employment letter with Mr. Arcudi. These agreements are described below under the caption Agreements with our Named Executive Officers.

Base Salary

In establishing base salaries for our executive officers, our compensation committee typically reviews the market compensation data presented by Radford, considers historic salary levels of the executive officer and the nature of the executive officer s responsibilities, compares the executive officer s base salary with those of our other executives and considers the executive officer s performance. The compensation committee also typically considers the challenges involved in hiring and retaining managerial personnel and scientific personnel with extensive experience in the chemistry of DNA and RNA and its application to toll-like receptors because of the new nature of this technology, general economic conditions and our financial condition. In assessing the executive officer s performance, the compensation committee considers the executive officer s role in the achievement of the annual corporate goals, as well as the performance evaluation prepared by our chief executive officer with respect to such executive officer. The compensation

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committee considers such evaluation as a means of informing the committee s decision as to whether the executive officer s performance was generally consistent with the company s expectations.

In November 2011, the compensation committee set base salaries for 2012. In light of setbacks during 2011 regarding our research and development programs, our board s adoption of new strategic goals for the company in September 2011 and our cash resources, the committee determined that annual base salaries for the named executive officers would not be increased for 2012 and would remain at 2011 levels, except that Mr. Arcudi s base salary was increased by $5,000 as a result of his appointment in April 2011 as our senior vice president of operations. As a result of its deferral of its annual compensation and performance review, the compensation committee has not made any determinations with respect to base salaries for 2013.

Cash Bonuses

The compensation committee generally structures cash bonuses by linking them to the achievement of the annual corporate goals, corporate performance outside of the corporate goals and individual performance. The amount of the bonus paid, if any, varies among the executive officers depending on individual performance and their contribution to the achievement of our annual corporate goals and corporate performance generally. The compensation committee reviews and assesses corporate goals and individual performance by executive officers and considers the reasons why specific goals have been achieved or have not been achieved. While achievement against the applicable corporate goals is given substantial weight in connection with the determination of annual bonus, consideration is also given to an evaluation of our named executive officers individual performance based on analysis of achievement of individual performance goals as well as the following subjective criteria:

- leadership,
- management,
- judgment and decision making skills,
- results orientation and
- communication.

No formula is applied to the analysis of the achievement of corporate goals or individual goals by executive officers for purposes of the committee s determination of annual cash bonuses.

The compensation committee did not set performance goals for 2012 given the fluidity of our business plans and in light of the uncertainties with respect to our clinical development plan, results of our ongoing clinical trials and our financial condition. Instead, the compensation committee decided it would assess individual and corporate achievements as part of its annual compensation and performance review at the end of 2012. As a result of its deferral of its annual compensation and performance review, the compensation committee has not made any determination with respect to 2012 cash bonuses for our named executive officers.

Equity Compensation

Our equity award program is the primary vehicle for offering long-term incentives to our executive officers, including our named executive officers. We believe that equity awards provide our executives with a strong link to our long-term performance, create an ownership culture and help to align the interest of our named executive officers and our stockholders. Equity grants are intended as both a reward for contributing to the long-term success of our company and an incentive for future performance. The vesting feature of our equity awards is intended to further our goal of executive retention by providing an incentive to our named executive officers to remain in our employ during the

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vesting period. In determining the size of equity awards to our executives, our compensation committee considers the achievement of our annual corporate goals, individual performance, the applicable executive officer s previous awards, including the exercise price of such previous awards, the recommendations of management and the market compensation data presented by Radford.

Our equity awards have typically taken the form of stock options. However, under the terms of our stock incentive plan, we may grant equity awards other than stock options, such as restricted stock awards, stock appreciation rights and restricted stock units.

The compensation committee approves all equity awards to our executive officers. The compensation committee reviews all components of the executive officer s compensation when determining annual equity awards to ensure that an executive officer s total compensation conforms to our overall philosophy and objectives.

The compensation committee typically makes initial stock option awards to new executive officers upon commencement of their employment and annual stock option awards thereafter. Equity awards to our named executive officers are typically granted annually in conjunction with the annual performance review. This review typically occurs at the regularly scheduled meeting of the compensation committee held in the fourth quarter of each year. In general, our option awards vest over four years in 16 equal quarterly installments. The exercise price of stock options equals the fair market value of our common stock on the date of grant, which is typically equal to the closing price of our common stock on Nasdaq on the date of grant.

In November 2011, the compensation committee granted annual option awards to our named executive officers, effective December 5, 2011. In light of setbacks during 2011 regarding our research and development programs and our board s adoption of new strategic goals in September 2011, as well as the committee s determination not to increase salaries for 2012 or grant bonuses for 2011 to our named executive officers, the committee structured these options to retain our named executive officers and to align the interests of our executive officers with the interests of our stockholders in the value creation that could arise beginning in 2012 from the achievement of our new strategic goals. As a result, the committee increased the size of the annual option awards, specifically targeting the 75th percentile of the market compensation data, and linked a portion of the vesting of the option awards to the achievement of specified milestones with the option awards having the following time based vesting and performance vesting components:

- 25% of the shares subject to the option become exercisable over four years in 16 equal quarterly installments with the first installment vesting February 28, 2012;
- 25% of the shares subject to the option become exercisable on November 28, 2012;
- 50% of the shares subject to the option become exercisable upon the achievement of specified performance milestones with 25% of the number of shares corresponding to a particular performance milestone vesting upon achievement of the performance milestone and the balance of such shares vesting in three equal installments on the first, second and third anniversaries of the achievement of such milestone; and
- 100% of the unexercisable shares subject to the option become exercisable if, upon or within 12 months after a change in control of the company, the named executive officer s employment is terminated by us without cause or the named executive officer terminates his employment for good reason.

The compensation committee adopted this vesting structure in order to address the following components of incentive compensation:

- our typical annual long-term incentive grant, vesting quarterly over four years;

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a short-term retention grant, vesting in full upon the first anniversary of the grant, which the committee adopted based on the need for executive retention and in recognition that our officers had not received salary increases for 2012 or cash bonuses for 2011; and

a performance grant, vesting based on the achievement of specified performance milestones modeled on our strategic goals adopted by our board in September 2011.

The performance-based portion of the option awards was tied to nine specified performance milestones. These milestones relate to clinical trials and regulatory processes for our lead compounds, business development transactions and corporate financing. Each milestone must be achieved by a specified date ranging from March 31, 2012 to June 30, 2013 in order to be achieved. The committee designed these milestones to be challenging milestones that the committee believed could be reasonably achieved within the specified timing. Each milestone was weighted and assigned a percentage by the committee such that the achievement of a particular milestone will result in the commencement of vesting of that percentage of the shares subject to the performance-based portion of the option. The total weighting of the milestones equals 125% with the effect that a named executive officer can vest with respect to all of the shares subject to the performance-based portion of the option even if one or more milestones are not achieved. However, even if milestones with aggregate weighting of more than 100% are achieved, the named executive officer will not be entitled to more than 100% of the shares subject to the performance-based portion of the option.

In determining the size of the option awards, the compensation committee reviewed the market compensation data presented by Radford regarding annual option grants on the basis of percentage ownership (as opposed to market value), specifically targeting the 75th percentile of the market compensation data. The committee also considered corporate and individual performance during 2011, the value of options then held by executive officers and our chief executive officer s recommendations with respect to the awards to be made to the other executive officers. On this basis, the committee granted options to each of our named executive officer, effective December 2011, including an option to Dr. Agrawal to purchase 500,000 shares. In addition to these options, the committee granted Dr. Agrawal a similar performance option in January 2012 to purchase 35,000 shares on the same terms.

As a result of its deferral of its annual compensation and performance review, the compensation committee has not made any determination with respect to annual options awards or other equity awards for 2012.

Benefits and Other Compensation

We maintain broad-based benefits that are provided to all employees, including health and dental insurance, life and disability insurance and a 401(k) plan. During 2012, consistent with our prior practice, we matched 50% of the employee contributions to our 401(k) plan up to a maximum of 6% of the participating employee s annual salary, resulting in a maximum company match of 3% of the participating employee s annual salary, and subject to certain additional statutory dollar limitations. Named executive officers are eligible to participate in all of our employee benefit plans, in each case on the same basis as other employees and subject to any limitations in such plans. Each of our named executive officers contributed to our 401(k) plan and their contributions were matched by us.

Our board of directors has adopted a retirement policy to address the treatment of options in the event of an employee s retirement that applies to all employees, including all officers. For purposes of this policy, an employee will be deemed to have retired if the employee terminates his or her employment with us, has been an employee of ours for more than 10 years and is older than 65 upon termination of employment. Under the policy, if an employee retires, then

all outstanding options held by the employee will automatically vest in full; and

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the period during which the employee may exercise the options will be extended to the expiration of the term of the option under the plan.

Our board adopted this policy for our employees in recognition of the importance of stock options to the compensation of employees and in order that our employees get the full benefit of the options held by them if he or she retires after making 10 years of contributions to the company.

We occasionally pay relocation expenses for newly hired executive officers who we require to relocate as a condition to their employment by us. We also occasionally pay local housing expenses and travel costs for executives who maintain a primary residence outside of a reasonable daily commuting range to our headquarters. We believe that these are typical benefits offered by comparable companies to executives who are asked to relocate and that we would be at a competitive disadvantage in trying to attract executives who would need to relocate in order to work for us if we did not offer such assistance. In 2012, Dr. Sullivan received reimbursement for local housing expenses because Dr. Sullivan maintains a primary residence outside of a reasonable daily commuting range to our headquarters.

Our named executive officers also may participate in our employee stock purchase plan, which is generally available to all employees who work over 20 hours per week, including our executive officers so long as they own less than 5% of our common stock, including for this purpose vested and unvested stock options. Due to his stock ownership, Dr. Agrawal is not eligible to participate in the employee stock purchase plan. None of our named executive officers participated in the employee stock purchase plan during 2012.

Severance and Change-in-Control Benefits

We currently have an employment agreement with Dr. Agrawal and an employment letter agreement with Mr. Arcudi under which we agreed to provide benefits in the event of the termination of their employment under specified circumstances. We have provided more detailed information about these benefits, along with estimates of their value under various circumstances, under the captions Agreements with our Named Executive Officers and Potential Payments Upon Termination or Change in Control below.

In December 2011, we entered into an amended and restated employment letter with Mr. Arcudi. In connection with this amendment and restatement, we increased the period of time following termination of employment for which he is entitled to receive severance and healthcare, disability and life insurance benefits from three months to 12 months in connection with a termination by us without cause at any time, and provided severance and healthcare, disability and life insurance benefits for 12 months in connection with termination by Mr. Arcudi for good reason upon or within 12 months after a change of control. The committee agreed to these provisions based in part on market compensation data from Radford.

We believe providing severance and/or change-in-control benefits as a component of our compensation structure that can help us compete for executive talent and attract and retain highly talented executive officers whose contributions are critical to our long-term success. After reviewing the practices of companies in general industry surveys provided by our independent compensation consultant, we believe that our severance and change-in-control benefits are appropriate.

Deductibility of Executive Compensation/Internal Revenue Code Section 162(m)

Section 162(m) of the Internal Revenue Code generally disallows a tax deduction to public companies for certain compensation in excess of $1 million per person paid to our chief executive officer and the three other officers (other than our chief executive officer and chief financial officer) whose compensation is required to be disclosed under the Securities Exchange Act of 1934, as amended by reason of being among our three other most highly compensated officers. Certain compensation, including qualified

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performance-based compensation, will not be subject to the deduction limit if specified requirements are met. The compensation committee reserves the right to use its judgment to authorize compensation payments that may be subject to the limit when the compensation committee believes such payments are appropriate and in the best interests of our company and our stockholders. There can be no assurance that compensation attributable to awards granted under our plans will be treated as qualified performance-based compensation under Section 162(m).

Agreements with our Named Executive Officers

We have entered into agreements with certain of our named executive officers, as discussed below, that provide benefits to the executives upon their termination of employment in certain circumstances or under which we have agreed to specific compensation elements. Other than as discussed below, our named executive officers do not have employment agreements with us, other than standard employee confidentiality agreements, and are at-will employees.

Sudhir Agrawal, D. Phil.

We are a party to an employment agreement, as amended, with Dr. Agrawal, our chairman, president and chief executive officer. The agreement had an initial three-year term that is automatically extended for an additional year on October 19th of each year during the term of the agreement unless either party provides prior written notice to the other that the term of the agreement is not to be extended. As a result, on each October 19th, the term of the agreement, as extended will be three years. On October 19, 2012, the term was extended from October 19, 2014 to October 19, 2015.

Under the agreement, Dr. Agrawal is currently entitled to receive an annual base salary of $549,000 or such higher amount as our compensation committee or our board of directors may determine. In addition, under the agreement, Dr. Agrawal is eligible to receive an annual bonus in an amount equal to between 20% and 70% of his base salary, as determined by the compensation committee or our board of directors.

If we terminate Dr. Agrawal s employment without cause or if he terminates his employment for good reason, as such terms are defined in the agreement, we have agreed to:

- continue to pay Dr. Agrawal his base salary as severance for a period ending on the earlier of the final day of the term of the agreement in effect immediately prior to such termination and the second anniversary of his termination date;
- pay Dr. Agrawal a lump sum cash payment equal to the pro rata portion of the annual bonus that he earned in the year preceding the year in which his termination occurs;
- continue to provide Dr. Agrawal with healthcare, disability and life insurance benefits for a period ending on the earlier of the final day of the term of the agreement in effect immediately prior to the termination date and the second anniversary of the termination date, except to the extent another employer provides Dr. Agrawal with comparable benefits;
- accelerate the vesting of any stock options or other equity incentive awards previously granted to Dr. Agrawal as of the termination date to the extent such options or equity incentive awards would have vested had he continued to be an employee until the final day of the term of the agreement in effect immediately prior to such termination; and
- permit Dr. Agrawal to exercise any vested stock options until the second anniversary of the termination date.

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If Dr. Agrawal s employment is terminated by him for good reason or by us without cause in connection with, or within one year after, a change in control, we have agreed to provide Dr. Agrawal with all of the items listed above, except that in lieu of the severance amount described above, we will pay Dr. Agrawal a lump sum cash payment equal to his base salary multiplied by the lesser of the aggregate number of years or portion thereof remaining in his employment term and two years. We have also agreed that if we execute an agreement that provides for our company to be acquired or liquidated, or otherwise upon a change in control, all unvested stock options held by Dr. Agrawal will vest in full.

If required by Section 409A of the Internal Revenue Code, the payments we are required to make to Dr. Agrawal for the first six months following termination of his employment under his agreement will be made as a lump sum on the date that is six months and one day following such termination.

Our employment agreement with Dr. Agrawal provides that if all or a portion of the payments made under the agreement are subject to the excise tax imposed by Section 4999 of the Code, or a similar state tax or assessment, we will pay him an amount necessary to place him in the same after-tax position as he would have been had no excise tax or assessment been imposed. Any amounts paid pursuant to the preceding sentence will also be increased to the extent necessary to pay income and excise tax on those additional amounts.

In the event of Dr. Agrawal s death or the termination of his employment due to disability, we have agreed to pay Dr. Agrawal or his beneficiary a lump sum cash payment equal to the pro rata portion of the annual bonus that he earned in the year preceding his death or termination due to disability. Additionally, any stock options or other equity incentive awards previously granted to Dr. Agrawal and held by him on the date of his death or termination due to disability will vest as of such date to the extent such options or equity incentive awards would have vested had he continued to be an employee until the final day of the term of the employment agreement in effect immediately prior to his death or termination due to disability. Dr. Agrawal or his beneficiary will be permitted to exercise such stock options until the second anniversary of his death or termination of employment due to disability.

Dr. Agrawal has agreed that during his employment with us and for a one-year period thereafter, he will not hire or attempt to hire any of our employees or compete with us.

Louis J. Arcudi, III

We are a party to an employment letter with Mr. Arcudi, our Senior Vice President of Operations, Chief Financial Officer, Treasurer and Secretary. If we terminate Mr. Arcudi s employment without cause at any time, or if he terminates his employment for good reason upon a change in control or within one year after a change of control, as such terms are defined in the agreement, we have agreed to:

- continue to pay Mr. Arcudi his base salary as severance for twelve months following such termination payable in accordance with our then current payroll practices; and
- continue to provide Mr. Arcudi with healthcare, disability and life insurance benefits for twelve months following such termination, except to the extent another employer provides Mr. Arcudi with comparable benefits.

Our agreement to pay severance and benefits is subject to Mr. Arcudi s entering into a separation and release agreement.

If required by Section 409A of the Internal Revenue Code, the payments we are required to make to Mr. Arcudi in the first six months following the termination of his employment under his agreement will be made as a lump sum on the date that is six months and one day following such termination.

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Summary Compensation Table

The table below summarizes compensation paid to or earned by our named executive officers. Our named executive officers have no stock awards, defined benefit pension or non-qualified compensation to report for 2012, 2011 and 2010.

Summary Compensation Table for Fiscal Year 2012

Name and Principal Position	Year	Salary ($)	Option Awards ($)[1]	Non-Equity Plan Compensation[2]	All Other Compensation ($)[3]	Total ($)
Sudhir Agrawal, D. Phil.,	2012	$ 549,000	$ 24,019		$ 75,447	$ 648,466
Chairman, President and	2011	$ 549,000	$ 334,500		$ 30,606	$ 914,156
Chief Executive Officer	2010	$ 530,000	$ 362,795	$ 260,000	$ 29,710	$ 1,182,505
Louis J. Arcudi, III	2012	$ 315,000			$ 43,523	$ 358,523
Senior Vice President of	2011	$ 310,000	$ 133,820		$ 30,135	$ 473,955
Operations, Chief Financial Officer, Treasurer and Secretary	2010	$ 290,000	$ 148,476	$ 55,000	$ 29,092	$ 522,568
Timothy M. Sullivan, Ph. D.	2012	$ 299,000			$ 49,877	$ 348,877
Vice President,	2011	$ 299,000	$ 100,365		$ 46,978	$ 446,343
Development Programs and Alliance Management	2010	$ 289,120	$ 113,247	$ 51,000	$ 45,893	$ 499,260
Robert D. Arbeit, M.D.	2012	$ 300,000			$ 11,968	$ 311,968
Vice President,	2011	$ 300,000	$ 100,365		$ 11,913	$ 412,278
Clinical Development	2010	$ 290,100	$ 112,634	$ 51,000	$ 11,766	$ 465,500

(1) Represents the aggregate grant date fair value of options granted to each of the named executive officers as computed in accordance with ASC 718. These amounts do not represent the actual amounts paid to or realized by the named executive officers. See Note 2(j) to the financial statements in this prospectus regarding assumptions we made in determining the fair value of option awards.

(2) Represents bonuses paid under our cash bonus program based upon the achievement of corporate goals and the specified bonus target for each named executive officer.

(3) All Other Compensation for 2012 for each of the named executive officers includes the following:

	Dr. Agrawal	Mr. Arcudi	Dr. Sullivan	Dr. Arbeit
Premiums paid by us for all insurance plans	$ 22,681	$ 22,192	$ 25,440	$ 4,468
Company match on 401(k)	$ 7,500	$ 7,500	$ 7,500	$ 7,500
Reimbursement for housing expenses			$ 16,937	
Unused vacation accrual	$ 45,266	$ 13,831		

See Compensation Discussion and Analysis above for a discussion of annual cash bonuses and the amount of salary and bonus in proportion to total compensation.

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Grants of Plan-Based Awards

The following table sets forth information regarding stock options granted to Dr. Agrawal during 2012. There were no other stock options and no non-equity incentive plan awards granted during 2012.

Grants of Plan-Based Awards for Fiscal Year 2012

Name	Grant Date	All Other Option Awards: Number of Securities Underlying Options (#)[1]	Exercise or Base Price of Option Awards ($/Sh)	Grant Date Fair Value of Option Awards ($)[2]
Sudhir Agrawal, D. Phil.	1/3/2012	35,000	1.16	$ 24,019
Louis J. Arcudi, III				
Timothy M. Sullivan, Ph.D.				
Robert D. Arbeit, M.D.				

(1) The stock options granted to each of the named executive officers listed above were granted pursuant to our 2008 Stock Incentive Plan. The term of these options is ten years. The stock options vest based on a combination of performance based vesting and time based vesting. See Compensation Discussion and Analysis Elements of Compensation Equity Compensation for a full description of the vesting terms for these options. See Agreements with our Named Executive Officers for further information about acceleration of vesting of Dr. Agrawal s options in the event of the termination of his employment and/or a change of control.

(2) Represents the aggregate grant date fair value of option awards made to named executive officers in 2012 as computed in accordance with ASC 718. These amounts do not represent the actual amounts paid to or realized by the named executive officers during 2012. See Note 2(j) to the financial statements in this prospectus regarding assumptions we made in determining the fair value of option awards.

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Outstanding Equity Awards At Fiscal Year-End

The following table sets forth information regarding the outstanding stock options held by our named executive officers as of December 31, 2012. None of our named executive officers held shares of unvested restricted stock as of December 31, 2012.

Outstanding Equity Awards At Fiscal Year-End for 2012

Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price ($)	Option Expiration Date
Sudhir Agrawal, D. Phil.[1]	31,250		$ 4.16	11/30/2014
	125,000		$ 4.48	5/12/2015
	50,000		$ 5.76	6/1/2015
	37,500		$ 4.24	12/15/2015
	125,000		$ 5.10	12/14/2016
	62,500		$ 7.05	6/25/2017
	125,000		$ 13.28	1/2/2018
	200,000		$ 8.70	12/16/2018
	225,000 [2]	75,000 [2]	$ 5.24	12/23/2019
	115,500 [3]	115,500 [3]	$ 2.74	12/27/2020
	184,999 [4]	253,751 [4]	$ 1.157	11/28/2021
	12,950 [4]	17,764 [4]	$ 1.16	11/28/2021
Louis J. Arcudi, III	80,000		$ 12.25	12/3/2017
	40,000		$ 8.70	12/16/2018
	82,500 [2]	27,500 [2]	$ 5.24	12/23/2019
	47,500 [3]	47,500 [3]	$ 2.74	12/27/2020
	74,000 [4]	101,500 [4]	$ 1.157	11/28/2021
Timothy M. Sullivan, Ph.D.	5,625		$ 8.96	12/16/2013
	58,750		$ 4.16	11/30/2014
	12,500		$ 4.24	12/15/2015
	20,000		$ 5.10	12/14/2016
	25,000		$ 13.28	1/2/2018
	35,000		$ 8.70	12/16/2018
	52,500 [2]	17,500 [2]	$ 5.24	12/23/2019
	36,250 [3]	36,250 [3]	$ 2.74	12/27/2020
	55,499 [4]	76,126 [4]	$ 1.157	11/28/2021
Robert D. Arbeit, M.D.	32,500 [5]	7,500 [5]	$ 6.43	8/3/2019
	12,750 [2]	4,250 [2]	$ 5.24	12/23/2019
	36,250 [3]	36,250 [3]	$ 2.74	12/27/2020
	55,499 [4]	76,126 [4]	$ 1.157	11/28/2021

(1) See Agreements with our Named Executive Officers for further information about acceleration of vesting of Dr. Agrawal s options in the event of the termination of his employment and/or a change of control.

(2) 6.25% of the shares subject to this option vest quarterly from the date of grant until December 23, 2013 when all shares will be vested. The total number of shares subject to the option equals the sum of the figures in the exercisable and unexercisable columns.

(3) 6.25% of the shares subject to this option vest quarterly from the date of grant until December 27, 2014 when all shares will be vested. The total number of shares subject to the option equals the sum of the figures in the exercisable and unexercisable columns.

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(4) The shares subject to this option vest as follows:

25% of the shares vest over four years in 16 equal quarterly installments with the first installment vesting February 28, 2012;

25% of the shares vested on November 28, 2012;

50% of the shares vest upon the achievement of specified performance milestones with 25% of the number of shares corresponding to a particular performance milestone vesting upon achievement of the performance milestone and the balance of such shares vesting in three equal installments on the first, second and third anniversaries of the achievement of such milestone; and

100% of the unexercisable shares subject to the option vest if, upon or within 12 months after a change in control of the company, the named executive officer s employment is terminated by us without cause or the named executive officer terminates his employment for good reason.

(5) 6.25% of the shares subject to this option vest quarterly from the date of grant until August 3, 2013 when all shares will be vested. The total number of shares subject to the option equals the sum of the figures in the exercisable and unexercisable columns.

Option Exercises and Stock Vested

None of our named executive officers exercised any options during the year ended December 31, 2012.

Potential Payments under Termination or Change in Control

We have an employment agreement with Dr. Agrawal that provides for severance benefits and acceleration of vesting of equity awards following a termination of his employment with our company. Additionally, Mr. Arcudi s employment offer letter provides for severance benefits in certain circumstances. These agreements are described above under the caption Agreements with our Named Executive Officers. Neither Dr. Sullivan nor Dr. Arbeit is entitled to any severance benefits following a termination of his employment with our company. Each of our named executive officers is entitled to acceleration of vesting in connection with a termination of employment upon or within one year after a change in control for the options the compensation committee granted in November 2011, effective December 5, 2011 and January 3, 2012.

Termination of Employment Not in Connection with or following a Change in Control

The following table sets forth the estimated potential benefits that our named executive officers would be entitled to receive upon their termination of employment with our company (other than a termination in connection with or following a change in control of the company) if the named executive officers employment terminated on December 31, 2012. This table represents estimates only and does not necessarily reflect the actual amounts that would be paid to our named executive officers, which would only be known at the time that they become eligible for payment following their termination.

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Termination of Employment Not In Connection With or Following Change in Control

Name	Severance Payments ($)	Bonus Amount ($)	Value of Accelerated Vesting of Stock Options ($)[3]	Value of Continuation of Benefits ($)[1]	Total ($)
Sudhir Agrawal, D. Phil.[2]	$ 1,098,000			$ 47,507	$ 1,145,507
Louis J. Arcudi, III[4]	$ 315,000			$ 23,226	$ 338,226
Timothy M. Sullivan, Ph.D.					
Robert D. Arbeit, M.D.					

(1) This amount represents the estimated cost to us of continuing the named executive officer s healthcare, disability, life and dental insurance benefits for the full severance period applicable to such named executive officer based on our costs for such benefits at December 31, 2012.

(2) Following the termination of Dr. Agrawal s employment by him for good reason or by us other than for death, disability or cause, Dr. Agrawal will be entitled to severance payments, a pro rata portion of his bonus for the prior year, if any, benefits continuation and acceleration of vesting of his equity awards to the extent such options or equity incentive awards would have vested had he continued to be an employee until the final day of the term of the agreement in effect immediately prior to such termination. Upon termination of Dr. Agrawal s employment due to death or disability, we have agreed to pay a pro rata portion of his bonus for the prior year and to accelerate the vesting of his equity awards to the extent such options or equity incentive awards would have vested had he continued to be an employee until the final day of the term of the agreement in effect immediately prior to such termination. See Agreements with our Named Executive Officers for further information about acceleration of vesting and severance payments in such circumstances.

(3) Calculated by multiplying the number of shares subject to options for which vesting would be accelerated by the difference between $0.89, the closing price of our common stock on December 31, 2012, and the per share exercise prices for such options. As of December 31, 2012, all of Dr. Agrawal s options had exercise prices that were higher than $0.89 per share.

(4) Severance payments and benefits continuation will only be paid to Mr. Arcudi following termination by us without cause. See Agreements with our Named Executive Officers for further information about our agreement with Mr. Arcudi.

Termination of Employment In Connection With or Following Change in Control

The following table sets forth the estimated potential benefits that our named executive officers would be entitled to receive upon their termination of employment with our company in connection with or following a change in control of the company if the change of control occurred on December 31, 2012 and the named executive officer s employment was immediately terminated. This table represents estimates only and does not necessarily reflect the actual amounts that would be paid to our named executive officers, which would only be known at the time that they become eligible for payment following their termination.

Termination of Employment In Connection With or Following Change in Control

Name	Severance Payments ($)	Bonus Amount ($)	Value of Accelerated Vesting of Stock Options ($)	Value of Continuation of Benefits ($)[1]	Total ($)
Sudhir Agrawal, D. Phil.[2]	$ 1,098,000		[3]	$ 47,507	$ 1,145,507
Louis J. Arcudi, III[4]	$ 315,000			$ 23,226	$ 338,226
Timothy M. Sullivan, Ph.D.					
Robert D. Arbeit, M.D.					

(1) Represents the estimated cost to us of continuing the named executive officers healthcare, disability, life and dental insurance benefits for the applicable severance period based on our costs for such benefits at December 31, 2012.

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(2) Following the termination of Dr. Agrawal s employment in connection with or following a change in control by him for good reason or by us other than for death, disability or cause, Dr. Agrawal will be entitled to a lump sum severance payment, a pro rata portion of his bonus for the prior year, benefits continuation and full acceleration of vesting of his option awards. See Agreements with our Named Executive Officers for further information about acceleration of vesting and severance payments in such circumstances.

(3) Calculated by multiplying the number of shares subject to options for which vesting would be accelerated by the difference between $0.89, the closing price of our common stock on December 31, 2012, and the per share exercise prices for such options. As of December 31, 2012, all of options subject to acceleration granted to these individuals had an exercise price that was higher than $0.89 per share.

(4) Following the termination of Mr. Arcudi s employment in connection with or following a change in control by him for good reason or by us other than for death, disability or cause, Mr. Arcudi will be entitled to severance payments of his then current base salary and benefits continuation for a twelve-month period, payable in accordance with and at the times contemplated by our then current payroll practices.

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EQUITY COMPENSATION PLAN INFORMATION

The following table provides information about our common stock that may be issued upon exercise of options and warrants under all of our equity compensation plans as of December 31, 2012.

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options and Warrants (a)	Weighted-Average Exercise Price of Outstanding Options and Warrants (b)	Number of Securities Remaining Available For Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a)) (c)
Equity compensation plans approved by stockholders[1]	5,657,256	$ 4.96	2,413,469
Equity compensation plans not approved by stockholders			
Total	5,657,256	$ 4.96	2,413,469

[1] Consists of our:

- 1995 Employee Stock Purchase Plan;
- 1995 Director Stock Option Plan;
- 1997 Stock Incentive Plan;
- 2005 Stock Incentive Plan; and
- 2008 Stock Incentive Plan.

Shares are available for future issuance only under our 1995 Employee Stock Purchase Plan and our 2008 Stock Incentive Plan.

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CERTAIN RELATIONSHIPS AND RELATED PERSON TRANSACTIONS

Since January 1, 2010, except as discussed below regarding transactions with Pillar Pharmaceuticals I, L.P., or Pillar I, Pillar Pharmaceuticals II, L.P., or Pillar II, and Merck Sharp & Dohme Corp. (formerly Merck & Co., Inc.), or Merck & Co., which are currently greater than 5% stockholders, and Mr. El Zein, and Mr. Umari, whom are currently members of our board of directors and affiliates of Pillar I and Pillar II, we have not entered into or engaged in any related party transactions, as defined by the SEC, with our directors, officers and stockholders who beneficially owned more than 5% of our outstanding common stock, as well as affiliates or immediate family members of those directors, officers and stockholders. We believe that the terms of our transactions described below were no less favorable than those that we could have obtained from unaffiliated third parties.

Series D Preferred Stock and Warrant Financing

In November 2011, we entered into a Convertible Preferred Stock and Warrant Purchase Agreement, or Series D Purchase Agreement, with Pillar I, an investment partnership managed by Mr. El Zein. Mr. El Zein is a director and controlling stockholder of Pillar Invest, which is the general partner of Pillar I, and is a limited partner of Pillar I. The Series D Purchase Agreement was amended in connection with our November 2012 Series E financing.

Under the Series D Purchase Agreement, we issued and sold to Pillar I, for an aggregate purchase price of $9.5 million, 1,124,260 shares of Series D redeemable convertible preferred stock, or Series D preferred stock, and related warrants to purchase shares of our common stock, or Series D warrants, to purchase up to 2,810,650 shares of common stock. The shares of Series D preferred stock were initially convertible, subject to limitations, into 5,621,300 shares of our common stock at an initial conversion price of $1.63. The initial exercise price of the warrants was $1.63 per share. No Series D preferred stockholder may convert its shares to the extent such conversion would result in such Series D stockholder and its affiliates beneficially owning more than 19.99% of the common stock outstanding. The sale of shares of Series E convertible preferred stock, or Series E preferred stock, and related warrants to purchase shares of our common stock, or Series E warrants, in our November 2012 Series E financing triggered an anti-dilution adjustment under the terms of the Series D preferred stock, resulting in the conversion price of the Series D preferred stock being reduced and fixed at the minimum $1.46 per share and the Series D preferred stock no longer being subject to any anti-dilution adjustments.

The Series D Purchase Agreement was amended in connection with the Series E financing to provide:

- for so long as Pillar I and its affiliates beneficially own more than 19.99% (prior to the date the stockholders of the Company approve the Nasdaq Proposal, as described below) or 25% (effective upon the date that the stockholders of the Company approve the Nasdaq Proposal) of the outstanding common stock, that Pillar I and its affiliates will vote any shares held by them in excess of the number of shares equal to 19.99% or 25%, as applicable, of the outstanding common stock (including the shares of common stock issuable upon conversion of securities convertible into or exercisable for shares of common stock held by Pillar I and its affiliates, including Pillar II) with respect to any matter put to a vote of the holders of common stock in the same manner and percentage as the holders of the common stock (other than the Series E preferred stockholders and their affiliates) vote on such matter; and

- for certain restrictions on the transfer of any securities issued to Pillar I (including securities convertible into or exercisable for common stock) pursuant to the Series D Purchase Agreement, including to not sell or transfer any such securities in one or a series of transactions if such transfer would, in the aggregate, result in the transfer of more than 5% of the then outstanding combined voting power of the outstanding securities of the Company (excluding from this restriction certain transfers to permitted transferees or in connection with an underwritten public offering by the Company that has been approved by our board of directors).

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In connection with our Series E preferred stock and warrant financing, as described below, we agreed to seek approval from our stockholders of the issuance and sale by the Company to Pillar II (together with all prior issuances and sales to Pillar I) of a number of shares of common stock (including securities convertible into or exercisable for common stock) that is greater than 19.99% of the outstanding common stock or outstanding voting power of the Company after such issuance and sale in accordance with Nasdaq Listing Rule 5635(b), which we refer to as the Nasdaq Proposal.

Pillar I is entitled to receive dividends payable quarterly in arrears at the rate of 7% per annum. Such dividends shall be paid in cash through December 31, 2014 and thereafter in cash or with shares of common stock, as determined by us in our sole discretion, except that we may not pay any dividends to a Series D preferred stockholder in shares of common stock to the extent the issuance of such shares would result in the Series D preferred stockholder and its affiliates beneficially owning more than 19.99% (prior to the date the stockholders of the Company approve the Nasdaq Proposal) or 35% (effective upon the date that the stockholders of the Company approve the Nasdaq Proposal) of the common stock outstanding or the combined voting power of our securities outstanding immediately after giving effect to the issuance of such shares of common stock. We have agreed to pay to Series E preferred stockholders quarterly dividends payable in cash in arrears at the rate of 4.6% per annum with the first dividend payment being due on March 31, 2013. Under the terms of the Series D preferred stock, any dividends that we pay to Series E preferred stockholders will also be paid to Series D preferred stockholders on an as-converted to common stock basis. We have agreed that, at our 2013 annual meeting of stockholders, we will propose an amendment to the Certificate of Designations, Preferences and Rights of Series D Preferred Stock, or the Series D Certificate of Designations, to, among other things, modify the terms of the Series D preferred stock dividends that require the payment of dividends to Series D preferred stockholders upon payment of dividends to Series E stockholders. If such amendment is approved by our stockholders, the Series E preferred stockholders would become entitled to receive dividends payable in cash quarterly in arrears at the rate of 8% per annum and Series D preferred stockholders would cease to be entitled to corresponding dividends. If such amendment is submitted to our stockholders and it is not approved, Series E preferred stockholders will no longer be entitled to receive dividends.

After November 4, 2013 and following written notice by us, we may redeem, for a cash payment equal to the $8.1375 original Series D preferred stock issue price per share plus any accrued or declared but unpaid dividends thereon, all or a portion of the Series D preferred stock if the closing price of our common stock for 20 or more trading days in a period of 30 consecutive trading days is greater than or equal to 200% of the $1.46 Series D preferred stock conversion price. In addition, the holders of shares of Series D preferred stock then outstanding are entitled to require us to purchase the shares of Series D preferred stock at a price equal to the original Series D preferred stock purchase price per share plus all accrued or declared but unpaid dividends thereon upon the occurrence of specified fundamental changes such as mergers, consolidations, business combinations, stock purchases or similar transactions resulting in a person or group unaffiliated with any Series D preferred stockholder owning 66.67% or more of the outstanding voting securities of the Company or successor entity.

Under the terms of the Series D Purchase Agreement, Pillar I agreed to be subject to a standstill provision that continues for so long as Pillar I and its affiliates beneficially own more than 15% of the outstanding common stock of the Company.

The sale of shares of Series E preferred stock and Series E warrants in our November 2012 Series E financing triggered an anti-dilution adjustment under the terms of the Series D warrants, resulting in the exercise price of the Series D warrants being fixed at the minimum $1.46 per share and the Series D warrants no longer being subject to any anti-dilution adjustments. The Series D warrants may be exercised at Pillar I s option at any time on or before November 4, 2016. The Series D warrants, as amended in connection with the November 2012 Series E financing, provide that the Series D warrants may not be exercised with respect to any portion of the warrants, to the extent that such exercise would

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result in Pillar I and its affiliates beneficially owning more than 19.99% of the number of shares of common stock outstanding or the combined voting power of our securities outstanding immediately after giving effect to the issuance of shares of common stock issuable upon exercise of the Series D warrants, unless our stockholders approve the Nasdaq Proposal, in which case, the 19.99% limitation will be increased, with respect to Pillar I, to 35%. After November 4, 2013, we may redeem the Series D warrants for $0.01 per share of common stock issuable on exercise of the Series D warrants following notice to Pillar I if the closing price of the common stock for 20 or more trading days in a period of 30 consecutive trading days is greater than or equal to $6.51 per share.

In connection with the Series D Purchase Agreement, we filed a registration statement that became effective on December 21, 2011, registering the resale of the shares of common stock issuable upon conversion of the Series D preferred stock and the shares of common stock issuable upon exercise of the Series D warrants. In February 2013, we filed a registration statement that became effective on February 8, 2013, covering the resale of additional shares of common stock issuable upon conversion of the Series D preferred stock.

Series E Preferred Stock and Warrant Financing

In November 2012, we entered into a Convertible Preferred Stock and Warrant Purchase Agreement, or Series E Purchase Agreement, with Pillar II and a second purchaser, which we collectively refer to as the Series E purchasers. Pillar II is an investment partnership managed by two of our directors and one of our significant stockholders. Mr. El Zein, a member of our board of directors, is a director and controlling stockholder of Pillar Invest, which is the general partner of Pillar II, and is a limited partner of Pillar II. Pillar Invest also entered into an Advisory Agreement with the second purchaser of our Series E preferred stock and Series E warrants pursuant to which Pillar Invest has investment discretion over the shares purchased by such second purchaser. Mr. El Zein has voting and investment control over the securities beneficially owned by Pillar II and Besancon. In addition, Abdul-Wahab Umari, also a member of our board of directors, is a managing partner of Pillar Invest.

Under the Series E Purchase Agreement, we issued and sold to the Series E purchasers, for an aggregate purchase price of approximately $7.0 million, 424,242 shares of Series E preferred stock and Series E warrants to purchase up to 8,484,840 shares of common stock. The shares of Series E preferred stock are convertible, subject to limitations, into an aggregate of 8,484,840 shares of common stock at a conversion price of $0.70 per share. No Series E preferred stockholder may convert its shares to the extent such conversion would result in the holder and its affiliates beneficially owning more than 19.99% of the common stock outstanding. The exercise price of the warrants is $0.70 per share. The warrants to purchase common stock are exercisable immediately, and will expire if not exercised on or prior to November 9, 2017.

We have agreed to pay to the Series E preferred stockholders quarterly dividends payable in cash in arrears at the rate of 4.6% per annum with the first dividend payment being due on March 31, 2013. Under the terms of the Series D preferred stock, any dividends that we pay to Series E preferred stockholders will also be paid to Series D preferred stockholders on an as-converted to common stock basis. We have agreed that, at our 2013 annual meeting of stockholders, we will propose an amendment to the Series D Certificate of Designations to, among other things, modify the terms of the Series D preferred stock that require the payment of dividends to Series D preferred stockholders upon payment of dividends to Series E preferred stockholders. If such amendment is approved by our stockholders, the Series E preferred stockholders would become entitled to receive dividends payable in cash quarterly in arrears at the rate of 8% per annum and the Series D preferred stockholders would cease to be entitled to corresponding dividends. If such amendment is submitted to our stockholders and it is not approved, the Series E preferred stockholders will no longer be entitled to receive dividends.

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Under the terms of the Series E Purchase Agreement, we granted Pillar II participation rights in future financings. In addition, we agreed to use our best efforts to file a preliminary proxy statement for our 2013 annual meeting of stockholders that will, among other things, seek approval from our stockholders of the following matters:

- the Nasdaq Proposal;
- an amendment to our restated certificate of incorporation and bylaws, as necessary, to eliminate the classification of our board of directors; and
- an amendment to the Series D Certificate of Designations for our Series D preferred stock to modify the dividend provisions of the Series D Certificate of Designations so that dividends on the Series E preferred stock are not required to be paid to the Series D preferred stockholders and to conform the beneficial ownership limitations applicable to the conversion of the Series D preferred stock to the beneficial ownership limitations applicable to the conversion of the Series E preferred stock.

Also under the terms of the Series E Purchase Agreement, each Series E preferred stockholder has agreed:

- for so long as the Series E preferred stockholder and its affiliates beneficially own more than 19.99% (prior to the date the stockholders of the Company approve the Nasdaq Proposal) or 25% (effective upon the date that the stockholders of the Company approve the Nasdaq Proposal) of the outstanding common stock, that the Series E preferred stockholder and its affiliates will vote any shares held by them in excess of the number of shares equal to 19.99% or 25%, as applicable, of the outstanding common stock (including the shares of common stock issuable upon conversion or exercise of securities that are convertible into or exercisable for shares of common stock held by such Series E preferred stockholder and its affiliates) with respect to any matter put to a vote of the holders of common stock in the same manner and percentage as the holders of the common stock (other than the Series E preferred stockholder) vote on such matter;
- to certain restrictions on the transfer of any securities issued to such Series E preferred stockholder (including securities convertible into or exercisable for common stock) pursuant to the convertible preferred stock and warrant purchase agreement including to not sell or transfer any such securities in one or a series of transactions if such transfer would, in the aggregate, result in the transfer of more than 5% of the then outstanding combined voting power of the outstanding securities of the Company (excluding from this restriction certain transfers to permitted transferees or in connection with an underwritten public offering by the Company that has been approved by our board of directors); and
- to be subject to a standstill provision that continues for so long as such Series E preferred stockholder and its affiliates beneficially own more than 15% of the outstanding common stock of the Company.

After the later of November 9, 2014 and the date that no shares of Series D preferred stock remain outstanding, we may redeem all or a portion of the Series E preferred stock for a cash payment equal to the $14.00 original Series E preferred stock issue price per share plus any accrued or declared but unpaid dividends thereon following notice to the Series E preferred stockholders if the closing price of our common stock for 20 or more trading days in a period of 30 consecutive trading days is greater than or equal to 400% of the $0.70 Series E preferred stock conversion price. We may not redeem any shares of Series E preferred stock from a Series E preferred stockholder that cannot convert such shares of Series E preferred stock into common stock as a result of the beneficial ownership limitations described above. In such event, we may redeem such nonredeemable shares for a cash payment equal to the greater of the 20 consecutive trading day average closing price per share of the common stock ending on the trading day immediately prior to redemption date plus any dividends accrued or declared but unpaid thereon and

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the Series E conversion price plus any dividends accrued or declared but unpaid thereon. After November 9, 2014, we also may redeem the Series E warrants for $0.01 per share of common stock issuable on exercise of the Series D warrants following notice to the Series E purchasers if the closing price of the common stock for 20 or more trading days in a period of 30 consecutive trading days is greater than or equal to $2.80 per share.

In connection with the Series E Purchase Agreement, we filed a registration statement that became effective on January 17, 2013, registering the resale of the shares of common stock issuable upon conversion of the Series E preferred stock and the shares of common stock issuable upon exercise of the Series E warrants.

April 2013 Pillar Agreements

On April 22, 2013, we entered into an agreement with Pillar I and Pillar II, which we refer to as the April 22, 2013 Pillar Agreement. Under the April 22, 2013 Pillar Agreement, Pillar I has irrevocably agreed to waive and not exercise the rights, powers, preferences and other terms of the Series D preferred stock under Section 6 of the Series D Certificate of Designations, including without limitation the right to require us to purchase all or any portion of the shares of our Series D preferred stock at a price equal to the original Series D preferred stock purchase price per share plus all accrued or declared but unpaid dividends thereon upon the occurrence of specified fundamental changes such as mergers, consolidations, business combinations, stock purchases or similar transactions resulting in a person or group unaffiliated with any holder of Series D preferred stock owning 66.67% or more of the outstanding voting securities of the Company or successor entity.

Under the April 22, 2013 Pillar Agreement, we and each of Pillar I and Pillar II have agreed, among other things:

to an amendment to the Series D Certificate of Designations for our Series D preferred stock that would:

- modify the dividend provisions of the Series D Certificate of Designations to change the date after which we may elect to pay dividends in shares of our common stock from December 31, 2014 to October 1, 2013, and to allow for the payment of such dividends in shares of a to-be-created new series of non-voting preferred stock in the event that payment of such dividends may not be made in shares of our common stock as a result of the application of the beneficial ownership and voting power limitations set forth the Series D Certificate of Designations; and

- in connection with the waiver of the right to require us to purchase the Series D preferred stock upon the occurrence of specified fundamental changes, to modify the Series D Certificate of Designations to provide, in the event of a sale of our company, for the distribution of any assets that remain available for distribution to our stockholders, after payment to the holders of our Series A convertible preferred stock and any other class of our capital stock that ranks senior to our Series D preferred stock, to the holders of our Series D preferred stock on a pro rata basis with the holders of our common stock, Series E preferred stock and such new series of non-voting preferred stock; and

to an amendment to the Certificate of Designations, Preferences and Rights of Series E Preferred Stock, or the Series E Certificate of Designations, that would:

- modify the dividend provisions of the Series E Certificate of Designations to allow for the payment of dividends in shares of our common stock commencing October 1, 2013; and

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- allow for the payment of dividends in shares of a to-be-created new series of non-voting preferred stock in the event that payment of such dividends may not be made in shares of our common stock as a result of the application of the beneficial ownership and voting power limitations set forth in the Series E Certificate of Designations.

In addition, on April 30, 2013, we entered into a second agreement with Pillar I, Pillar II and an entity affiliated with Pillar I and Pillar II, which we refer to collectively as the Pillar Entities, which we refer to as the April 30, 2013 Pillar Agreement. We refer to the April 30, 2013 Pillar Agreement and the April 22, 2013 Pillar Agreement collectively as the Pillar Agreements.

Under the April 30, 2013 Pillar Agreement, Pillar I has irrevocably agreed to waive the right of the holders of the Series D preferred stock under Section 2.1 of the Series D Certificate of Designations to receive, in the event of a voluntary or involuntary liquidation, dissolution or winding up of the Company, or Liquidation, an amount per share of Series D preferred stock equal to the original issue price of such share of Series D preferred stock plus any dividends accrued or declared but unpaid thereon to the extent such amount is greater than the amount that would have been payable with respect to such share had all shares of Series D preferred stock been converted into shares of our common stock immediately prior to such Liquidation, and that upon a Liquidation the holders of the Series D preferred stock will receive an amount per share of Series D preferred stock equal to the amount that would be payable with respect to such share had all shares of Series D preferred stock been converted into shares of our common stock immediately prior to such Liquidation.

In addition, under the April 30, 2013 Pillar Agreement, Pillar II and the entity affiliated with Pillar II, together the holders of 100% of the Series E preferred stock, have irrevocably agreed to waive the right of the holders of the Series E preferred stock under Section 2.1.1 of the Series E Certificate of Designations to receive, in the event of a Liquidation, an amount per share of Series E preferred stock equal to the original issue price of such share of Series E preferred stock plus any dividends accrued or declared but unpaid thereon to the extent such amount is greater than the amount that would have been payable with respect to such share had all shares of Series E preferred stock been converted into shares of our common stock immediately prior to such Liquidation, and that upon a Liquidation the holders of the Series E preferred stock will receive under Section 2.1 of the Series E Certificate of Designations an amount per share of Series E preferred stock equal to the amount that would be payable with respect to such share had all shares of Series E preferred stock been converted into shares of our common stock immediately prior to such Liquidation.

Under the Pillar Agreements, we have agreed to seek approval from our stockholders at our 2013 annual meeting of stockholders of amendments to the Series D Certificate of Designations and Series E Certificate of Designations to effect these changes to the dividend and liquidation provisions of our Series D preferred stock and Series E preferred stock, the redemption rights of the holders of our Series D preferred stock and the rights of the holders of our Series D preferred stock to distributions in the event of a sale of our company. Each applicable Pillar Entity has agreed:

to vote, and to cause its affiliates to vote, all shares of our voting stock held by such Pillar Entity or its affiliates, and over which such Pillar Entity or its affiliates has the power to vote, in favor of such amendments; and

not to, and to cause its affiliates not to, sell or transfer any shares of our common stock, Series D preferred stock or Series E preferred stock held by such Pillar Entity or its affiliates to any person, entity or group unless such proposed transferee agrees in a written instrument executed by such transferee, the applicable Pillar Entity and us to take and hold such securities subject to, among other things, the Pillar Agreements and to be bound by the terms of such Pillar Agreements, including the waiver of rights, voting agreements and restrictions on transfer set forth therein.

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Under the April 22, 2013 Pillar Agreement, in consideration of the agreements of Pillar I and II under the April 22, 2013 Pillar Agreement and the delivery of the waiver by Pillar I, and for no additional cash consideration, we have agreed to issue to Pillar I warrants, the Pillar I Warrants, to purchase up to 1,000,000 shares of our common stock. The Pillar I Warrants will have an exercise price per share equal to the greater of (a) $0.61 and (b) to the extent that warrants to purchase shares of our common stock are issued in the qualified financing, the per share exercise price of the warrants issued in such qualified financing, which would include the exercise price of the warrants issued in this offering to the extent that this offering is deemed to be a qualified financing.

In addition, under the April 30, 2013 Pillar Agreement, in consideration of the agreements of the Pillar Entities under the April 30, 2013 Pillar Agreement and the delivery of the waivers by the Pillar Entities, and for no additional cash consideration, we have agreed to issue to the Pillar Entities warrants, the Additional Pillar Warrants, and together with the Pillar I Warrants, the Pillar Warrants, to purchase up to an aggregate of 1,000,000 shares of our common stock. The Additional Pillar Warrants will have an exercise price per share equal to the greater of (a) $0.79 and (b) to the extent that warrants to purchase shares of our common stock are issued in the qualified financing, the per share exercise price of the warrants issued in such qualified financing, which would include the exercise price of any warrants issued in this offering to the extent that this offering is deemed to be a qualified financing.

The Pillar Warrants are each exercisable immediately, and will expire if not exercised on or prior to the fifth anniversary from the date of issuance. The Pillar Warrants provide that, after the second anniversary of the date of issuance, we may redeem such Pillar Warrants for $0.01 per share of common stock issuable on exercise of such Pillar Warrants following notice to the holder thereof if the closing price of our common stock for 20 or more trading days in a period of 30 consecutive trading days is greater than or equal to $2.80 per share.

The Pillar Agreements, including our obligations to issue the Pillar Warrants under the Pillar Agreements, will become effective upon the consummation of a qualified financing, which would include the consummation of this offering. The Pillar Agreements will terminate in the event that a qualified financing is not consummated by October 1, 2013. Under the terms of the Pillar Agreements, a qualified financing is defined as the issuance and sale of our equity securities from and after the date of the applicable Pillar Agreement in one or more closings resulting in aggregate gross proceeds to us of at least $12.5 million.

In addition, we have agreed to file a registration statement to register the resale of the shares of common stock issuable upon exercise of the Pillar Warrants.

Merck & Co.

In December 2006, we entered into an exclusive license and research collaboration agreement with Merck & Co. to research, develop and commercialize vaccine products containing our TLR7, TLR8, and TLR9 agonists in the fields of cancer, infectious diseases and Alzheimer s disease. Under the terms of the agreement, we granted Merck & Co. worldwide exclusive rights to a number of our TLR7, TLR8, and TLR9 agonists for use in combination with Merck & Co. s therapeutic and prophylactic vaccines under development in the fields of cancer, infectious diseases, and Alzheimer s disease. There is no limit under the agreement to the number of vaccines to which Merck & Co. can apply our agonists within these fields. We also agreed with Merck & Co. to engage in a two-year research collaboration to generate novel agonists targeting TLR7 and TLR8 and incorporating both Merck & Co. s and the Company s chemistry for use in vaccines in the defined fields. Under the terms of the agreement, Merck & Co. extended the research collaboration for two additional years to December 2010. Under the terms of the agreement:

Merck & Co. paid us a $20.0 million upfront license fee;

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Merck & Co. purchased $10.0 million of our common stock at $5.50 per share;

Merck & Co. agreed to fund the research and development collaboration through its term;

Merck & Co. agreed to pay us milestone payments as follows:

- up to $165.0 million if vaccines containing our TLR9 agonist compounds are successfully developed and marketed in each of the oncology, infectious disease and Alzheimer s disease fields;
- up to $260.0 million if vaccines containing our TLR9 agonist compounds are successfully developed and marketed for follow-on indications in the oncology field and if vaccines containing our TLR7 or TLR8 agonists are successfully developed and marketed in each of the oncology, infectious disease, and Alzheimer s disease fields; and
- if Merck & Co. develops and commercializes additional vaccines using our agonists, we would be entitled to receive additional milestone payments; and

Merck & Co. agreed to pay us mid to upper single-digit royalties on net product sales of vaccines using our TLR agonist technology that are developed and marketed, with the royalty rates being dependent on disease indication and the TLR agonist employed.

Under the agreement, Merck & Co. is obligated to pay us royalties, on a product-by-product and country-by-country basis, until the later of the expiration of the patent rights licensed to Merck & Co. and the expiration of regulatory-based exclusivity for the vaccine product. If the patent rights and regulatory-based exclusivity expire in a particular country before the 10th anniversary of the product s first commercial sale in such country, Merck & Co. s obligation to pay us royalties will continue at a reduced royalty rate until such anniversary, except that Merck & Co. s royalty obligation will terminate upon the achievement of a specified market share in such country by a competing vaccine containing an agonist targeting the same toll-like receptor as that targeted by the agonist in the Merck & Co. vaccine. In addition, the applicable royalties may be reduced if Merck & Co. is required to pay royalties to third parties for licenses to intellectual property rights, which royalties exceed a specified threshold. Merck & Co. s royalty and milestone obligations may also be reduced if Merck & Co. terminates the agreement based on specified uncured material breaches by us.

Merck & Co. may terminate the collaborative alliance without cause upon 90 days written notice to us. Either party may terminate the collaborative alliance upon the other party s filing or institution of bankruptcy, reorganization, liquidation or receivership proceedings, or for a material breach if such breach is not cured within 60 days after delivery of written notice.

In January 2012, in accordance with the agreement, Merck & Co. selected multiple novel TLR7, TLR8, and TLR9 agonists for Merck & Co. s exclusive evaluation and use as vaccine adjuvants.

Policies and Procedures for Related Person Transactions

Our board of directors is committed to upholding the highest legal and ethical conduct in fulfilling its responsibilities and recognizes that related party transactions can present a heightened risk of potential or actual conflicts of interest. Accordingly, as a general matter, it is our preference to avoid related party transactions.

In accordance with our audit committee charter, members of the audit committee, all of whom are independent directors, review and approve all related party transactions for which approval is required under applicable laws or regulations, including SEC and the Nasdaq Stock Market rules. Current SEC rules define a related party transaction to include any transaction, arrangement or relationship in which

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we are a participant and the amount involved exceeds $120,000, and in which any of the following persons has or will have a direct or indirect interest:

- our executive officers, directors or director nominees;
- any person who is known to be the beneficial owner of more than 5% of our common stock;
- any person who is an immediate family member, as defined under Item 404 of Regulation S-K, of any of our executive officers, directors or director nominees or beneficial owners of more than 5% of our common stock; or
- any firm, corporation or other entity in which any of the foregoing persons is employed or is a partner or principal or in a similar position or in which such person, together with any other of the foregoing persons, has a 5% or greater beneficial ownership interest.

In addition, the audit committee reviews and investigates any matters pertaining to the integrity of management, including conflicts of interest and adherence to our code of business conduct and ethics. Under our code of business conduct and ethics, our directors, officers and employees are expected to avoid any relationship, influence or activity that would cause or even appear to cause a conflict of interest. Under our code of business conduct and ethics, a director is required to promptly disclose to our board of directors any potential or actual conflict of interest involving him or her. In accordance with our code of business conduct and ethics, the board of directors will determine an appropriate resolution on a case-by-case basis. All directors must recuse themselves from any discussion or decision affecting their personal, business or professional interests.

Participation in Offering

Certain of our existing principal stockholders, including certain of the Pillar Entities and their affiliated entities, have indicated an interest in purchasing up to $2.5 million of shares of our common stock and warrants to purchase shares of our common stock in this offering at the public offering price. However, because indications of interest are not binding agreements or commitments to purchase, the underwriters could determine to sell more, less or no shares and warrants to any of these existing principal stockholders and any of these existing principal stockholders could determine to purchase more, less or no shares and warrants in this offering.

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SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

On January 31, 2013, we had 27,642,969 shares of common stock issued and outstanding, 424,242 shares of Series E preferred stock, or Series E preferred stock, issued and outstanding and 1,124,260 shares of Series D preferred stock, or Series D preferred stock, issued and outstanding. The following table sets forth information we know about the beneficial ownership of our common stock, our Series E preferred stock and our Series D preferred stock, as of January 31, 2013, by:

- each person known by us to own beneficially more than 5% of the outstanding shares of our common stock;
- each person known to us to beneficially own more than 5% of the outstanding shares of our Series E preferred stock;
- each person known to us to beneficially own more than 5% of the outstanding shares of our Series D preferred stock;
- each of our directors;
- each of our named executive officers; and
- all directors and executive officers as a group.

We have determined beneficial ownership in accordance with the rules of the SEC, and the information in the table below is not necessarily indicative of beneficial ownership for any other purpose. Under such rules, beneficial ownership of a person includes any shares as to which such person has the sole or shared voting power or investment power. In addition, under such rules, beneficial ownership of a person includes any shares that such person has the right to acquire within 60 days after January 31, 2012 through the conversion of any convertible security or the exercise of any stock option, warrant or other right. These shares, however, are not considered outstanding when computing the percentage ownership of each other person.

Certain of our existing principal stockholders, including certain of the Pillar Entities and their affiliated entities, have indicated an interest in purchasing up to $2.5 million of shares of our common stock and warrants to purchase shares of our common stock in this offering at the public offering price. However, because indications of interest are not binding agreements or commitments to purchase, the underwriters could determine to sell more, less or no shares and warrants to any of these existing principal stockholders and any of these existing principal stockholders could determine to purchase more, less or no shares and warrants in this offering.

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Unless otherwise indicated in the footnotes to the table below, each stockholder named in the table has sole investment and voting power (or shares such power with his or her spouse) with respect to the shares shown as beneficially owned by them. The inclusion of any shares deemed beneficially owned does not constitute an admission of beneficial ownership of such shares.

Name and Address of Beneficial Owner[1]	Amount and Nature of Beneficial Ownership of Common Stock	% of Common Stock Beneficially Owned	Amount