IDERA PHARMACEUTICALS, INC.
Form 424B4
September 30, 2013

Filed Pursuant to Rule 424(b)(4)

Registration File No. 333-187155

PROSPECTUS SUPPLEMENT NO. 2

To Prospectus dated May 1, 2013

Idera Pharmaceuticals, Inc.

17,500,000 Shares of Common Stock

Warrants to Purchase 49,132,654 Shares of Common Stock

This prospectus supplement no. 2 supplements the prospectus dated May 1, 2013, relating to the offering of (i) the 17,500,000 shares of our common stock, and the warrants to purchase 49,132,654 shares of our common stock that we issued and sold on May 7, 2013 and (ii) the shares of common stock that are issuable from time to time upon exercise of the warrants.

This prospectus supplement incorporates into the prospectus the information contained in the following documents filed by us with the Securities and Exchange Commission, or SEC, each of which is attached to this prospectus supplement:

our current reports on Form 8-K, which were filed with the SEC on September 24, 2013 and September 26, 2013.

You should read this prospectus supplement in conjunction with the prospectus, including any supplements and amendments thereto. This prospectus supplement is qualified by reference to the prospectus except to the extent that the information in the prospectus supplement supersedes the information contained in the prospectus.

This prospectus supplement is not complete without, and may not be delivered or utilized except in connection with, the prospectus, including any supplements and amendments thereto.

Investing in our common stock involves risks. Please read carefully the section entitled Risk Factors beginning on page 8 of the prospectus and in our Current Report on Form 8-K that was filed on September 24, 2013.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement is truthful or complete. Any

representation to the contrary is a criminal offense.

The date of this prospectus supplement is September 30, 2013.

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d)

of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): September 24, 2013

Idera Pharmaceuticals, Inc.

(Exact Name of Registrant as Specified in Charter)

Delaware	**001-31918**	**04-3072298**
(State or Other Jurisdiction of Incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**
167 Sidney Street		**02139**

Cambridge, Massachusetts
(Address of principal executive offices) (Zip Code)
Registrant s telephone number, including area code: (617) 679-5500

(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

¨ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

¨ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

¨ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

¨ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 8.01. Other Events.

Idera Pharmaceuticals, Inc. (the Company) is filing this Current Report on Form 8-K to provide certain information as an update to the information provided in the Company s previous periodic filings with the Securities and Exchange Commission in order to reflect recent business developments. Updated risk factors and a summary description of the Company s business are attached hereto as Exhibits 99.1 and 99.2, respectively, and are incorporated herein by reference. This Current Report on Form 8-K, including the exhibits hereto, should be read in conjunction with the Company s Annual Report on Form 10-K for the year ended December 31, 2012, the Company s Quarterly Reports on Form 10-Q for the quarters ended March 31, 2013 and June 30, 2013 and the Company s Current Reports on Form 8-K.

On September 24, 2013, the Company issued a press release announcing its intention to offer and sell shares of its common stock and pre-funded warrants in an underwritten public offering, subject to market conditions and other factors, pursuant to the Company s effective Registration Statement on Form S-3 (File No. 333-191073). The full text of the press release issued in connection with the announcement is attached to this Current Report on Form 8-K as Exhibit 99.3 and is incorporated herein by reference.

Item 9.01. Financial Statements and Exhibits.

(d) Exhibits

See attached Exhibit Index.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Idera Pharmaceuticals, Inc.

Date: September 24, 2013

By: /s/ Sudhir Agrawal
Sudhir Agrawal, D. Phil.

President and Chief Executive Officer

EXHIBIT INDEX

Exhibit No.	Description
99.1	Updated Risk Factors
99.2	Updated Summary Business Description
99.3	Press Release dated September 24, 2013

Exhibit 99.1

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 or incorporated by reference in this Current Report on Form 8-K, before purchasing our common stock. 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 in our securities.

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 $16.3 million at June 30, 2013. We believe that our existing cash and cash equivalents would be sufficient to fund our operations at least through the fourth quarter of 2014, based on an operating plan that includes the completion of our ongoing Phase 2 clinical trial of IMO-8400 in patients with psoriasis and planning with respect to further clinical development of IMO-8400. We believe that our available funds will enable us to complete our ongoing Phase 2 clinical trial in patients with psoriasis. We will need to raise additional funds in order to conduct any other clinical development of IMO-8400 or IMO-9200, including to conduct any other development of our other drug candidates or technologies.

We expect that we will require substantial additional funds to conduct additional 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 results of our ongoing Phase 2 clinical trial of IMO-8400 in patients with moderate to severe plaque psoriasis that we initiated in June 2013 and the results of the dose escalation phase of our planned Phase 1/2 clinical trial of IMO-8400 in patients with Waldenström s macroglobulinemia and our planned Phase 1/2 clinical trial of IMO-8400 in patients with DLBCL;

- 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.

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 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 or relinquish rights to portions of our technology, drug candidates and/or products.

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 June 30, 2013, we had an accumulated deficit of $402.1 million. Since January 1, 2001, we have primarily been involved in the development of our TLR pipeline. From January 1, 2001 to June 30, 2013, we incurred losses of $141.9 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 June 30, 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.

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

We have received a report dated March 11, 2013 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. The going concern explanatory paragraph included in our auditor s report on our financial statements could inhibit our ability to finance our operations. On May 7, 2013, we raised $16.5 million in gross proceeds from a follow-on underwritten public offering of our securities, increasing our cash resources sufficiently to fund our operations at least through the fourth quarter of 2014. 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 beyond such time. 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 or relinquish rights to portions of our technology, drug candidates and/or products.

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

Our common stock trades on the Nasdaq Capital Market. In order to continue the listing of our common stock on the Nasdaq Capital Market, we are required to meet the continued listing requirements of the Nasdaq Capital Market. We recently faced the delisting of our common stock from the Nasdaq Capital Market as a result of our failure to satisfy the minimum stockholders equity requirement pursuant to Nasdaq Listing Rule 5450(b)(2), and the minimum bid price requirement in accordance with Nasdaq Listing Rule 5450(a)(1). Nasdaq notified us that we had regained compliance with the minimum stockholders equity requirement on May 8, 2013 and with the minimum bid price requirement on August 12, 2013. If we do not continue to meet the continued listing requirements of the Nasdaq Capital Market, our common stock will be delisted. If our common stock were to be delisted from the Nasdaq Capital Market, it might 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 in the future it were to be delisted from the Nasdaq Capital Market, would be listed on a national securities exchange, a national quotation service, the Over-The-Counter Bulletin Board or the pink sheets. Delisting from the Nasdaq Capital Market, 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.

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 and certain genetically defined B-cell lymphomas. If we terminate the development of any of our programs or any of our drug candidates in such programs, 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 clinical stage lead drug candidates as part of our autoimmune and inflammatory disease program. In June 2013, we initiated 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. We expect to have top-line data from this Phase 2 trial during the first quarter of 2014. In the future, we also intend to invest a significant portion of our time and financial resources in the development of IMO-8400 as part of our genetically defined B-cell lymphoma program.

We are planning to initiate a Phase 1/2 clinical trial of IMO-8400 in patients with Waldenström s macroglobulinemia and a Phase 1/2 clinical trial of IMO-8400 in patients with DLBCL in the first quarter of 2014, and are also planning to initiate a Phase 1 clinical trial of IMO-9200 in the third quarter of 2014. However, our plans to conduct these trials are subject to our ability to fund the conduct of these trials with additional financing. We expect to seek such additional funding through public or private equity offerings, debt financings, collaborations and licensing arrangements, and other sources.

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 and genetically defined B-cell lymphoma programs.

Our ability to generate product revenues under our collaboration with Merck Sharp & Dohme Corp. (formerly Merck & Co., Inc.), or Merck & Co., and under any other collaboration that we enter into with respect to our autoimmune disease program, will depend on the development and commercialization of the drug candidates being developed. 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.

We intend to seek to enter into collaborations with pharmaceutical companies to advance the use of our TLR antagonist product 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 regimens;

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.

We have recently begun to focus our efforts on the research and development of product candidates for use in the treatment of certain genetically defined B-cell lymphomas, and our approach for the treatment of these genetically defined B-cell lymphomas is novel and may not result in any approved and marketable products.

We are in the early stages of developing our program in genetically defined B-cell lymphomas, an area in which we have little experience. In connection with this program, we are focusing our efforts on the research and development of TLR antagonist product candidates for use in the treatment of certain genetically defined B-cell lymphomas. The scientific evidence to support the feasibility of developing product candidates for this use is both preliminary and limited. We have conducted preclinical studies in human lymphoma cell lines that carry the specific genetic mutation and have also entered into a M-CRADA with NCI to evaluate our TLR antagonists as a potential approach to the treatment of certain genetically defined B-cell lymphomas. Although the preliminary results of our preclinical studies have been promising, it is unknown whether these results are indicative of results that may be obtained in our planned clinical trials. Therefore, we do not know if our approach of inhibiting TLRs to treat patients with genetically defined B-cell lymphomas will be successful or if we will ever succeed in obtaining regulatory approval to market any product for this purpose. In addition, in the event that our development efforts for such a product candidate progress towards commercialization, we will need to develop companion diagnostics for such product candidate. We have no experience in developing companion diagnostics and will be dependent on the efforts of third party collaborators to successfully develop and commercialize these companion diagnostics on our behalf.

If we experience delays or difficulties in the enrollment of patients in clinical trials, our receipt of necessary regulatory approvals could be delayed or prevented.

We may not be able to initiate or continue clinical trials for our TLR antagonist product candidates if we are unable to locate and enroll a sufficient number of eligible patients to participate in these trials as required by the FDA or similar regulatory authorities outside the United States. In particular, because there are a limited number of patients with the Waldenström s macroglobulinemia or DLBCL and the specific genetic mutation, our ability to enroll eligible patients in any clinical trials for these indications may be limited or may result in slower enrollment than we anticipate. In addition, some of our competitors have ongoing clinical trials for product candidates that treat the same indications as our TLR antagonist product candidates, and patients who would otherwise be eligible for our clinical trials may instead enroll in clinical trials of our competitors product candidates.

Patient enrollment is affected by other factors including:

- the severity of the disease under investigation;
- the eligibility criteria for the study in question;
- the perceived risks and benefits of the TLR antagonist product candidates under study;
- the efforts to facilitate timely enrollment in clinical trials;
- the patient referral practices of physicians;
- the ability to monitor patients adequately during and after treatment; and
- the proximity and availability of clinical trial sites for prospective patients.

Our inability to enroll a sufficient number of patients for our clinical trials would result in significant delays and could require us to abandon one or more clinical trials altogether. Enrollment delays in our clinical trials may result in increased development costs for our TLR antagonist product candidates, which would cause the value of our company to decline and limit our ability to obtain additional financing.

With respect to our genetically defined B-cell lymphoma programs, we expect to design future clinical trials to include some patients with a particular genetic mutation that causes the disease with a view to assessing possible early evidence of potential therapeutic effect. If we are unable to include patients with the applicable genetic mutation, this could compromise our ability to seek participation in FDA expedited review and approval programs, including breakthrough therapy and fast track designation, or otherwise to seek to accelerate clinical development and regulatory timelines.

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.

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;

- 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.

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;
- 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 genetically defined B-cell lymphomas and for use as vaccine adjuvants. We have one drug candidate, IMO-8400, in clinical development in our autoimmune and inflammatory disease program. With respect to our genetically defined B-cell lymphoma program we have conducted preclinical studies on and entered into a M-CRADA with NCI to evaluate our TLR antagonists as a potential approach to the treatment of certain genetically defined B-cell lymphomas, and plan to initiate a Phase 1/2 clinical trial of IMO-8400 in patients with Waldenström s macroglobulinemia and a Phase 1/2 clinical trial of IMO-8400 in patients with DLBCL during the first quarter of 2014. 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 broader autoimmune disease indications, such as psoriasis, lupus and arthritis, 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, 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.

We are planning to develop drug candidates for the treatment of genetically defined B-cell lymphoma. There are currently no drugs specifically approved for the treatment of Waldenström s macroglobulinemia or DLBCL. Currently, patients with any form of non-Hodgkin lymphoma are most often treated with monoclonal antibody rituximab and/or with one or more chemotherapeutic agents. Rituximab is co-marketed in the United States by Biogen Idec and Genentech and Hoffmann-La Roche and Chugai Pharmaceuticals in territories outside the United States. We are aware of additional compounds in development for the treatment of genetically defined B-cell lymphoma, including Ibrutinib, which is being developed by Pharmacyclics, Inc., and an inhibitor of interleukin-1 receptor-associated kinase 4, or IRAK4, which is being developed by Nimbus Discovery, Inc.

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, 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 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 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.

Even if we obtain regulatory approval for any of our product candidates, we will be subject to continual requirements of and review by the FDA and other regulatory authorities. These requirements include submissions of safety and other post-marketing information and reports, registration and listing requirements, cGMP requirements relating to manufacturing, quality control, quality assurance and corresponding maintenance of records and documents, requirements regarding the distribution of samples to physicians and recordkeeping. Even if marketing approval of a product candidate is granted, the approval may be subject to limitations on the indicated uses for which the product may be marketed or to the conditions of approval, including the requirement to implement a risk evaluation and mitigation strategy. If any of our product candidates receives marketing approval, the accompanying label may limit the approved use of our drug in this way, which could limit sales of the product. For example, new cancer drugs frequently are indicated only for patient populations that have not responded to an existing therapy or have relapsed.

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 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 we are conducting a Phase 2 clinical trial of IMO-8400. 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 may not be able to obtain orphan drug exclusivity for applications of our TLR antagonist product candidates.

Regulatory authorities in some jurisdictions, including the United States and Europe, may designate drugs for relatively small patient populations as orphan drugs. Under the Orphan Drug Act, the FDA may designate a product as an orphan drug if it is a drug intended to treat a rare disease or condition, which is generally defined as a patient population of fewer than 200,000 individuals annually in the United States.

Generally, if a product with an orphan drug designation subsequently receives the first marketing approval for the indication for which it has such designation, the product is entitled to a period of marketing exclusivity, which precludes the European Medicines Agency, or EMA, or the FDA from approving another marketing application for the same drug for that time period. The applicable period is seven years in the United States and ten years in Europe. The European exclusivity period can be reduced to six years if a drug no longer meets the criteria for orphan drug designation or if the drug is sufficiently profitable so that market exclusivity is no longer justified. Orphan drug exclusivity may be lost if the FDA or EMA determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the drug to meet the needs of patients with the rare disease or condition.

Even if we obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because different drugs can be approved for the same condition. Even after an orphan drug is approved, the FDA can subsequently approve the same drug for the same condition if the FDA concludes that the later drug is clinically superior in that it is shown to be safer, more effective or makes a major contribution to patient care.

A fast track designation by the FDA may not actually lead to a faster development or regulatory review or approval process.

We intend to seek fast track designation for some applications of our TLR antagonist product candidates. If a drug is intended for the treatment of a serious or life-threatening condition and the drug demonstrates the potential to address unmet medical needs for this condition, the drug sponsor may apply for FDA fast track designation. The FDA has broad discretion whether or not to grant this designation, so even if we believe a particular TLR antagonist product candidate is eligible for this designation, we cannot assure you that the FDA would decide to grant it. Even if we do receive fast track designation, we may not experience a faster development process, review or approval compared to conventional FDA procedures. The FDA may withdraw fast track designation if it believes that the designation is no longer supported by data from our clinical development program.

A breakthrough therapy designation by the FDA for any application of our TLR antagonist product candidates may not lead to a faster development or regulatory review or approval process, and it does not increase the likelihood that those TLR antagonist product candidates will receive marketing approval.

We may seek a breakthrough therapy designation for some applications of our TLR antagonist product candidates. A breakthrough therapy is defined as a drug that is intended, alone or in combination with one or more 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. For drugs and biologics that have been designated as breakthrough therapies, interaction and communication between the FDA and the sponsor of the trial can help to identify the most efficient path for clinical development while minimizing the number of patients placed in ineffective control regimens. Drugs designated as breakthrough therapies by the FDA are also eligible for accelerated approval.

Designation as a breakthrough therapy is within the discretion of the FDA. Accordingly, even if we believe an application of one of our TLR antagonist product candidates meets the criteria for designation as a breakthrough therapy, the FDA may disagree and instead determine not to make such designation. In any event, the receipt of a

breakthrough therapy designation for a TLR antagonist product candidate may not result in a faster development process, review or approval compared to drugs considered for approval under conventional FDA procedures and does not assure ultimate approval by the FDA. In addition, even if one or more of our TLR antagonist product candidates qualify as breakthrough therapies, the FDA may later decide that the products no longer meet the conditions for qualification or decide that the time period for FDA review or approval will not be shortened.

If we are unable to successfully develop companion diagnostics for our product candidates intended for the treatment of genetically defined B-cell lymphoma, or experience significant delays in doing so, we may not achieve marketing approval or realize the full commercial potential of these product candidates.

We plan to develop companion diagnostics for our TLR antagonist product candidates in our genetically defined B-cell lymphoma programs. We expect that, at least in some cases, the FDA and similar regulatory authorities outside the United States may require the development and regulatory approval of a companion diagnostic as a condition to approving our TLR antagonist product candidates specifically for the treatment of patients with a genetically defined B-cell lymphoma. We do not have experience or capabilities in developing or commercializing diagnostics and plan to rely on third parties or collaborators to perform these functions. To date, we have not entered into any agreements for the development or commercialization of companion diagnostics for use with any of our product candidates. However, we expect to enter into such agreements in the future with respect to our TLR antagonist product candidates in our genetically defined B-cell lymphoma programs. Companion diagnostics are subject to regulation by the FDA and similar regulatory authorities outside the United States as medical devices and require separate regulatory approval prior to commercialization.

If we, any third parties that we engage to assist us or any of our collaborators, are unable to successfully develop companion diagnostics for our TLR antagonist product candidates, or experience delays in doing so:

- the development of our TLR antagonist product candidates may be adversely affected if we are unable to appropriately select patients for enrollment in our clinical trials;
- our TLR antagonist product candidates may not receive marketing approval if their safe and effective use depends on a companion diagnostic; and
- we may not realize the full commercial potential of any TLR antagonist product candidates that receive marketing approval if, among other reasons, we are unable to appropriately identify patients with the specific genetic mutation targeted by our TLR antagonist product candidates.

If any of these events were to occur, our business would be harmed, possibly materially.

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.

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 broader autoimmune disease indications, such as psoriasis, lupus and arthritis, 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 and certain genetically defined B-cell lymphomas. 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 development of the companion diagnostic to be developed for use in conjunction with our drug candidates 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;

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.

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 September 1, 2013, we owned more than 45 U.S. patents and patent applications and more than 85 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, IMO-9200, and IMO-2055. As of September 1, 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 an issued U.S. patent that covers 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-9200, we have a provisional U.S. patent application that covers the chemical composition for IMO-9200 and methods of its use, which, if issued, would expire at the earliest in 2034. 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 September 1, 2013, we owned one issued U.S. patent, three U.S. patent applications, one international patent application and five foreign 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 September 1, 2013, our antisense patent portfolio included more than 65 U.S. patents, one U.S. patent application and more than 60 patents 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-targeted 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 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;

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 September 1, 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 manage our Phase 1 and Phase 2 clinical trials of IMO-3100, our Phase 1 clinical trial of IMO-8400 and our ongoing 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.

Failure of our third party collaborators to successfully commercialize companion diagnostics developed for use with any TLR antagonist product candidates that we develop with respect to our genetically defined B-cell lymphoma program could harm our ability to commercialize these TLR antagonist product candidates.

Any TLR antagonist product candidates that we develop with respect to our genetically defined B-cell lymphoma program will necessitate the use of companion diagnostics. We do not plan to develop companion diagnostics internally and, as a result, we will be dependent on the efforts of our third party collaborators to successfully commercialize these companion diagnostics. Our collaborators:

- may not perform their obligations as expected;
- may encounter production difficulties that could constrain the supply of the companion diagnostics;
- may have difficulties gaining acceptance of the use of the companion diagnostics in the clinical community;
- may not pursue commercialization of any TLR antagonist product candidates that achieve regulatory approval;
- may elect not to continue or renew commercialization programs based on changes in the collaborators strategic focus or available funding, or external factors, such as an acquisition, that divert resources or create competing priorities;
- may not commit sufficient resources to the marketing and distribution of such product or products; and
- may terminate their relationship with us.

If companion diagnostics for use with our genetically defined B-cell lymphoma TLR antagonist product candidates fail to gain market acceptance, our ability to derive revenues from sales of these TLR antagonist product candidates could be harmed. If our collaborators fail to commercialize these companion diagnostics, we may not be able to enter into arrangements with another diagnostic company to obtain supplies of an alternative diagnostic test for use in connection with genetically defined B-cell lymphoma TLR antagonist product candidates or do so on commercially reasonable terms, which could adversely affect and delay the development or commercialization of these TLR antagonist product candidates.

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. For example, current cancer treatments like chemotherapy and radiation therapy are well established in the medical community, and doctors may continue to rely on these treatments. If our products do not achieve an adequate level of acceptance, we may not generate 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 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;

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 Relating to 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.

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.

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 November 2011 Series D redeemable convertible preferred stock financing, which we refer to as our November 2011 Series D 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 up to 2,810,650 shares of our common stock. In connection with our November 2012 Series E convertible preferred stock financing, which we refer to as our November 2012 Series E 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 up to 8,484,840 shares of our common stock. In connection with the Pillar Agreements, we issued to the Pillar Entities warrants exercisable for up to 2,000,000 shares of common stock. In connection with our follow-on underwritten public offering in May 2013, we issued to the Pillar Entities and Pillar Pharmaceuticals III, L.P., or Pillar III, and together with the Pillar Entities, the Pillar Investment Entities, 5,000,000 shares of our common stock and warrants exercisable for up to 5,000,000 shares of common stock. As a result, the Pillar Investment Entities are collectively our largest stockholder group. In addition, two members of our board of directors are affiliates of the Pillar Investment Entities. In connection with their ownership of these securities, the Pillar Investment Entities 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 Investment Entities 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 Investment Entities, the Pillar Investment Entities 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 with respect to dividends, 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, 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 and Series E preferred stock in shares of common stock. If we were to pay such dividends in common stock, our existing stockholders will experience dilution.

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 September 20, 2013, the closing sales price of our common stock ranged from a high of $3.25 per share to a low of $0.46 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;

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.

Exhibit 99.2

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. 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 are conducting a Phase 2 clinical trial of our lead drug candidate, IMO-8400, a TLR7, TLR8, and TLR9 antagonist, for the treatment of psoriasis. In 2012, we completed all patient activities in a Phase 2 clinical trial of IMO-3100, a TLR7 and TLR9 antagonist, in patients with moderate to severe plaque psoriasis. We believe that the results of the Phase 2 clinical trial of IMO-3100 provided proof of concept for our approach of inhibiting specific TLRs for the treatment of psoriasis and potentially other autoimmune and inflammatory diseases. We have designed our ongoing Phase 2 clinical trial of IMO-8400 to provide further proof of concept for our approach. Additionally, recently published independent research has suggested that inhibition of specific TLRs may be a useful approach for the treatment of certain genetically defined B-cell lymphomas.

Our business strategy is to develop IMO-8400 and other TLR antagonists for the treatment of autoimmune diseases with orphan indications or other autoimmune diseases with serious unmet medical needs and for the treatment of certain genetically defined B-cell lymphomas. We plan to seek to enter into one or more collaborations for the development of our TLR antagonists in broader autoimmune disease indications, including psoriasis, lupus and arthritis.

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

In 2013, we completed a Phase 1 clinical trial of IMO-8400 in healthy subjects. The objectives of the trial, which was conducted at a single U.S. site, were to evaluate the safety, pharmacokinetics, and pharmacodynamics of IMO-8400 administered by subcutaneous injection. 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. In this trial, IMO-8400 was well-tolerated at all dose levels, and showed target engagement of TLR7, TLR8, and TLR9 in subjects treated with IMO-8400 compared to treatment with placebo. Based on the clinical activity observed in the four-week Phase 2 clinical trial of IMO-3100 in patients with psoriasis and the data from our Phase 1 clinical trial of IMO-8400, we determined that the next step in our development program was to conduct a Phase 2 clinical trial in patients with moderate to severe plaque 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 determined to conduct this trial in patients with psoriasis with IMO-8400.

We initiated the Phase 2 clinical trial of IMO-8400 in patients with moderate to severe psoriasis with a 12-week treatment period and a six-week follow-up period during the second quarter of 2013. In the trial, we are evaluating IMO-8400 at three dose levels, 0.075 mg/kg, 0.15 mg/kg and 0.3 mg/kg, and in a placebo cohort. To date, IMO-8400

treatment in this Phase 2 clinical trial has been well-tolerated, with no treatment-related discontinuations. We expect to complete the target enrollment of 32 patients in September 2013 and to have top-line data from this Phase 2 trial during the first quarter of 2014.

We are currently evaluating orphan autoimmune disease indications for which we may develop IMO-8400 or other of our TLR antagonists. We plan to seek to enter into one or more collaborations for broader autoimmune disease indications such as psoriasis, lupus and arthritis.

Program in Genetically Defined B-cell Lymphomas. Recent independent research suggests that inhibition of specific TLRs may be a useful approach to the treatment of certain genetically defined B-cell lymphomas. In this research, a specific genetic mutation has been identified which has been shown to engage TLR7 and TLR9 to confer a survival benefit to the tumor cells. In this research, the inhibition of TLR7 and TLR9 led to increased rates of cell death in tumor cells harboring this mutation.

We have conducted preclinical studies of IMO-8400 in human lymphoma cell lines that carry this specific genetic mutation and in human lymphoma cell lines lacking the mutation. In these studies, IMO-8400 increased rates of cell death, inhibited cytokine production, and inhibited key components of signaling pathways. IMO-8400 did not have any significant effects in human lymphoma cell lines that did not carry the mutation. In addition, in a study that we conducted in a mouse tumor model, IMO-8400 monotherapy showed anti-tumor activity using a human lymphoma cell line that carries the mutation. In July 2013, we entered into a materials cooperative research and development agreement, or M-CRADA, with the National Cancer Institute, or NCI, to evaluate our TLR antagonists as a potential approach for the treatment of certain genetically defined B-cell lymphomas.

This specific genetic mutation has been reported in several types of B-cell lymphomas, and is most often associated with non-Hodgkin lymphoma. We initially plan to evaluate IMO-8400 with respect to two forms of non-Hodgkin lymphomas. One is Waldenström s macroglobulinemia, a lymphoma that commonly involves the blood and bone marrow and may spread to almost any organ in the body. Based on published independent reports, we believe that approximately 90% of patients with Waldenström s macroglobulinemia have the specific genetic mutation. Diffuse large B-cell lymphoma, or DLBCL, is another form of non-Hodgkin lymphoma with a high incidence of this specific genetic mutation. Based on published independent reports, we believe that approximately 30% of patients with activated B-cell-like, or ABC, DLBCL carry the specific genetic mutation.

Based on the SEER Cancer Statistics Review, 1975-2001, from the National Cancer Institute s SEER database and published independent reports as to patients with B-cell lymphoma with the specific genetic mutation, and taking into consideration estimated population growth, we estimate that there will be approximately 4,000 patients diagnosed with non-Hodgkin forms of B-cell lymphoma in 2013, including 1,200 patients with Waldenström s macroglobulinemia and 2,000 patients with ABC-DLBCL. Based on this information, we also believe that at least 7,500 patients in the United States currently have B-cell lymphoma with the specific genetic mutation. We believe Waldenström s macroglobulinemia and DLBCL are orphan indications with unmet medical need. There are currently no drugs specifically approved for the treatment of Waldenström s macroglobulinemia or DLBCL. Currently, patients with any form of non-Hodgkin lymphoma are most often treated with monoclonal antibody rituximab and/or with one or more chemotherapeutic agents.

Our planned next step in our B-cell lymphoma program is to conduct two Phase 1/2 clinical trials of IMO-8400 in relapsed or refractory patients. We plan to evaluate patients with Waldenström s macroglobulinemia in one trial and patients with DLBCL in the second trial. We expect that some of the patients in each trial will have the specific genetic mutation, which we believe will provide us with the opportunity to assess the clinical activity of IMO-8400 in patients with the specific genetic mutation. The planned Phase 1/2 clinical trials are designed to evaluate safety and tolerability in dose-escalation cohorts and to evaluate the potential for clinical activity in expansion cohorts at one or more dose levels. In the dose-escalation cohorts, each trial is designed to include approximately 12 to 18 patients. In the expansion cohorts, an additional 12 patients in each trial will be evaluated for safety and for signals of potential clinical activity. Each trial therefore is expected to enroll approximately 30 patients. We currently anticipate submitting an Investigational New Drug application, or IND, with respect to the use of IMO-8400 in B-cell lymphomas to the United States Food and Drug Administration, or FDA, in the fourth quarter of 2013, with the goal

of initiating the two Phase 1/2 clinical trials in the first quarter of 2014.

Our strategy for our program in genetically defined B-cell lymphomas is to include in the planned trials patients with the genetically defined cancer that we are seeking to treat. If we see early evidence of a therapeutic effect in either of these trials, we plan to meet with regulatory authorities to discuss the possibility of an accelerated clinical development and regulatory pathway for the applicable program. We cannot predict whether or when any of our product candidates will prove effective or safe in humans, if they will receive regulatory approval or if we will be able to participate in FDA expedited review and approval programs, including breakthrough and fast track designation.

Expanding Development Pipeline of TLR Antagonist Candidates. We have selected an additional TLR antagonist candidate, IMO-9200, for development and have completed early stage preclinical studies of this TLR antagonist product candidate. We intend to initiate an IND-enabling development program of IMO-9200 in the fourth quarter of 2013 for one of the diverse disease indications for which TLR antagonists may be applicable. We anticipate submission of an IND for IMO-9200 in the third quarter of 2014, with the goal of initiating the Phase 1 trial in the third quarter of 2014.

Additional Programs. 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 had cash and cash equivalents of approximately $16.3 million at June 30, 2013. We believe that our existing cash and cash equivalents would be sufficient to fund our operations at least through the fourth quarter of 2014, based on an operating plan that includes the completion of our ongoing Phase 2 clinical trial of IMO-8400 in patients with psoriasis and planning with respect to further clinical development of IMO-8400. We believe that our available funds will enable us to complete our ongoing Phase 2 clinical trial in patients with psoriasis. We will need to raise additional funds in order to conduct any other clinical development of IMO-8400 or IMO-9200, including to conduct any other development of our other drug candidates or technologies.

Exhibit 99.3

Idera Pharmaceuticals Announces Public Offering of Common Stock and Pre-Funded Warrants

CAMBRIDGE, Mass. (BUSINESS WIRE) Sept. 24, 2013 Idera Pharmaceuticals, Inc. (NASDAQ: IDRA) (Idera or, the Company) today announced that it intends to offer and sell shares of its common stock and pre-funded warrants to purchase shares of its common stock in an underwritten public offering. Piper Jaffray & Co. is acting as sole manager for the offering. The offering is subject to market conditions, and there can be no assurance as to whether or when the offering may be completed, or as to the actual size or terms of the offering.

The securities described above are being offered by the Company pursuant to a shelf registration statement previously filed with and declared effective by the Securities and Exchange Commission on September 18, 2013. The offering will be made only by means of the written prospectus and prospectus supplement that form a part of the registration statement. Copies of the preliminary prospectus supplement and the accompanying prospectus relating to the securities being offered may also be obtained from Piper Jaffray & Co., Attention: Prospectus Department, 800 Nicollet Mall, J12S03, Minneapolis, MN 55402, via telephone at 800-747-3924 or email at prospectus@pjc.com.

This press release shall not constitute an offer to sell or the solicitation of an offer to buy the securities being offered, nor shall there be any sale of the securities being offered in any state or other jurisdiction in which such offer, solicitation or sale would be unlawful prior to the registration or qualification under the securities laws of any such state or other jurisdiction.

About Idera Pharmaceuticals, Inc.

Idera s technology platform involves creating novel synthetic RNA- and DNA-based compounds to modulate immune responses. Idera has applied this platform to develop proprietary Toll-like receptor (TLR) antagonists as immunomodulatory drug candidates. Toll-like receptor antagonists block the overactivation of immune factors which can cause a range of pathological effects. Idera is conducting clinical development of TLR antagonists in autoimmune and inflammatory diseases, and preclinical development of their use in certain genetically defined forms of B-cell lymphoma. More information on Idera is available at iderapharma.com.

Forward Looking Statements

This press release contains 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 press release, including statements regarding the Company s 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, and would and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Idera cannot guarantee that it will actually achieve the plans, intentions or expectations disclosed in its forward-looking statements and you should not place undue reliance on the Company s forward-looking statements. There are a number of important factors that could cause Idera s actual results to differ materially from those indicated or implied by its forward-looking statements. Factors that may cause such a difference include: whether Idera s cash resources will be sufficient to fund its continuing operations and the further development of the Company s programs; whether results obtained in early research, preclinical studies and clinical trials will be indicative of the results that will be generated in future clinical studies; whether products based

on Idera s technology will advance into or through the clinical trial process on a timely basis or at all and receive approval from the United States Food and Drug Administration or equivalent foreign regulatory agencies; whether, if the Company s products receive approval, they will be successfully distributed and marketed; whether Idera will be able to enter into collaborations that will advance the development of its compounds for autoimmune disease indications; and such other important factors as are set forth under the

caption Risk Factors in the Company s Quarterly Report on Form 10-Q. Although Idera may elect to do so at some point in the future, the Company does not assume any obligation to update any forward-looking statements and it disclaims any intention or obligation to update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.

Source: Idera Pharmaceuticals, Inc.

Idera Pharmaceuticals, Inc.

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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d)

of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): September 25, 2013

Idera Pharmaceuticals, Inc.

(Exact Name of Registrant as Specified in Charter)

Delaware	**001-31918**	**04-3072298**
(State or Other Jurisdiction of Incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**
167 Sidney Street		**02139**

Cambridge, Massachusetts
(Address of principal executive offices) (Zip Code)
Registrant s telephone number, including area code: (617) 679-5500

(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

¨ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

¨ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

¨ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

¨ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 1.01. Entry into a Material Definitive Agreement

On September 25, 2013, Idera Pharmaceuticals, Inc. (the Company) entered into an underwriting agreement (the Underwriting Agreement) with Piper Jaffray & Co., related to an underwritten offering of 13,727,251 shares of the Company s common stock, par value $0.001 per share (the Common Stock), and warrants (the Pre-Funded Warrants) to purchase up to an aggregate of 4,175,975 shares of Common Stock (together, the Securities). The Pre-Funded Warrants will be exercisable at an exercise price of $0.01 per share and will expire seven years from the date of issuance. The Company expects to receive net proceeds of approximately $25.6 million from the sale of the Securities, after deducting the underwriting discounts and commissions and other estimated offering expenses payable by it and excluding the proceeds, if any, from the exercise of the Pre-Funded Warrants. The last reported sale price of the Common Stock on the Nasdaq Capital Market on September 23, 2013 was $1.55 per share.

The Securities will be issued pursuant to a registration statement on Form S-3 that the Company filed with the Securities and Exchange Commission, which became effective on September 18, 2013 (File No. 333-191073). The Company expects that the closing of the sale of the Securities will take place on September 30, 2013, subject to the satisfaction of customary closing conditions.

A copy of the Underwriting Agreement is attached as Exhibit 1.1 hereto and is incorporated herein by reference. A copy of the form of Pre-Funded Warrant is attached as Exhibit 4.1 and is incorporated herein by reference. The foregoing descriptions of the Underwriting Agreement and Pre-Funded Warrant do not purport to be complete and are qualified in their entirety by reference to such exhibits.

A copy of the legal opinion and consent of Wilmer Cutler Pickering Hale and Dorr LLP relating to the validity of the Common Stock and Pre-Funded Warrants to be issued in the offering is attached as Exhibit 5.1 hereto.

Item 8.01. Other Events

The Company issued a press release on September 25, 2013 announcing the pricing of the sale of the Securities. The full text of the press release is attached as Exhibit 99.1 hereto and is incorporated herein by reference.

Item 9.01. Financial Statements and Exhibits.

(d) Exhibits

See attached Exhibit Index.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Idera Pharmaceuticals, Inc.

Date: September 26, 2013

By: /s/ Sudhir Agrawal
Sudhir Agrawal, D. Phil.
President and Chief Executive Officer

EXHIBIT INDEX

Exhibit No.	Description
1.1	Underwriting Agreement, dated as of September 25, 2013, between the Company and Piper Jaffray & Co.
4.1	Form of Pre-Funded Warrant
5.1	Opinion of Wilmer Cutler Pickering Hale and Dorr LLP
23.1	Consent of Wilmer Cutler Pickering Hale and Dorr LLP (included in Exhibit 5.1)
99.1	Press Release dated September 25, 2013

Exhibit 1.1

13,727,251 Shares of Common Stock

and

Pre-Funded Warrants to Purchase 4,175,975 Shares of Common Stock

IDERA PHARMACEUTICALS, INC.

PURCHASE AGREEMENT

September 25, 2013

PIPER JAFFRAY & CO.

As Representative of the several

Underwriters named in Schedule I hereto

c/o Piper Jaffray & Co.

800 Nicollet Mall

Minneapolis, Minnesota 55402

Ladies and Gentlemen:

Idera Pharmaceuticals, Inc., a Delaware corporation (the ***Company***), proposes to sell to the several Underwriters named in Schedule I hereto (the ***Underwriters***) an aggregate of (i) 13,727,251 authorized but unissued shares (the ***Firm Shares***) of common stock, par value $0.001 per share (the ***Common Stock***), of the Company and (ii) warrants of the Company, in the form set forth in Exhibit C hereto, to purchase up to an aggregate of 4,175,975 shares of Common Stock at an exercise price of $0.01 per share (the ***Pre-Funded Warrants***). The Firm Shares and the Pre-Funded Warrants purchased pursuant to this Agreement are herein collectively called the ***Securities***.

The Company hereby confirms its agreement with respect to the sale of the Securities to the several Underwriters, for whom you are acting as representative (the ***Representative***).

1. ***Registration Statement and Prospectus***. The Company has prepared and filed with the Securities and Exchange Commission (the ***Commission***) a registration statement on Form S-3 (File No. 333-191073) under the Securities Act of 1933, as amended (the ***Act***), and the rules and regulations (the ***Rules and Regulations***) of the Commission thereunder, and such amendments to such registration statement as may have been required to the date of this Agreement. Such registration statement has been declared effective by the Commission. Each part of such registration statement, including the amendments, exhibits and any schedules thereto, the documents incorporated by reference therein pursuant to Item 12 of Form S-3 under the Securities Act and the documents and information otherwise deemed to be a part thereof or included therein by Rule 430B under the Act (the ***Rule 430B Information***) or otherwise pursuant to the Rules and Regulations, as of the time the Registration Statement became effective, is herein called the ***Registration Statement.*** Any registration statement filed by the Company pursuant to Rule 462(b) under the Securities Act is called the ***Rule 462(b) Registration Statement*** and, from and after the date and time of filing of the Rule 462(b) Registration Statement, the term Registration Statement shall include the Rule 462(b) Registration Statement.

The prospectus in the form in which it appeared in the Registration Statement at the time the Registration Statement became effective is herein called the ***Base Prospectus***. Each preliminary prospectus supplement to the Base Prospectus (including the Base Prospectus as so supplemented), that describes the Securities and the offering thereof, that omitted the Rule 430B Information and that was

used prior to the filing of the final prospectus supplement referred to in the following sentence is herein called a ***Preliminary Prospectus***. Promptly after execution and delivery of this Agreement, the Company will prepare and file with the Commission a final prospectus supplement to the Base Prospectus relating to the Securities and the offering thereof in accordance with the provisions of Rule 430B and Rule 424(b) of the Rules and Regulations. Such final supplemental form of prospectus (including the Base Prospectus as so supplemented), in the form filed with the Commission pursuant to Rule 424(b) is herein called the ***Prospectus***. Any reference herein to the Base Prospectus, any Preliminary Prospectus or the Prospectus shall be deemed to refer to and include the documents incorporated by reference therein pursuant to Item 12 of Form S-3 under the Securities Act as of the date of such prospectus.

All references in this Agreement to the Registration Statement, the Base Prospectus, any Preliminary Prospectus, the Prospectus or any amendment or supplement to any of the foregoing, shall be deemed to include the copy filed with the Commission pursuant to its Electronic Data Gathering, Analysis and Retrieval System (***EDGAR***). All references in this Agreement to financial statements and schedules and other information which is described, contained, included or stated in the Registration Statement, the Base Prospectus, any Preliminary Prospectus or the Prospectus (or other references of like import) shall be deemed to mean and include all such financial statements and schedules and other information which is incorporated by reference in or otherwise deemed pursuant to the Rules and Regulations to be a part of or included in the Registration Statement, the Base Prospectus, any Preliminary Prospectus or the Prospectus, as the case may be; and all references in this Agreement to amendments or supplements to the Registration Statement, the Base Prospectus, any Preliminary Prospectus or the Prospectus shall be deemed to mean and include the subsequent filing of any document under the Securities Exchange Act of 1934, as amended (the ***Exchange Act***) and which is deemed to be incorporated therein by reference therein or otherwise deemed by the Rules and Regulations to be a part thereof.

2. ***Representations and Warranties of the Company***. The Company represents and warrants to, and agrees with, the several Underwriters as follows:

(a) No order preventing or suspending the use of any Preliminary Prospectus has been issued by the Commission and the Preliminary Prospectus included in the Time of Sale Disclosure Package (as defined below), at the time of filing thereof or the time of first use within the meaning of the Rules and Regulations, complied in all material respects with the requirements of the Act and the Rules and Regulations and did not contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading except that the foregoing shall not apply to statements in or omissions from any Preliminary Prospectus or the Time of Sale Disclosure Package in reliance upon, and in conformity with, written information furnished to the Company by you, or by any Underwriter through you, specifically for use in the preparation thereof; it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 6(f).

(b) As of the time any part of each of the Registration Statement and the 462(b) Registration Statement (or any post-effective amendment thereto) became effective and at all other subsequent times until expiration of the Prospectus Delivery Period (as defined below), upon the filing or first use within the meaning of the Rules and Regulations of the Prospectus (or any supplement to the Prospectus) and at all other subsequent times until expiration of the Prospectus Delivery Period and at the Closing Date (as defined below), (A) the Registration Statement and the Prospectus (in each case, as so amended and/or supplemented) conformed or will conform in all material respects to the requirements of the Act and the Rules and Regulations, (B) the Registration Statement (as so amended) did not or will not include an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make

the statements therein not misleading, and (C) the Prospectus (as so supplemented) did not or will not include an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they are or were made, not misleading; except that each of the foregoing shall not apply to statements in or omissions from any such document in reliance upon, and in conformity with, written information furnished to the Company by you, or by any Underwriter through you, specifically for use in the preparation thereof, it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 6(f). If the Registration Statement has been declared effective by the Commission, no stop order suspending the effectiveness of the Registration Statement has been issued, and no proceeding for that purpose has been initiated or communicated to the Company, or, to the Company s knowledge, threatened by the Commission.

(c) Neither (A) the Issuer General Free Writing Prospectus(es) issued at or prior to the Time of Sale and set forth on Schedule II, the information on Schedule III, the Base Prospectus and the Preliminary Prospectus included in the Registration Statement at the Time of Sale, all considered together (collectively, the ***Time of Sale Disclosure Package***), nor (B) any individual Issuer Limited-Use Free Writing Prospectus, when considered together with the Time of Sale Disclosure Package, includes or included as of the Time of Sale any untrue statement of a material fact or omits or omitted as of the Time of Sale to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The preceding sentence does not apply to statements in or omissions from any Preliminary Prospectus or any Issuer Free Writing Prospectus based upon and in conformity with written information furnished to the Company by you or by any Underwriter through you specifically for use therein; it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 6(f). As used in this paragraph and elsewhere in this Agreement:

(1) ***Time of Sale*** means 8:30 am (Eastern time) on September 25, 2013.

(2) ***Issuer Free Writing Prospectus*** means any issuer free writing prospectus, as defined in Rule 433 under the Act, relating to the Securities that (A) is required to be filed with the Commission by the Company, or (B) is exempt from filing pursuant to Rule 433(d)(5)(i) under the Act because it contains a description of the Securities or of the offering that does not reflect the final terms, or pursuant to Rule 433(d)(8)(ii) because it is a bona fide electronic road show, as defined in Rule 433 of the Rules and Regulations which is made available without restriction, in each case in the form filed or required to be filed with the Commission or, if not required to be filed, in the form retained in the Company s records pursuant to Rule 433(g) under the Act.

(3) ***Issuer General Free Writing Prospectus*** means any Issuer Free Writing Prospectus that is intended for general distribution to prospective investors, as evidenced by its being specified in Schedule II to this Agreement.

(4) ***Issuer Limited-Use Free Writing Prospectus*** means any Issuer Free Writing Prospectus that is not an Issuer General Free Writing Prospectus.

(d) (A) Each Issuer Free Writing Prospectus, as of its issue date and at all subsequent times through the completion of the public offer and sale of the Securities or until any earlier date that the Company notified or notifies the Representative as described in Section 4(c)(B), did not, does not and will not include any information that conflicted, conflicts or will conflict with the information contained in the Registration Statement, any Preliminary Prospectus or the Prospectus. The foregoing sentence does not apply to statements in or omissions from any Issuer Free Writing Prospectus based upon and in conformity with

written information furnished to the Company by you or by any Underwriter through you specifically for use therein; it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 6(f).

(B) (1) At the time of filing the Registration Statement and (2) at the date hereof, the Company was not and is not an ineligible issuer, as defined in Rule 405 under the Act, including the Company in the preceding three years not having been convicted of a felony or misdemeanor or having been made the subject of a judicial or administrative decree or order as described in Rule 405 under the Act (without taking account of any determination by the Commission pursuant to Rule 405 that it is not necessary that the Company be considered an ineligible issuer), nor an excluded issuer as defined in Rule 164 under the Act.

(C) Each Issuer Free Writing Prospectus satisfied, as of its issue date and at all subsequent times through the completion of the public offer and sale of the Securities, all other conditions to use thereof as set forth in Rules 164 and 433 under the Act.

(e) The consolidated financial statements of the Company, together with the related notes, set forth in the Registration Statement or incorporated by reference therein, the Time of Sale Disclosure Package and Prospectus comply in all material respects with the requirements of the Act and the Exchange Act and fairly present in all material respects the financial condition of the Company as of the dates indicated and the results of operations and changes in cash flows for the periods therein specified in conformity with generally accepted accounting principles in the United States (***GAAP***) consistently applied throughout the periods involved (except as may be otherwise specified in such financial statement or the notes thereto and except in the case of unaudited financial statements, which are subject to normal, immaterial year-end adjustments and do not contain certain footnotes as permitted by the applicable rules of the Commission); the supporting schedules included in the Registration Statement present fairly, in all material respects, the information required to be stated therein; there are no non-GAAP financial measures (as such term is defined by the Rules and Regulations) in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus; and, except as disclosed in the Time of Sale Disclosure Package and the Prospectus, there are no material off-balance sheet arrangements (as defined in Regulation S-K under the Act, Item 303(a)(4)(ii)) or any other relationships with unconsolidated entities or other persons, that would reasonably be expected to have a material current or, to the Company s knowledge, material future effect on the Company s financial condition, results of operations, liquidity, capital expenditures, capital resources or significant components of revenue or expenses. No other financial statements or schedules are required to be included in the Registration Statement, the Time of Sale Disclosure Package or the Prospectus. Ernst & Young LLP, which has expressed its opinion with respect to the financial statements and schedules filed as a part of the Registration Statement and included in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus, is (x) an independent public accounting firm within the meaning of the Act and the Rules and Regulations, (y) a registered public accounting firm (as defined in Section 2(a)(12) of the Sarbanes-Oxley Act of 2002 (the ***Sarbanes-Oxley Act***)) and (z) not in violation of the auditor independence requirements of the Sarbanes-Oxley Act.

(f) The Company has been duly organized and is validly existing as a corporation in good standing under the laws of its jurisdiction of incorporation. The Company has full corporate power and authority to own its properties and conduct its business as currently being carried on and as described in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus, and is duly qualified to do business as a foreign corporation in good standing in each jurisdiction in which it owns or leases real property or in which the conduct of its business makes such qualification necessary, except where the failure to so qualify would have or reasonably be expected to result in a Material Adverse Effect. As used in this Agreement, ***Material Adverse Effect*** shall mean a material adverse effect upon the results of operations, assets, prospects, business or financial condition of the Company, taken as a whole.

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(g) Except as contemplated in the Time of Sale Disclosure Package and in the Prospectus, subsequent to the respective dates as of which information is given in the Time of Sale Disclosure Package, the Company has not incurred any material liabilities or obligations, direct or contingent, other than in the ordinary course of business, or entered into any material transactions, or declared or paid any dividends or made any distribution of any kind with respect to its capital stock; and there has not been any change in the capital stock (other than a change in the number of outstanding shares of Common Stock due to the issuance of shares upon the exercise or conversion of outstanding options, warrants, rights or convertible securities), or any material change in the short-term or long-term debt, or any issuance of options, warrants, convertible securities or other rights to purchase the capital stock, of the Company (except pursuant to equity compensation plans or arrangements described in the Time of Sale Disclosure Package and in the Prospectus), or any Material Adverse Change or any development which would reasonably be expected to result in any Material Adverse Change. As used in this Agreement, ***Material Adverse Change*** means a material adverse change in the general affairs, condition (financial or otherwise), business, prospects, management, properties, operations or results of operations of the Company, taken as a whole.

(h) Except as set forth in the Time of Sale Disclosure Package and in the Prospectus, there is not pending or, to the knowledge of the Company, threatened or contemplated, any action, suit or proceeding (a) to which the Company is a party or (b) which has as the subject thereof any officer or director of the Company, any employee benefit plan sponsored by the Company or any property or assets owned or leased by the Company before or by any court or Governmental Authority (as defined below), or any arbitrator, which, individually or in the aggregate, would reasonably be expected to result in any Material Adverse Change, or would materially and adversely affect the ability of the Company to perform its obligations under this Agreement or which are otherwise material in the context of the sale of the Securities. There are no current or, to the knowledge of the Company, pending, legal, governmental or regulatory actions, suits or proceedings (x) to which the Company is subject or (y) which has as the subject thereof any officer or director of the Company, any employee plan sponsored by the Company or any property or assets owned or leased by the Company, that are required to be described in the Registration Statement, Time of Sale Disclosure Package and Prospectus by the Act or by the Rules and Regulations and that have not been so described.

(i) There are no statutes, regulations, contracts or documents that are required to be described in the Registration Statement, in the Time of Sale Disclosure Package and in the Prospectus or required to be filed as exhibits to the Registration Statement by the Act or by the Rules and Regulations that have not been so described or filed.

(j) This Agreement has been duly authorized, executed and delivered by the Company, and constitutes a valid, legal and binding obligation of the Company, enforceable in accordance with its terms, except as rights to indemnity hereunder may be limited by federal or state securities laws and except as such enforceability may be limited by bankruptcy, insolvency, reorganization or similar laws affecting the rights of creditors generally and subject to general principles of equity. The execution, delivery and performance of this Agreement and the consummation of the transactions herein contemplated will not (A) materially conflict with or result in a material breach or material violation of any of the terms or provisions of, or constitute a material default under, or result in the creation or imposition of any material lien, charge or encumbrance upon any property or assets of the Company pursuant to any indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which the Company is a party or by which the Company is bound or to which any of the property or assets of the Company is subject, (B) result in any violation of the provisions of the Company s charter or by-laws or (C) violate, in any material respect, any law or statute or

any judgment, order, rule, regulation or decree of any court or arbitrator or federal, state, local or foreign governmental agency or regulatory authority having jurisdiction over the Company or any of its properties or assets (each, a ***Governmental Authority***). No consent, approval, authorization or order of, or registration or filing with any Governmental Authority is required to be obtained or made by the Company for the execution, delivery and performance of this Agreement by the Company or for the consummation thereby of the transactions contemplated hereby, including the issuance or sale of the Securities by the Company, except such as may be required under the Act or state or applicable foreign securities laws, the rules of the Financial Industry Regulatory Authority (***FINRA***) or state securities or blue sky laws; and the Company has full corporate power and authority to enter into this Agreement and to consummate the transactions contemplated hereby, including the authorization, issuance and sale of the Securities as contemplated by this Agreement.

(k) All of the issued and outstanding shares of capital stock of the Company, including the outstanding shares of Common Stock, are duly authorized and validly issued, fully paid and nonassessable, have been issued in compliance with all federal and state and foreign securities laws and applicable exemptions therefrom, were not issued in violation of or subject to any preemptive rights or other rights to subscribe for or purchase securities that have not been waived or satisfied in writing (a copy of which has been delivered to counsel to the Representative), and the holders thereof are not subject to personal liability solely by reason of being such holders; the Firm Shares which may be sold hereunder by the Company have been duly authorized and, when issued, delivered and paid for in accordance with the terms of this Agreement, will have been validly issued and will be fully paid and nonassessable, and the holders thereof will not be subject to personal liability solely by reason of being such holders; and the capital stock of the Company, including the Common Stock, conforms in all material respects to the description thereof in the Registration Statement, in the Time of Sale Disclosure Package and in the Prospectus. Except as otherwise stated in the Registration Statement, in the Time of Sale Disclosure Package and in the Prospectus, there are no preemptive rights or other rights to subscribe for or to purchase, or any restriction upon the voting or transfer of, any shares of Common Stock pursuant to the Company s charter, by-laws or any agreement or other instrument to which the Company is a party or by which the Company is bound. Except as disclosed in the Registration Statement, in the Time of Sale Disclosure Package and in the Prospectus, neither the filing of the Registration Statement nor the offering or sale of the Securities as contemplated by this Agreement gives rise to any rights for or relating to the registration of any shares of Common Stock or other securities of the Company (collectively ***Registration Rights***), and any person to whom the Company has granted Registration Rights has agreed not to exercise such rights until after expiration of the Lock-Up Period (as defined below). Except as described in the Registration Statement, in the Time of Sale Disclosure Package and in the Prospectus, there are no options, warrants, agreements, contracts or other rights in existence to purchase or acquire from the Company any shares of the capital stock of the Company. The Company has an authorized and outstanding capitalization as set forth in the Registration Statement, in the Time of Sale Disclosure Package and in the Prospectus under the captions Description of Capital Stock Common Stock and Description of Pre-Funded Warrants, in each case as of the dates set forth therein. The Common Stock (including the Firm Shares and the shares underlying the Pre-Funded Warrants) conforms in all material respects to the description thereof contained in the Time of Sale Disclosure Package and the Prospectus. The description of the Company s stock option, stock bonus and other stock plans or arrangements and the options or other rights granted thereunder, set forth in the Time of Sale Disclosure Package and the Prospectus accurately and fairly presents the information required to be shown with respect to such plans, arrangements, options and rights.

(l) The Pre-Funded Warrants have been duly authorized for issuance and sale by the Company and, when executed, issued and delivered by the Company pursuant to this Agreement against payment of the consideration set forth herein, will constitute legal, valid and binding obligations of the Company, enforceable in accordance with their terms, except as the enforceability thereof may be limited by bankruptcy, insolvency, reorganization, moratorium or similar laws affecting creditors rights generally and

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general principles of equity. The shares of Common Stock issuable upon exercise of the Pre-Funded Warrants have been duly authorized and validly reserved for issuance upon exercise of the Pre-Funded Warrants in a number sufficient to meet the current exercise requirements. Upon exercise of the Pre-Funded Warrants in accordance with their terms, the shares of Common Stock issuable thereupon will be duly and validly issued and fully paid and non-assessable, free of statutory and contractual preemptive rights, resale rights, rights of first refusal and similar rights and free of any voting or transfer restrictions pursuant to the Company s charter or bylaws or any agreement or other instrument to which the Company is a party that have not been validly waived. The certificates for such shares of Common Stock will be in due and proper form. The warrants of the Company (including the Pre-Funded Warrants) conform in all material respects to the description thereof contained in the Time of Sale Disclosure Package and the Prospectus.

(m) The Company holds, and is operating in compliance in all material respects with, all franchises, grants, authorizations, licenses, permits, easements, consents, certificates and orders of any Governmental Authority or self-regulatory body required for the conduct of its business except where the failure to possess or comply with such permits, individually or in the aggregate, has not and would not have or reasonably be expected to result in a Material Adverse Effect (***Material Permits***) and, to the Company s knowledge, all such Material Permits are valid and in full force and effect; and the Company has not received notice of any revocation or modification of any such Material Permit or has reason to believe that any such Material Permit will not be renewed in the ordinary course; and the Company is in compliance in all material respects with all applicable federal, state, local and foreign laws, regulations, orders and decrees.

(n) The Company has good and marketable title to all property (whether real or personal) that is material to the business and is described in the Registration Statement, in the Time of Sale Disclosure Package and in the Prospectus as being owned by it, in each case free and clear of all material liens, claims, security interests, other encumbrances or defects except such as are described in the Registration Statement, in the Time of Sale Disclosure Package and in the Prospectus and except such as do not materially and adversely affect the value of such property and do not materially and adversely interfere with the use made and proposed to be made of such property by the Company. The property held under lease by the Company is held by it under valid subsisting and enforceable leases with only such exceptions as are not material and do not interfere with the use made and proposed to be made of such property and buildings by the Company.

(o) The Company owns, or possesses valid and enforceable licenses to use all Intellectual Property that, to the Company s knowledge, is necessary for the conduct of the Company s business as now conducted or as described in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus to be conducted, except as such failure to own, possess, or acquire such rights would not or would not reasonably be expected to result in a Material Adverse Effect. Furthermore, (A) to the knowledge of the Company, there is no infringement, misappropriation or violation by third parties of any such Intellectual Property; (B) there is no pending or, to the knowledge of the Company, threatened, action, suit, proceeding or claim by others challenging the rights in or to any such Intellectual Property, and the Company is unaware of any facts which would form a reasonable basis for any such claim; (C) the Company Intellectual Property, and to the knowledge of the Company, the Intellectual Property licensed to the Company, has not been adjudged invalid or unenforceable, in whole or in part, and there is no pending or threatened action, suit, proceeding or claim by others challenging the validity or scope of any such licensed Intellectual Property, and the Company is unaware of any facts which would form a reasonable basis for any such claim; (D) there is no pending or, to the Company s knowledge, threatened action, suit, proceeding or claim by others that the Company infringes, misappropriates or otherwise violates any Intellectual Property or other proprietary rights of others, the Company has not received any written notice of such claim and the Company is unaware of any other fact which would form a reasonable basis for any such claim; and (E) to the Company s knowledge, no employee of the Company is in or has ever been in violation of any term of

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any employment contract, patent disclosure agreement, invention assignment agreement, non-competition agreement, non-solicitation agreement, nondisclosure agreement or any restrictive covenant to or with a former employer where the basis of such violation relates to such employee s employment with the Company or actions undertaken by the employee while employed with the Company. ***Intellectual Property*** shall mean all patents, patent applications, trade and service marks, trade and service mark registrations, trade names, copyrights, licenses, inventions, trade secrets, domain names, technology, know-how and other intellectual property. ***Company Intellectual Property*** shall mean all Intellectual Property owned, in whole or in part, by Company. The Company has obtained assignments of Company Intellectual Property from its employees. There are no outstanding options, licenses or agreements of any kind that have been entered into by the Company, and to the knowledge of the Company, by any third party, that relate to the Company Intellectual Property that are required by applicable law to be described in the Registration Statement, the Time of Sale Disclosure Package or the Prospectus that are not described therein in all material respects. To the knowledge of the Company, the Company has duly and properly filed or caused to be filed with the United States Patent and Trademark Office (the ***PTO***) and applicable foreign and international patent authorities all pending or issued patent applications owned by the Company (the ***Patent Applications***). To the knowledge of the Company, the Company has complied with the PTO s duty of candor, good faith and disclosure and best mode requirement for the Patent Applications, and all other requirements for patentability and enforceability of any resultant patents, and have made no material misrepresentation in the Patent Applications with an intent to deceive the PTO. To the knowledge of the Company, the Company has complied with the relevant foreign filing requirements underlying patentability and enforceability of any resultant patents for the Patent Applications pending in countries outside of the United States. The Company is not aware of any information material to a determination of patentability regarding the Patent Applications not submitted to or possessed by the PTO or, if required, similar foreign authority by the Company with respect to the prosecution of any Patent Applications. The Company has no knowledge of any information which would preclude the Company from having clear title to any Patent Applications, or would preclude the patentability, validity or enforceability of any patents or patent applications included in the Company Intellectual Property.

(p) The Company is not in violation of its charter, by-laws or other organizational documents, or in breach of or otherwise in default, and no event has occurred which, with notice or lapse of time or both, would constitute such a default in the performance of any material obligation, agreement or condition contained in any bond, debenture, note, indenture, loan agreement or any other material contract, lease or other instrument to which it is subject or by which any of them may be bound, or to which any of the material property or assets of the Company is subject.

(q) The Company (i) has accurately and timely prepared and filed all foreign, federal and state income and all other tax returns, reports and declarations required by any jurisdiction to which it is subject, (ii) has paid, when due, all taxes and other governmental assessments and charges that are material in amount, shown or determined to be due on such returns, reports and declarations, except those being contested in good faith, with respect to which adequate reserves have been set aside on the books of the Company and (iii) has set aside on its books provisions reasonably adequate for the payment of all taxes for periods subsequent to the periods to which such returns, reports or declarations apply, except, in the case of clauses (i) and (ii) above, where the failure to so pay or file any such tax, assessment, charge or return would not have or reasonably be expected to result in a Material Adverse Effect. There are no unpaid taxes in any material amount claimed to be due by the Company by the taxing authority of any jurisdiction.

(r) The Company has not distributed and will not distribute any prospectus or other offering material in connection with the offering and sale of the Securities other than the Base Prospectus, any Preliminary Prospectus, the Time of Sale Disclosure Package or the Prospectus or other materials permitted by the Act to be distributed by the Company; provided, however, that, except as set forth on

Schedule III, the Company has not made and will not make any offer relating to the Securities that would constitute a free writing prospectus as defined in Rule 405 under the Act, except in accordance with the provisions of Section 4(q) of this Agreement.

(s) The Common Stock is registered pursuant to Section 12(b) of the Securities Exchange Act of 1934, as amended (***Exchange Act***) and is included or approved for listing on the Nasdaq Capital Market and the Company has taken no action designed to, or likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act or delisting the Common Stock from the Nasdaq Capital Market nor has the Company received any notification that the Commission or the Nasdaq Capital Market is contemplating terminating such registration or listing, except as set forth in the Time of Sale Disclosure Package and the Prospectus. The Company has complied in all material respects with the applicable requirements of the Nasdaq Capital Market for maintenance of inclusion of the Common Stock thereon, except as disclosed in the Time of Sale Disclosure Package and the Prospectus. The Company has filed an application to include the Firm Shares and the shares of Common Stock underlying the Pre-Funded Warrants on the Nasdaq Capital Market. Except as previously disclosed to counsel for the Underwriters in writing or as set forth in the Time of Sale Disclosure Package and the Prospectus, there are no affiliations with members of FINRA among the Company s officers or directors or, to the knowledge of the Company, any five percent or greater stockholders of the Company or any beneficial owner of the Company s unregistered equity securities that were acquired during the 180-day period immediately preceding the initial filing date of the Registration Statement.

(t) The Company, directly or indirectly, owns no capital stock or other equity or ownership or proprietary interest in any corporation, partnership, association, trust or other entity.

(u) The Company maintains a system of internal accounting controls sufficient to provide reasonable assurances that (i) transactions are executed in accordance with management s general or specific authorization; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles in the United States and to maintain accountability for assets; (iii) access to assets is permitted only in accordance with management s general or specific authorization; and (iv) the recorded accountability for assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences. Except as disclosed in the Registration Statement, in the Time of Sale Disclosure Package and in the Prospectus, the Company s internal control over financial reporting is effective and none of the Company, its board of directors and audit committee is aware of any significant deficiencies or material weaknesses (each as defined by the Public Company Accounting Oversight Board) in its internal control over financial reporting, or any fraud, whether or not material, that involves management or other employees of the Company who have a significant role in the Company s internal controls; and since the end of the latest audited fiscal year, there has been no change in the Company s internal control over financial reporting (whether or not remediated) that has materially affected, or is reasonably likely to materially affect, the Company s internal control over financial reporting. Since the end of the latest audited fiscal year, there has been no change in the Company s internal control over financial reporting (whether or not remediated) that has materially affected, or is reasonably likely to materially affect, the Company s internal control over financial reporting. The Company s board of directors has, subject to the exceptions, cure periods and the phase-in periods specified in the applicable NASDAQ Marketplace Rules (***Exchange Rules***) and the Exchange Act and the rules and regulations thereunder, validly appointed an audit committee to oversee internal accounting controls whose composition satisfies the applicable requirements of the Exchange Rules and the Company s board of directors and/or the audit committee has adopted a charter that satisfies the requirements of the Exchange Rules.

(v) Other than as contemplated by this Agreement and except as disclosed in the Registration Statement, in the Time of Sale Disclosure Package and in the Prospectus, the Company has not incurred any liability for any finder s or broker s fee or agent s commission in connection with the execution and delivery of this Agreement or the consummation of the transactions contemplated hereby.

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(w) The Company is insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as the Company believes to be prudent and customary in the businesses and locations in which the Company is engaged, including, but not limited to, directors and officers insurance coverage; all policies of insurance and any fidelity or surety bonds insuring the Company or its business, assets, employees, officers and directors are in full force and effect; the Company is in compliance with the terms of such policies and instruments in all material respects; there are no material claims by the Company under any such policy or instrument as to which any insurance company is denying liability or defending under a reservation of rights clause; the Company has not been refused any insurance coverage sought or applied for; and the Company has no reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from other insurers as may be necessary to continue its business without a significant increase in cost.

(x) The documents incorporated by reference in the Time of Sale Disclosure Package and in the Prospectus, when they became effective or were filed with the Commission, as the case may be, conformed in all material respects to the requirements of the Act or the Exchange Act, as applicable, and were filed on a timely basis with the Commission and none of such documents, when they were filed or became effective, as the case may be, contained an untrue statement of a material fact or omitted to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading; any additional documents so filed and incorporated by reference in the Time of Sale Disclosure Package or in the Prospectus, when such documents are filed with the Commission, will conform in all material respects to the requirements of the Exchange Act, and will not contain an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(y) The Company is not and, after giving effect to the offering and sale of the Securities, will not be an investment company, as such term is defined in the Investment Company Act of 1940, as amended.

(z) The Company is in compliance in all material respects with all of the provisions of the Sarbanes-Oxley Act of 2002 which are applicable to it as of the Closing Date. The Company has established disclosure controls and procedures (as such term is defined in Rule 13a-15(e) and 15d-15(e) under the Exchange Act) for the Company and designed such disclosure controls and procedures to ensure that information required to be disclosed by the Company in the reports it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Commission s rules and forms. The Company has utilized such controls and procedures in preparing and evaluating the disclosures in the Registration Statement, in the Time of Sale Disclosure Package and in the Prospectus.

(aa) The Company and, to the knowledge of the Company, any of its officers and directors, supervisors, managers, agents, or employees, has not violated, and the Company s participation in the offering will not violate, and the Company has instituted and maintains policies and procedures designed to ensure continued compliance with, each of the following laws: (a) anti-bribery laws, including but not limited to, any applicable law, rule, or regulation of any locality, including but not limited to any law, rule, or regulation promulgated to implement the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, signed December 17, 1997, including the U.S. Foreign Corrupt Practices Act of 1977, as amended, or any other law, rule or regulation of similar purposes and scope; (b) anti-money laundering laws, including but not limited to, applicable federal, state, international, foreign or other laws, regulations or government guidance regarding anti-money laundering, including,

without limitation, Title 18 US. Code section 1956 and 1957, the Patriot Act, the Bank Secrecy Act, and international anti-money laundering principles or procedures by an intergovernmental group or organization, such as the Financial Action Task Force on Money Laundering, of which the United States is a member and with which designation the United States representative to the group or organization continues to concur, all as amended, and any Executive order, directive, or regulation pursuant to the authority of any of the foregoing, or any orders or licenses issued thereunder or (c) laws and regulations imposing U.S. economic sanctions measures, including, but not limited to, the International Emergency Economic Powers Act, the Trading with the Enemy Act, the United Nations Participation Act and the Syria Accountability and Lebanese Sovereignty Act, all as amended, and any Executive Order, directive, or regulation pursuant to the authority of any of the foregoing, including the regulations of the United States Treasury Department set forth under 31 CFR, Subtitle B, Chapter V, as amended, or any orders or licenses issued thereunder.

(bb) Neither the Company nor, to the Company s knowledge, any director, officer or employee of the Company, is currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Department of the Treasury.

(cc) To the knowledge of the Company, no transaction has occurred between or among the Company, on the one hand, and any of the Company s officers, directors or 5% stockholders or any affiliate or affiliates of any such officer, director or 5% stockholders that is required to be described under the Rules and Regulations that is not so described in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus. The Company has not, directly or indirectly, extended or maintained credit, or arranged for the extension of credit, or renewed an extension of credit, in the form of a personal loan to or for any of its directors or executive officers in violation of applicable laws, including Section 402 of the Sarbanes-Oxley Act.

(dd) To the knowledge of the Company, except as disclosed in the Registration Statement, the Time of Disclosure Package and the Prospectus, the Company is not in violation of any statute, any rule, regulation, decision or order of any Governmental Authority or any court, domestic or foreign, relating to the use, disposal or release of hazardous or toxic substances or relating to the protection or restoration of the environment or human exposure to hazardous or toxic substances (collectively, ***Environmental Laws***), owns or operates any real property contaminated with any substance that is in violation of any Environmental Laws, is liable for any off-site disposal or contamination pursuant to any Environmental Laws, or is subject to any claim relating to any Environmental Laws, which violation, contamination, liability or claim, individually or in the aggregate, has had or would have a Material Adverse Effect; and the Company is not aware of any pending investigation which would reasonably be expected to lead to such a claim.

(ee) The Company (A) is in compliance, in all material respects, with any and all applicable foreign, federal, state and local laws, rules, regulations, treaties, statutes and codes promulgated by any and all governmental authorities (including pursuant to the Occupational Health and Safety Act) relating to the protection of human health and safety in the workplace (***Occupational Laws***); (B) has received all material permits, licenses or other approvals required of it under applicable Occupational Laws to conduct its business as currently conducted; and (C) is in compliance, in all material respects, with all terms and conditions of such permit, license or approval. No action, proceeding, revocation proceeding, writ, injunction or claim is pending or, to the Company s knowledge, threatened in writing against the Company relating to Occupational Laws.

(ff) To the knowledge of the Company, no prohibited transaction as defined under Section 406 of ERISA or Section 4975 of the Code and not exempt under ERISA Section 408 and the regulations and published interpretations thereunder has occurred with respect to any Employee Benefit Plan.

At no time has the Company or any ERISA Affiliate maintained, sponsored, participated in, contributed to or has or had any liability or obligation in respect of any Employee Benefit Plan subject to Part 3 of Subtitle B of Title I of ERISA, Title IV of ERISA, or Section 412 of the Code or any multiemployer plan as defined in Section 3(37) of ERISA or any multiple employer plan for which the Company or any ERISA Affiliate has incurred or could reasonably be expected to incur any liability under Section 4063 or 4064 of ERISA. No Employee Benefit Plan provides or promises, or at any time provided or promised, retiree health, retiree life insurance, or other retiree welfare benefits except as may be required by the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended, or similar state law. Each Employee Benefit Plan is and has been operated in material compliance with its terms and all applicable laws, including, with respect to Employee Benefit Plans subject to ERISA and the Code, ERISA and the Code and, to the knowledge of the Company, no event has occurred (including a reportable event as such term is defined in Section 4043 of ERISA) and no condition exists that would subject the Company or any ERISA Affiliate to any material tax, fine, lien, penalty or liability imposed by ERISA, the Code or other applicable law, except as would not reasonably be expected to have a Material Adverse Effect. Each Employee Benefit Plan intended to be qualified under Code Section 401(a) is so qualified and has a favorable determination or opinion letter from the IRS upon which it can rely, and any such determination or opinion letter remains in effect and has not been revoked, and to the knowledge of the Company, (i) nothing has occurred since the date of any such determination or opinion letter that is reasonably likely to adversely affect such qualification and (ii) the Company does not have any obligations under any collective bargaining agreement with any union and no organization efforts are underway with respect to Company employees. As used in this Agreement, Code means the Internal Revenue Code of 1986, as amended; Employee Benefit Plan means any employee benefit plan within the meaning of Section 3(3) of ERISA sponsored, maintained, or contributed to by the Company, including, without limitation, all stock purchase, stock option, stock-based severance, employment, change-in-control, medical, disability, fringe benefit, bonus, incentive, deferred compensation, employee loan and all other employee benefit plans, agreements, programs, policies or other arrangements, whether or not subject to ERISA, under which (A) any current or former employee, director or independent contractor of the has any present or future right to benefits and which are contributed to, sponsored by or maintained by the Company or (B) the Company has within the past five (5) years had or currently has any present or known future obligation or liability; ***ERISA*** means the Employee Retirement Income Security Act of 1974, as amended; ***ERISA Affiliate*** means any member of the Company s controlled group as defined in Code Section 414(b), (c), (m) or (o).

(gg) Except as disclosed in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus, the Company has not granted rights to develop, manufacture, produce, assemble, distribute, license, market or sell its product candidates to any other person and is not bound by any agreement that affects the exclusive right of the Company to develop, manufacture, produce, assemble, distribute, license, market or sell its products.

(hh) No labor problem or dispute with the employees of the Company exists or, to the knowledge of the Company, is threatened or imminent, and the Company is not aware of any existing or imminent labor disturbance by the employees of any of its principal suppliers, contractors or customers, that would reasonably be expected to have a Material Adverse Effect. No executive officer of the Company (as defined in Rule 501(f) of the Securities Act) has notified the Company that such officer intends to leave the Company or otherwise terminate such officer s employment with the Company. To the Company s knowledge, no executive officer is, or is now expected to be, in violation of any term of any material term of any employment contract, confidentiality, disclosure or proprietary information agreement or non-competition agreement, or any other contract or agreement or any restrictive covenant in favor of a third party, and to the Company s knowledge, the continued employment of each such executive officer does not subject the Company to any liability with respect to any of the foregoing matters. The Company is in compliance with all U.S. federal, state, local and foreign laws and regulations relating to employment and

employment practices, terms and conditions of employment and wages and hours, except where the failure to be in compliance would not, individually or in the aggregate, have or reasonably be expected to result in a Material Adverse Effect.

(ii) Any third-party statistical and market-related data included in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus is based on or derived from sources that the Company believes to be reliable and accurate in all material respects.

(jj) There are no outstanding loans, advances (except normal advances for business expenses in the ordinary course of business) or guarantees or indebtedness, in each case made by or from the Company to or for the benefit of any of the officers or directors of the Company, except as disclosed in the Time of Sale Disclosure Package and the Prospectus.

(kk) Except as disclosed in the Time of Sale Disclosure Package and the Prospectus, the Company (i) does not have any material lending or other relationship with any bank or lending affiliate of any Underwriter and (ii) does not intend to use any of the proceeds from the sale of the Securities hereunder to repay any outstanding debt owed to any affiliate of any Underwriter.

(ll) As to each product subject to the jurisdiction of the U.S. Food and Drug Administration (***FDA***) under the Federal Food, Drug and Cosmetic Act, as amended, and the regulations thereunder (***FDCA***) that is manufactured, packaged, labeled, tested, distributed, sold, and/or marketed by the Company (each such product, a ***Pharmaceutical Product***), such Pharmaceutical Product is being manufactured, packaged, labeled, tested, distributed, sold and/or marketed by the Company in compliance with all applicable requirements under FDCA and similar laws, rules and regulations relating to registration, investigational use, premarket clearance, licensure, or application approval, good manufacturing practices, good laboratory practices, good clinical practices, product listing, quotas, labeling, advertising, record keeping and filing of reports, except where the failure to be in compliance would not have or reasonably be expected to result in a Material Adverse Effect. There is no pending, completed or, to the Company s knowledge, threatened, action (including any lawsuit, arbitration, or legal or administrative or regulatory proceeding, charge, complaint, or investigation) against the Company by the FDA or any other governmental entity, and the Company has not received any notice, warning letter or other communication from the FDA or any other governmental entity, which (i) contests the premarket clearance, licensure, registration, or approval of, the uses of, the distribution of, the manufacturing or packaging of, the testing of, the sale of, or the labeling and promotion of any Pharmaceutical Product, (ii) withdraws its approval of, requests the recall, suspension, or seizure of, or withdraws or orders the withdrawal of advertising or sales promotional materials relating to, any Pharmaceutical Product, (iii) imposes a clinical hold on any clinical investigation by the Company other than with respect to IMO-3100, except as disclosed in the Time of Sale Disclosure Package and the Prospectus, (iv) enjoins production at any facility of the Company, (v) enters or proposes to enter into a consent decree of permanent injunction with the Company, or (vi) otherwise alleges any violation of any laws, rules or regulations by the Company, and which, either individually or in the aggregate, would have or reasonably be expected to result in a Material Adverse Effect. The properties, business and operations of the Company have been and are being conducted in all material respects in accordance with all applicable laws, rules and regulations of the FDA. The Company has not been informed by the FDA that the FDA will prohibit the marketing, sale, license or use in the United States of any product proposed to be developed, produced or marketed by the Company nor has the FDA expressed any concern as to approving or clearing for marketing any product being developed or proposed to be developed by the Company.

(mm) To the knowledge of the Company, the descriptions of the results of the studies, tests and trials contained in the Time of Sale Disclosure Package and the Prospectus are accurate in all material respects and there are no other studies or tests, the results of which could reasonably be expected to discredit or call into question the results described in the Time of Sale Disclosure Package and the Prospectus.

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(nn) Except as would not, individually or in the aggregate, have a Material Adverse Effect, the Company is in compliance in all material respects with all applicable rules and regulations of the FDA, and all applicable U.S. and foreign laws, statutes, ordinances, rules and regulations.

Any certificate signed by any officer of the Company and delivered to you or to counsel for the Underwriters in connection with this Agreement shall be deemed a representation and warranty by the Company to each Underwriter as to the matters covered thereby.

3. ***Purchase, Sale and Delivery of Securities***.

(a) On the basis of the representations, warranties and agreements herein contained, but subject to the terms and conditions herein set forth, the Company agrees to issue and sell 13,727,251 Firm Shares and Pre-Funded Warrants to purchase up to an aggregate of 4,175,975 shares of Common Stock to the several Underwriters, and each Underwriter agrees, severally and not jointly, to purchase from the Company the number of Firm Shares set forth opposite the name of such Underwriter in Schedule I hereto. The purchase price for each Firm Share shall be $1.55 per share and $1.54 for each Pre-Funded Warrant to purchase one share of Common Stock. The obligation of each Underwriter to the Company shall be to purchase from the Company that number of Firm Shares (to be adjusted by the Representative to avoid fractional shares), and Pre-Funded Warrants (to be adjusted by the Representative to avoid fractional shares) set forth opposite the name of such Underwriter in Schedule I. In making this Agreement, each Underwriter is contracting severally and not jointly; except as provided in paragraph (b) of this Section 3 and in Section 8 hereof, the agreement of each Underwriter is to purchase only the respective number of Firm Shares and Pre-Funded Warrants specified in Schedule I.

The Firm Shares and Pre-Funded Warrants will be delivered by the Company to you for the accounts of the several Underwriters, against payment of the purchase price therefor by wire transfer of same day funds payable to the order of the Company, at the offices of Dechert LLP, 1095 Avenue of the Americas, New York, New York 10036, or such other location as may be agreed upon by the Company and the Representative, at 10:00 a.m. Eastern time on the third (or if the Securities are priced, as contemplated by Rule 15c6-1(c) under the Exchange Act, after 4:30 p.m. Eastern time, the fourth) full business day following the date hereof, or at such other time and date as you and the Company determine pursuant to Rule 15c6-1(a) under the Exchange Act, such time and date of delivery being herein referred to as the ***Closing Date.*** If the Representative so elects, delivery of the Firm Shares and/or Pre-Funded Warrants may be made by credit through full fast transfer to the accounts at The Depository Trust Company designated by the Representative. Certificates representing the Firm Shares and warrants of the Company in the form of Exhibit C hereto representing the Pre-Funded Warrants, in definitive form and in such denominations and registered in such names as you may request upon at least two business days prior notice to the Company, or evidence of their issuance, will be made available for checking at a reasonable time preceding the Closing Date at the offices of Dechert LLP, 1095 Avenue of the Americas, New York, New York 10036, or such other location as may be agreed upon by the Company and the Representative.

(b) It is understood that you, individually and not as Representative of the several Underwriters, may (but shall not be obligated to) make payment to the Company on behalf of any Underwriter for the Securities to be purchased by such Underwriter. Any such payment by you shall not relieve any such Underwriter of any of its obligations hereunder. Nothing herein contained shall constitute any of the Underwriters an unincorporated association or partner with the Company.

4. ***Covenants***. The Company covenants and agrees with the several Underwriters as follows:

(a) The Company will use its best efforts to cause any post-effective amendments to the Registration Statement to become effective as promptly as possible; the Company will notify you promptly of the time when any post-effective amendment to the Registration Statement has become effective or any supplement to the Prospectus has been filed and of any request by the Commission for any amendment or supplement to the Registration Statement or Prospectus or additional information; if the Company has elected to rely upon Rule 462(b) of the Rules and Regulations to increase the size of the offering registered under the Act and the Rule 462(b) Registration Statement has not yet been filed and become effective, the Company will prepare and file the Rule 462 Registration Statement with the Commission within the time period required by, and otherwise in accordance with the provisions of, Rule 462(b) and the Act; promptly following execution of this Agreement, the Company will prepare the Prospectus containing the Rule 430B Information and other selling terms of the Securities, the plan of distribution thereof and such other information as may be required by the Act or the Rules and Regulations or as the Representative and the Company may deem appropriate, and if requested by the Representative, an Issuer Free Writing Prospectus containing the selling terms of the Securities and such other information as the Company and the Representative may deem appropriate, and will file or transmit for filing with the Commission, in accordance with Rule 424(b) or Rule 433, as the case may be, copies of the Prospectus and each Issuer Free Writing Prospectus; the Company will prepare and file with the Commission, promptly upon your request, any amendments or supplements to the Registration Statement or Prospectus that, based on the advice of counsel, may be necessary or advisable in connection with the distribution of the Securities by the Underwriters; and the Company will furnish the Representative and counsel for the Underwriters a copy of any proposed amendment or supplement to the Registration Statement or Prospectus and will not file any amendment or supplement to the Registration Statement or Prospectus to which you shall reasonably object by notice to the Company after having been furnished a copy a reasonable time prior to the filing.

(b) The Company will advise you, promptly after it shall receive notice or obtain knowledge thereof, of the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement, or any post-effective amendment thereto or preventing or suspending the use of the Base Prospectus, any Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus or any Issuer Free Writing Prospectus, of the suspension of the qualification of the Securities for offering or sale in any jurisdiction, or of the initiation or threatening of any proceeding for any such purpose; and the Company will promptly use its best efforts to prevent the issuance of any stop order or to obtain its withdrawal if such a stop order should be issued. Additionally, the Company agrees that it shall comply with the provisions of Rules 424(b) and 430B, as applicable, under the Act and will use its reasonable efforts to confirm that any filings made by the Company under Rule 424(b), Rule 433 or Rule 462 were received in a timely manner by the Commission.

(c) (A) Within the time during which a prospectus (assuming the absence of Rule 172) relating to the Securities is required to be delivered under the Act by any Underwriter or dealer (the ***Prospectus Delivery Period***), the Company will use its best efforts to comply with all requirements imposed upon it by the Act, as now and hereafter amended, and by the Rules and Regulations, as from time to time in force, so far as necessary to permit the continuance of sales of or dealings in the Securities as contemplated by the provisions hereof, the Time of Sale Disclosure Package and the Prospectus. If during such period any event occurs as a result of which the Prospectus (or if the Prospectus is not yet available to prospective purchasers, the Time of Sale Disclosure Package) would include an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances then existing, not misleading, or if during such period it is necessary to amend the Registration Statement or supplement the Prospectus (or if the Prospectus is not yet available to prospective investors, the

Time of Sale Disclosure Package) to comply with the Act or to file under the Exchange Act any document which would be deemed to be incorporated by reference in the Prospectus in order to comply with the Act or the Exchange Act, the Company will promptly notify you and will amend the Registration Statement or supplement the Prospectus (or, if the Prospectus is not yet available to prospective purchasers, the Time of Sale Disclosure Package) or file such document (at the expense of the Company) so as to correct such statement or omission or effect such compliance.

(B) If at any time following issuance of an Issuer Free Writing Prospectus and through the Prospectus Delivery Period, there occurred or occurs an event or development as a result of which such Issuer Free Writing Prospectus conflicted or would conflict, during such time, with the information contained in the Registration Statement, the most recent Preliminary Prospectus, the Base Prospectus or the Prospectus relating to the Securities or included or, during such time, would include an untrue statement of a material fact or omitted or would omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances prevailing at that subsequent time, not misleading, the Company has promptly notified or promptly will notify the Representative and has promptly amended or will promptly amend or supplement, at its own expense, such Issuer Free Writing Prospectus to eliminate or correct such conflict, untrue statement or omission.

(d) The Company shall take or cause to be taken all necessary action to qualify the Securities for sale under the securities laws of such jurisdictions as you reasonably designate and to continue such qualifications in effect so long as required for the distribution of the Securities, except that the Company shall not be required in connection therewith to qualify as a foreign corporation or to execute a general consent to service of process in any state or subject itself to taxation in any jurisdiction if it is not otherwise so subject.

(e) The Company will furnish, at its own expense, to the Underwriters and counsel for the Underwriters copies of the Registration Statement (one of which will be signed and will include all consents and exhibits filed therewith), and to the Underwriters and any dealer the Base Prospectus, each Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus, any Issuer Free Writing Prospectus and all amendments and supplements to such documents, in each case as soon as available and in such quantities as you may from time to time reasonably request.

(f) The Company will make generally available to its security holders as soon as practicable, but in no event later than 15 months after the end of the Company s current fiscal quarter, an earnings statement (which need not be audited) covering a 12-month period beginning after the effective date of the Registration Statement (or if later the Rule 462(b) Registration Statement) that shall satisfy the provisions of Section 11(a) of the Act and Rule 158 of the Rules and Regulations.

(g) During a period of five years commencing with the date hereof, the Company will furnish or make available to the Representative, as the Representative may from time to time reasonably request in writing, copies of all periodic and special reports furnished to the stockholders of the Company generally, and all public information, documents and reports filed with the Commission, the FINRA or any securities exchange (other than any such information, documents and reports that are filed with the Commission electronically via EDGAR or any successor system).

(h) The Company, whether or not the transactions contemplated hereunder are consummated or this Agreement is prevented from becoming effective under the provisions of Section 9 hereof or is terminated, will pay or cause to be paid (A) all expenses (including transfer taxes allocated to the respective transferees) incurred in connection with the delivery to the Underwriters of the Securities, (B) all expenses and fees (including, without limitation, fees and expenses of the Company s accountants and counsel but, except as otherwise provided below, not including fees of the Underwriters counsel) in

connection with the preparation, printing, filing, delivery, and shipping of the Registration Statement (including the financial statements therein and all amendments, schedules, and exhibits thereto), the Securities, each Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus, any Issuer Free Writing Prospectus and any amendment thereof or supplement thereto, and the printing, delivery, and shipping of this Agreement and other underwriting documents, including Blue Sky Memoranda (covering the states and other applicable jurisdictions), (C) all filing fees and reasonable fees and disbursements of the Underwriters counsel incurred in connection with the qualification of the Securities for offering and sale by the Underwriters or by dealers under the securities or blue sky laws of the states and other jurisdictions which you shall designate, (D) the fees and expenses of any transfer agent or registrar, (E) the filing fees and reasonable fees and disbursements of Underwriters counsel incident to any required review and approval by FINRA of the terms of the sale of the Securities, (F) listing fees, if any, (G) the cost and expenses of the Company relating to investor presentations or any road show undertaken in connection with marketing of the Securities, and (H) all other costs and expenses of the Company incident to the performance of its obligations hereunder that are not otherwise specifically provided for herein and (I) all other reasonable out-of-pocket documented costs and expenses of the Underwriter (including reasonable fees and disbursements of counsel) incident to the performance of its obligations hereunder not otherwise specifically provided for herein, provided however such costs and expenses provided for in this clause (I) shall not exceed $75,000 in the aggregate, without the Company s prior written consent. Notwithstanding the foregoing sentence of this subsection (h), the Underwriters have agreed to reimburse the Company an amount up to 20% of the aggregate underwriting discounts and commissions relating to the offering of the Securities (such amount not to exceed a maximum of $260,000 in the aggregate) to cover certain of the Company s expenses related to the offering of the Securities. If the sale of the Firm Shares and Pre-Funded Warrants provided for herein is not consummated by reason of action by the Company pursuant to Section 8 hereof which prevents this Agreement from becoming effective, if this Agreement is terminated by the Representative pursuant to Section 9 hereof prior to the Closing, or if the sale of the Firm Shares and Pre-Funded Warrants provided for herein is not consummated by reason of any failure, refusal or inability on the part of the Company to perform any agreement on its or their part to be performed, or because any other condition of the Underwriters obligations hereunder required to be fulfilled by the Company prior to the Closing is not fulfilled, the Company will reimburse the several Underwriters for all reasonable out-of-pocket disbursements (including but not limited to reasonable fees and disbursements of counsel, printing expenses, travel expenses, postage, facsimile and telephone charges) incurred by the Underwriters in connection with their investigation, preparing to market and marketing the Securities or in contemplation of performing their obligations hereunder.

(i) The Company will apply the net proceeds from the sale of the Securities to be sold by it hereunder for the purposes set forth in the Time of Sale Disclosure Package and in the Prospectus and will file such reports with the Commission with respect to the sale of the Securities and the application of the proceeds therefrom as may be required in accordance with Rule 463 of the Rules and Regulations.

(j) The Company will not, without the prior written consent of the Representative, from the date of execution of this Agreement and continuing to and including the date 90 days after the date of the Prospectus (the ***Lock-Up Period***), (A) offer, pledge, announce the intention to sell, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock or (B) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the Common Stock, whether any such transaction described in clause (A) or (B) above is to be settled by delivery of Common Stock or such other securities, in cash or otherwise, except (i) to the Underwriters pursuant to this Agreement, (ii) to directors, officers, employees and consultants of the Company pursuant to employee benefit plans, equity incentive plans or other employee compensation plans existing on the date hereof and as

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described in the Prospectus or otherwise approved by the Company s stockholders, (iii) pursuant to the exercise or conversion of any options, warrants, rights or convertible securities outstanding on the date hereof, of which the Representative has been advised in writing or (iv) securities of the Company issued in connection with a joint venture or collaboration or other strategic or commercial relationship existing prior to, on or following the date hereof; provided, that in the case of clause (iv) any recipient (as applicable) agrees to be bound in writing by the restrictions set forth herein for the remainder of the Lock-Up Period. The Company agrees not to accelerate the vesting of any option or warrant or the lapse of any repurchase right prior to the expiration of the Lock-Up Period. If (1) during the last 17 days of the Lock-Up Period, (a) the Company issues an earnings release, (b) the Company publicly announces material news or (c) a material event relating to the Company occurs; or (2) prior to the expiration of the Lock-Up Period, the Company announces that it will release earnings results during the 16-day period beginning on the last day of the Lock-Up Period, then if, within three days of that issuance or occurrence, the Representative publishes or otherwise distributes a research report or makes a public appearance concerning the Company, the restrictions in this Agreement, unless otherwise waived by the Representative in writing, shall continue to apply until the expiration of the date that is 18 calendar days after the date on which (a) the Company issues the earnings release, (b) the Company publicly announces material news or (c) a material event relating to the Company occurs. Notwithstanding the foregoing, if the Company has actively traded securities within the meaning of Rule 101(c)(1) of Regulation M of the Exchange Act, and otherwise satisfies the requirements set forth in Rule 139 of the Securities Act of 1933 that would permit Piper Jaffray & Co. or any underwriter to publish issuer-specific research reports pursuant to Rule 139, the Lock-Up Period shall not be extended upon the occurrence of (1) or (2) above. The Company will provide the Representative, any co-managers and each person subject to the Lock-Up Agreement (as defined below) with prior notice of any such announcement that gives rise to the extension of the Lock-Up Period.

(k) The Company has caused to be delivered to you prior to the date of this Agreement a letter, in the form of Exhibit A hereto (the ***Lock-Up Agreement***), from each of the Company s directors and officers. The Company will issue stop-transfer instructions to the transfer agent for the Common Stock with respect to any transaction or contemplated transaction that would constitute a breach of or default under the applicable Lock-Up Agreement.

(l) The Company has not taken and will not take, directly or indirectly, any action designed to or which would reasonably be expected to cause or result in, or which has constituted, the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Securities, and has not effected any sales of Common Stock which are required to be disclosed in response to Item 701 of Regulation S-K under the Act which have not been so disclosed in the Registration Statement.

(m) Other than as contemplated by this Agreement, the Company will not incur any liability for any finder s or broker s fee or agent s commission in connection with the execution and delivery of this Agreement or the consummation of the transactions contemplated hereby.

(n) During the Prospectus Delivery Period, the Company will file on a timely basis with the Commission such periodic and other reports as required by the Rules and Regulations.

(o) the Company will maintain such controls and other procedures, including without limitation those required by Sections 302 and 906 of the Sarbanes-Oxley Act and the applicable regulations thereunder, that are designed to ensure that information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Commission s rules and forms, including without limitation, controls and procedures designed to ensure that information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the Company s

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management, including its principal executive officer and its principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure, to ensure that material information relating to Company is made known to them by others within those entities.

(p) The Company will comply with all applicable provisions of the Sarbanes-Oxley Act.

(q) The Company represents and agrees that, unless it obtains the prior written consent of the Representative, and each Underwriter severally represents and agrees that, unless it obtains the prior written consent of the Company and the Representative, it has not made and will not make any offer relating to the Securities that would constitute an issuer free writing prospectus, as defined in Rule 433 under the Act, or that would otherwise constitute a free writing prospectus, as defined in Rule 405 under the Act, required to be filed with the Commission; provided that the prior written consent of the parties hereto shall be deemed to have been given in respect of the free writing prospectuses included in Schedule III. Any such free writing prospectus consented to by the Company and the Representative is hereinafter referred to as a ***Permitted Free Writing Prospectus.*** The Company represents that it has treated or agrees that it will treat each Permitted Free Writing Prospectus as an issuer free writing prospectus, as defined in Rule 433, and has complied and will comply with the requirements of Rules 164 and 433 applicable to any Permitted Free Writing Prospectus, including timely Commission filing where required, legending and record keeping. The Company represents that it has satisfied and agrees that it will satisfy the conditions in Rule 433 to avoid a requirement to file with the Commission any electronic road show

5. ***Conditions of Underwriters Obligations***. The obligations of the several Underwriters hereunder are subject to the accuracy, as of the date hereof and at the Closing Date (as if made at such Closing Date), of and compliance with all representations, warranties and agreements of the Company contained herein, to the performance by the Company and to the following additional conditions:

(a) If filing of the Prospectus, or any amendment or supplement thereto, or any Issuer Free Writing Prospectus, is required under the Securities Act or the Rules and Regulations, the Company shall have filed the Prospectus (or such amendment or supplement) or such Issuer Free Writing Prospectus with the Commission in the manner and within the time period so required (without reliance on Rule 424(b)(8) or Rule 164(b)); no stop order suspending the effectiveness of the Registration Statement or any part thereof or any amendment thereof, nor suspending or preventing the use of the Time of Sale Disclosure Package, the Prospectus or any Issuer Free Writing Prospectus shall have been issued; no proceedings for the issuance of such an order shall have been initiated or threatened; and any request of the Commission for additional information (to be included in the Registration Statement, the Time of Sale Disclosure Package, the Prospectus, any Issuer Free Writing Prospectus or otherwise) shall have been complied with to your satisfaction.

(b) The Representative shall not have advised the Company that (i) the Registration Statement or any amendment thereof or supplement thereto contains an untrue statement of a material fact which, based on the advice of counsel, is material or omits to state a material fact which, based on the advice of counsel, is required to be stated therein or necessary to make the statements therein not misleading, or (ii) the Time of Sale Disclosure Package or the Prospectus, or any amendment thereof or supplement thereto, or any Issuer Free Writing Prospectus contains an untrue statement of fact which, based on the advice of counsel, is material, or omits to state a fact which, based on the advice of counsel, is material and is required to be stated therein, or necessary to make the statements therein, in light of the circumstances under which they are made, not misleading.

(c) Except as contemplated in the Time of Sale Disclosure Package and in the Prospectus, subsequent to the respective dates as of which information is given in the Time of Sale Disclosure Package and the Prospectus, the Company shall have not incurred any material liabilities or obligations, direct or contingent, or entered into any material transactions outside the ordinary course of business, or declared or paid any dividends or made any distribution of any kind with respect to its capital stock; and there shall not have been any change in the capital stock (other than a change in the number of outstanding shares of Common Stock due to the issuance of shares upon the exercise or conversion of outstanding options, warrants, rights or convertible securities), or any material change in the short-term or long-term debt of the Company, or any issuance of options, warrants, convertible securities or other rights to purchase the capital stock of the Company except pursuant to equity compensation plans or arrangements described in the Time of Sale Disclosure Package and in the Prospectus, or any Material Adverse Change or any development that would result in a Material Adverse Change (whether or not arising in the ordinary course of business), that in your judgment, makes it impractical or inadvisable to offer or deliver the Securities on the terms and in the manner contemplated in the Time of Sale Disclosure Package and in the Prospectus.

(d) On the Closing Date, there shall have been furnished to you, as Representative of the several Underwriters, the opinion and negative assurance letter of Wilmer Cutler Pickering Hale and Dorr LLP, corporate counsel for the Company, dated as of the Closing Date and addressed to you in a form mutually agreed upon.

(e) On the Closing Date, there shall have been furnished to you, as Representative of the several Underwriters, the opinion of the Company s internal intellectual property counsel, dated as of the Closing Date and addressed to you in a form mutually agreed upon.

(f) On the Closing Date, there shall have been furnished to the Underwriter, the opinion and letter of negative assurance of Dechert LLP, counsel for the Underwriter, dated as of the Closing Date and addressed to the Underwriters with respect to the formation of the Company, the validity of the Securities, the Registration Statement, the Time of Sale Disclosure Package or the Prospectus and other related matters as you reasonably may request, and such counsel shall have received such papers and information as they reasonably request to enable them to pass upon such matters.

(g) On the date hereof and on the Closing Date you, as Representative of the several Underwriters, shall have received a letter from Ernst & Young LLP, dated such date and addressed to you, confirming that it is an independent registered public accounting firm within the meaning of the Act and are in compliance with the applicable requirements relating to the qualifications of accountants under Rule 2-01 of Regulation S-X of the Commission, and stating, as of the date of such letter (or, with respect to matters involving changes or developments since the respective dates as of which specified financial information is given in the Time of Sale Disclosure Package, as of a date not prior to the date hereof or more than five days prior to the date of such letter), the conclusions and findings of said firm with respect to the financial information and other matters covered by its letter delivered to you concurrently with the execution of this Agreement, and the effect of the letter so to be delivered on the Closing Date shall be to confirm the conclusions and findings set forth in such prior letter.

(h) On the Closing Date, there shall have been furnished to you, as Representative of the Underwriters, a certificate, dated as of the Closing Date and addressed to you, signed by the chief executive officer and by the chief financial officer of the Company, to the effect that:

(i) The representations and warranties of the Company in this Agreement are true and correct, in all material respects, as if made at and as of the Closing Date, and the Company has complied in all material respects with all the agreements and satisfied all the conditions on its part to be performed or satisfied under this Agreement at or prior to the Closing Date;

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(ii) No stop order or other order suspending the effectiveness of the Registration Statement or any part thereof or any amendment thereof or the qualification of the Securities for offering or sale, nor suspending or preventing the use of the Time of Sale Disclosure Package, the Prospectus or any Issuer Free Writing Prospectus, has been issued, and, no proceeding for that purpose has been instituted or, to the best of their knowledge, is contemplated by the Commission or any state or regulatory body; and

(iii) The signers of said certificate have examined the Registration Statement, the Time of Sale Disclosure Package and the Prospectus, and any amendments thereof or supplements thereto, and in their opinion (A) each part of the Registration Statement and the Prospectus, and any amendments thereof or supplements thereto contain, and contained when such part of the Registration Statement, or any amendment thereof, became effective, all statements and information required to be included therein, the Registration Statement, or any amendment thereof, does not contain and did not contain when such part of the Registration Statement, or any amendment thereof, became effective, any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading, and the Prospectus, as amended or supplemented, does not include and did not include as of its date or the time of first use within the meaning of the Rules and Regulations, any untrue statement of material fact or omit to state and did not omit to state as of its date or the time of first use within the meaning of the Rules and Regulations a material fact necessary to make the statements therein, in light of the circumstances under which they were made, not misleading, (B) neither (1) the Time of Sale Disclosure Package nor (2) any individual Issuer Limited-Use Free Writing Prospectus, when considered together with the Time of Sale Disclosure Package, include, nor included as of the Time of Sale any untrue statement of a material fact or omits, or omitted as of the Time of Sale, to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading, (C) since the Time of Sale there has occurred no event required to be set forth in an amended or supplemented prospectus which has not been so set forth, (D) subsequent to the respective dates as of which information is given in the Time of Sale Disclosure Package and in the Prospectus, the Company has not incurred any material liabilities or obligations, direct or contingent, or entered into any material transactions, not in the ordinary course of business, or declared or paid any dividends or made any distribution of any kind with respect to its capital stock, and except as disclosed in the Time of Sale Disclosure Package and in the Prospectus, there has not been any change in the capital stock (other than a change in the number of outstanding shares of Common Stock due to the issuance of shares upon the exercise or conversion of outstanding options, warrants, rights or convertible securities), or any material change in the short-term or long-term debt, or any issuance of options, warrants, convertible securities or other rights to purchase the capital stock, except pursuant to equity compensation plans or arrangements described in the Time of Sale Disclosure Package and in the Prospectus, of the Company, or any other Material Adverse Change or any development which could reasonably be expected to result in any Material Adverse Change (whether or not arising in the ordinary course of business), and (E) except as stated in the Time of Sale Disclosure Package and in the Prospectus, there is not pending, or, to the knowledge of the Company, threatened or contemplated, any action, suit or proceeding to which the Company is a party before or by any court, Governmental Agency or any arbitrator, which could reasonably be expected to result in any Material Adverse Change.

(i) The Underwriters shall have received all of the Lock-Up Agreements referenced in Section 4(k).

(j) At the Closing Date, the Underwriters shall have received a certificate, signed on behalf of the Company by the Chief Financial Officer of the Company, dated as of the Closing Date, substantially in the form of Exhibit B hereto.

(k) The Underwriters shall have received on the Closing Date a certificate of the Secretary of the Company.

(l) The Underwriters shall not have received any unresolved objection from FINRA as to the fairness and reasonableness of the amount of compensation allowable or payable to the Underwriters in connection with the issuance and sale of the Securities.

(m) The Firm Shares and the shares of Common Stock underlying the Pre-Funded Warrants to be delivered on the Closing Date will have been approved for listing on the NASDAQ Capital Market, subject to official notice of issuance.

(n) The Company shall have furnished to you and counsel for the Underwriters such additional documents, certificates and evidence as you or they may have reasonably requested.

All such opinions, certificates, letters and other documents mentioned above and elsewhere in this Agreement will be in compliance with the provisions hereof only if they are satisfactory in form and substance to you and counsel for the Underwriters. The Company will furnish you with such conformed copies of such opinions, certificates, letters and other documents as you shall reasonably request.

6. ***Indemnification and Contribution***.

(a) The Company agrees to indemnify and hold harmless each Underwriter, its affiliates, directors and officers and each person, if any, who controls such Underwriter within the meaning of Section 15 of the Act or Section 20 of the Exchange Act, from and against any losses, claims, damages or liabilities, joint or several, to which such Underwriter may become subject, under the Act or otherwise (including in settlement of any litigation, or any investigation or proceeding by any governmental agency or body, commenced or threatened, if such settlement is effected with the written consent of the Company), insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon (i) an untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, including the 430B Information and any other information deemed to be a part of the Registration Statement at the time of effectiveness and at any subsequent time pursuant to the Rules and Regulations, if applicable, any Preliminary Prospectus, the Base Prospectus, the Time of Sale Disclosure Package, the Prospectus, or any amendment or supplement thereto, any Issuer Free Writing Prospectus or in any materials or information provided to investors by, or with the written approval of, the Company in connection with the marketing of the offering of the Common Stock (***Marketing Materials***), including any road show or investor presentations made to investors by the Company (whether in person or electronically), (ii) arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of (other than in the case of the Registration Statement) the circumstances under which they are made, not misleading or (iii) any breach by the Company of any of its representations, warranties and agreements contained in this Agreement, and will reimburse each

Underwriter for any legal or other expenses reasonably incurred by it in connection with preparing, investigating or defending against such loss, claim, damage, liability or action as such expenses are incurred; *provided*, *however*, that the Company will not be liable in any such case to the extent that any such loss, claim, damage, liability or action arises out of or is based upon an untrue statement or alleged untrue statement or omission or alleged omission made in the Registration Statement, any Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus, or any such amendment or supplement, any Issuer Free Writing Prospectus or in any Marketing Materials, in reliance upon and in conformity with written information furnished to the Company by you, or by any Underwriter through you, specifically for use in the preparation thereof; it being understood and agreed that the only information furnished by an Underwriter consists of the information described as such in Section 6(f).

(b) Each Underwriter will, severally and not jointly, indemnify and hold harmless the Company, its affiliates, directors and officers and each person, if any, who controls the Company within the meaning of Section 15 of the Act and Section 20 of the Exchange Act, from and against any losses, claims, damages or liabilities to which the Company may become subject, under the Act or otherwise (including in settlement of any litigation, or any investigation or proceeding by any governmental agency or body, commenced or threatened, if such settlement is effected with the written consent of such Underwriter), insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon an untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, any Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus, or any amendment or supplement thereto, or any Issuer Free Writing Prospectus or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of (other than in the case of the Registration Statement) the circumstances under which they are made, not misleading, in each case to the extent, but only to the extent, that such untrue statement or alleged untrue statement or omission or alleged omission was made in the Registration Statement, any Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus, or any such amendment or supplement, or any Issuer Free Writing Prospectus in reliance upon and in conformity with written information furnished to the Company by you, or by such Underwriter through you, specifically for use in the preparation thereof (it being understood and agreed that the only information furnished by an Underwriter consists of the information described as such in Section 6(f)), and will reimburse the Company for any legal or other expenses reasonably incurred by the Company in connection with investigating or defending against any such loss, claim, damage, liability or action as such expenses are incurred.

(c) Promptly after receipt by an indemnified party under subsection (a) or (b) above of notice of the commencement of any action, such indemnified party shall, if a claim in respect thereof is to be made against the indemnifying party under such subsection, notify the indemnifying party in writing of the commencement thereof; but the omission so to notify the indemnifying party shall not relieve the indemnifying party from any liability that it may have to any indemnified party except to the extent such indemnifying party has been materially prejudiced by such failure (through the forfeiture of substantive rights or defenses). In case any such action shall be brought against any indemnified party, and it shall notify the indemnifying party of the commencement thereof, the indemnifying party shall be entitled to participate in, and, to the extent that it shall wish, jointly with any other indemnifying party similarly notified, to assume the defense thereof, with counsel reasonably satisfactory to such indemnified party, and after notice from the indemnifying party to such indemnified party of the indemnifying party s election so to assume the defense thereof, the indemnifying party shall not be liable to such indemnified party under such subsection for any legal or other expenses subsequently incurred by such indemnified party in connection with the defense thereof other than reasonable costs of investigation; provided, however, that the indemnified party shall have the right to employ counsel to represent jointly the indemnified party and those other indemnified parties and their respective directors, officers, employees and controlling persons who may be subject to liability arising out of any claim in respect of which indemnity may be sought under this Section 6 if (i) the indemnified party

and the indemnifying party shall have so mutually agreed; (ii) the indemnifying party has failed within a reasonable time to retain counsel reasonably satisfactory to the indemnified party; (iii) the indemnified party and its directors, officers, employees and controlling persons shall have reasonably concluded that there may be legal defenses available to them that are different from or in addition to those available to the indemnifying party; or (iv) the named parties in any such proceeding (including any impleaded parties) include both the indemnified parties or their respective directors, officers, employees or controlling persons, on the one hand, and the indemnifying party, on the other hand, and representation of both sets of parties by the same counsel would be inappropriate due to actual or potential differing interests between them, and in any such event the reasonable fees and expenses of such separate counsel shall be paid by the indemnifying party. An indemnifying party shall not be obligated under any settlement agreement relating to any action under this Section 6 to which it has not agreed in writing. In addition, no indemnifying party shall, without the prior written consent of the indemnified party (which consent shall not be unreasonably withheld or delayed), effect any settlement of any pending or threatened proceeding unless such settlement includes an unconditional release of such indemnified party for all liability on claims that are the subject matter of such proceeding and does not include a statement as to, or an admission of, fault, culpability or a failure to act by or on behalf of an indemnified party.

(d) If the indemnification provided for in this Section 6 is unavailable or insufficient to hold harmless an indemnified party under subsection (a) or (b) above, then each indemnifying party shall contribute to the amount paid or payable by such indemnified party as a result of the losses, claims, damages or liabilities referred to in subsection (a) or (b) above, (i) in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and the Underwriters on the other from the offering of the Securities or (ii) if the allocation provided by clause (i) above is not permitted by applicable law, in such proportion as is appropriate to reflect not only the relative benefits referred to in clause (i) above but also the relative fault of the Company on the one hand and the Underwriters on the other in connection with the statements or omissions that resulted in such losses, claims, damages or liabilities, as well as any other relevant equitable considerations. The relative benefits received by the Company on the one hand and the Underwriters on the other shall be deemed to be in the same proportion as the total net proceeds from the offering (before deducting expenses) received by the Company bear to the total underwriting discounts and commissions received by the Underwriters, in each case as set forth in the table on the cover page of the Prospectus. The relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company or the Underwriters and the parties relevant intent, knowledge, access to information and opportunity to correct or prevent such untrue statement or omission. The Company and the Underwriters agree that it would not be just and equitable if contributions pursuant to this subsection (d) were to be determined by pro rata allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation which does not take account of the equitable considerations referred to in the first sentence of this subsection (d). The amount paid by an indemnified party as a result of the losses, claims, damages or liabilities referred to in the first sentence of this subsection (d) shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending against any action or claim which is the subject of this subsection (d). Notwithstanding the provisions of this subsection (d), in no event shall an Underwriter be required to contribute any amount in excess of the amount by which the total underwriting discounts and commissions received by such Underwriter with respect to the offering of the Securities exceeds the amount of any damages that such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission. No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. The Underwriters obligations in this subsection (d) to contribute are several in proportion to their respective underwriting obligations and not joint.

(e) The obligations of the Company under this Section 6 shall be in addition to any liability which the Company may otherwise have and shall extend, upon the same terms and conditions, to each person, if any, who controls any Underwriter within the meaning of the Act; and the obligations of the Underwriters under this Section 6 shall be in addition to any liability that the respective Underwriters may otherwise have and shall extend, upon the same terms and conditions, to each director of the Company (including any person who, with his consent, is named in the Registration Statement as about to become a director of the Company), to each officer of the Company who has signed the Registration Statement and to each person, if any, who controls the Company within the meaning of the Act.

(f) The Underwriters severally confirm and the Company acknowledges that the statements with respect to the public offering of the Securities by the Underwriters regarding the names and corresponding share amounts set forth in the table of underwriters and paragraphs 3, 12 and 13 under the caption Underwriting in the Time of Sale Disclosure Package and in the Prospectus, are correct and constitute the only information concerning such Underwriters furnished in writing to the Company by or on behalf of the Underwriters specifically for inclusion in the Registration Statement, any Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus or any Issuer Free Writing Prospectus.

7. ***Representations and Agreements to Survive Delivery***. All representations, warranties, and agreements of the Company herein or in certificates delivered pursuant hereto, and the agreements of the several Underwriters and the Company contained in Section 6 hereof, shall remain operative and in full force and effect regardless of any investigation made by or on behalf of any Underwriter or any controlling person thereof, or the Company or any of its officers, directors, or controlling persons thereof, and shall survive delivery of, and payment for, the Securities to and by the Underwriters hereunder.

8. ***Termination of this Agreement***.

(a) You, as Representative of the several Underwriters, shall have the right to terminate this Agreement by giving notice as hereinafter specified at any time at or prior to the Closing Date, if (i) the Company shall have failed, refused or been unable, at or prior to the Closing Date, to perform any agreement on its part to be performed hereunder, (ii) any other condition of the Underwriters obligations hereunder is not fulfilled, (iii) trading on the NASDAQ Stock Market, the New York Stock Exchange or the NYSE Amex shall have been wholly suspended, (iv) minimum or maximum prices for trading shall have been fixed, or maximum ranges for prices for securities shall have been required, on the NASDAQ Stock Market, the New York Stock Exchange or the NYSE Amex, by such Exchange or by order of the Commission or any other Governmental Authority, (v) a banking moratorium shall have been declared by federal or state authorities, or (vi) there shall have occurred any outbreak or escalation of hostilities or any change in financial markets or any calamity or crisis that, in your judgment, is material and adverse and makes it impractical or inadvisable to proceed with the completion of the sale of and payment for the Securities. Any such termination shall be without liability of any party to any other party except that the provisions of Section 4(h) and Section 6 hereof shall at all times be effective.

(b) If you elect to terminate this Agreement as provided in this Section, the Company and shall be notified promptly by you by telephone, confirmed by letter.

9. ***Default by the Company***. If the Company shall fail at the Closing Date to sell and deliver the number of Securities which it is obligated to sell hereunder, then this Agreement shall terminate without any liability on the part of any Underwriter or, except as provided in Section 4(h) and Section 6 hereof, any non defaulting party. No action taken pursuant to this Section 9 shall relieve the Company so defaulting from liability, if any, in respect of such default.

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10. ***Notices***. Except as otherwise provided herein, all communications hereunder shall be in writing and, if to the Underwriter, shall be mailed or delivered to Piper Jaffray & Co., U.S. Bancorp Center, 800 Nicollet Mall, Minneapolis, Minnesota 55402, Attention: General Counsel, with a copy to Dechert LLP, 1095 Avenue of the Americas, New York, New York 10036, Attention: David S. Rosenthal; and if to the Company, shall be mailed or delivered to Idera Pharmaceuticals, Inc., 167 Sidney Street, Cambridge, MA 02139, Attention: Chief Executive Officer, with a copy to Wilmer Cutler Pickering Hale and Dorr LLP, 60 State Street, Boston, MA 02019, Attention: Stuart M. Falber. Any party to this Agreement may change such address for notices by sending to the parties to this Agreement written notice of a new address for such purpose.

11. ***Persons Entitled to Benefit of Agreement***. This Agreement shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns and the controlling persons, officers and directors referred to in Section 6. Nothing in this Agreement is intended or shall be construed to give to any other person, firm or corporation any legal or equitable remedy or claim under or in respect of this Agreement or any provision herein contained. The term ***successors and assigns*** as herein used shall not include any purchaser, as such purchaser, of any of the Securities from any of the several Underwriters.

12. ***Absence of Fiduciary Relationship***. The Company acknowledges and agrees that: (a) the Representative has been retained solely to act as an underwriter in connection with the sale of the Securities and that no fiduciary, advisory or agency relationship between the Company and the Representative has been created in respect of any of the transactions contemplated by this Agreement, irrespective of whether the Representative has advised or are advising the Company on other matters; (b) the price and other terms of the Securities set forth in this Agreement were established by the Company following discussions and arms-length negotiations with the Representative and the Company is capable of evaluating and understanding and understands and accepts the terms, risks and conditions of the transactions contemplated by this Agreement; (c) it has been advised that the Representative and its affiliates are engaged in a broad range of transactions which may involve interests that differ from those of the Company and that the Representative has no obligation to disclose such interest and transactions to the Company by virtue of any fiduciary, advisory or agency relationship; (d) it has been advised that the Representative is acting, in respect of the transactions contemplated by this Agreement, solely for the benefit of the Representative and the other Underwriters, and not on behalf of the Company; (e) it, he or she waives to the fullest extent permitted by law, any claims it may have against the Representative for breach of fiduciary duty or alleged breach of fiduciary duty in respect of any of the transactions contemplated by this Agreement and agrees that the Representative shall have no liability (whether direct or indirect) to the Company in respect of such a fiduciary duty claim on behalf of or in right of the Company, including stockholders, employees or creditors of the Company.

13. ***Governing Law***. This Agreement shall be governed by and construed in accordance with the laws of the State of New York.

14. ***Counterparts***. This Agreement may be executed in one or more counterparts and, if executed in more than one counterpart, the executed counterparts shall each be deemed to be an original and all such counterparts shall together constitute one and the same instrument.

15. ***General Provisions***. This Agreement constitutes the entire agreement of the parties to this Agreement and supersedes all prior written or oral and all contemporaneous oral agreements, understandings and negotiations with respect to the subject matter hereof. This Agreement may not be amended or modified unless in writing by all of the parties hereto, and no condition herein (express or implied) may be waived unless waived in writing by each party whom the condition is meant to benefit. The Section headings herein are for the convenience of the parties only and shall not affect the construction or interpretation of this Agreement.

[Signature Page Follows]

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Please sign and return to the Company the enclosed duplicates of this Agreement whereupon this Agreement will become binding between the Company and the Underwriters in accordance with its terms.

Very truly yours,

IDERA PHARMACEUTICALS, INC.

By: /s/ Sudhir Agrawal
Name: Sudhir Agrawal, D.Phil.
Title: Chief Executive Officer and President

The foregoing Purchase Agreement is hereby confirmed and accepted as of the date first above written.

PIPER JAFFRAY & CO.

By: /s/ David W. Stadinski
Name: David W. Stadinski
Title: Managing Director

[*Signature Page to Purchase Agreement*]

SCHEDULE I

Underwriter	Number of Firm Shares	Number of Pre-Funded Warrants
Piper Jaffray & Co.	13,727,251	4,175,975
Total	13,727,251	4,175,975

SCHEDULE II

Issuer General Free Writing Prospectuses

Issuer free writing prospectus filed September 25, 2013.

SCHEDULE III

Pricing Information

Number of Firm Shares to be Issued: 13,727,251

Number of Pre-Funded Warrants to be Issued: 4,175,975

Number of shares of Common Stock underlying Pre-Funded Warrants: 4,175,975

Public Offering Price: $1.55 per Firm Share

Public Offering Price: $1.54 per Pre-Funded Warrant

Pre-Funded Warrant exercise price: $0.01 per Share

Underwriting Discounts and Commissions: 6.5%

EXHIBIT A

Form of Lock-Up Agreement

September , 2013

Piper Jaffray & Co.

800 Nicollet Mall

Minneapolis, Minnesota 55402

Re: Public Offering of Shares of Common Stock
Ladies and Gentlemen:

The undersigned understands that Piper Jaffray & Co (the ***Underwriter***) proposes to enter into the Purchase Agreement (the ***Purchase Agreement***) with Idera Pharmaceuticals, Inc., a Delaware corporation (the ***Company***), providing for the offering (the ***Offering***) of shares (the ***Shares***) of common stock, $0.001 par value per share (the ***Common Stock***), and pre-funded warrants to purchase shares of Common Stock of the Company, and pre-funded warrants to purchase shares of Common Stock of the Company. Capitalized terms used herein and not otherwise defined shall have the meanings set forth in the Purchase Agreement.

In order to induce the Underwriter to enter into the Purchase Agreement, the undersigned hereby agrees that, commencing on the date hereof and continuing until the ninetieth (90th) day following the date of the final prospectus filed by the Company with the Securities and Exchange Commission in connection with such Offering (the ***Lock-Up Period***), the undersigned will not, without the prior written consent of the Underwriter, directly or indirectly, (1) offer, sell, contract to sell, pledge, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of any shares of the Common Stock, or any securities convertible into or exercisable or exchangeable for the Common Stock; (2) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the Common Stock, or any securities convertible into or exchangeable for the Common Stock, regardless of whether any such transaction described in clause (1) or (2) above is to be settled by delivery of the Common Stock or such other securities, or by delivery of cash or otherwise; (3) make any demand for, or exercise any right with respect to, the registration of any shares of the Common Stock or any security convertible into or exercisable or exchangeable for the Common Stock; or (4) publicly announce any intention to do any of the foregoing.

The undersigned agrees that the foregoing restrictions preclude the undersigned from engaging in any hedging or other transaction which is designed to or which reasonably could be expected to lead to or result in a sale or disposition of the undersigned s shares of Common Stock even if such shares of Common Stock would be disposed of by someone other than the undersigned. Such prohibited hedging or other transactions would include

without limitation any short sale or any purchase, sale or grant of any right (including without limitation any put or call option) with respect to any of the undersigned s securities or with respect to any security that includes, relates to, or derives any significant part of its value from such shares of Common Stock.

Notwithstanding the foregoing, the restrictions set forth in clause (1) and (2) above shall not apply to: (a) transfers (i) as a bona fide gift or gifts, *provided* that the donee or donees thereof agree to be bound in writing by the restrictions set forth herein for the remainder of the Lock-Up Period, (ii) by will, other testamentary document or intestate succession, (iii) to any trust for the direct or indirect benefit of the undersigned or the immediate family of the undersigned or (iv) if the undersigned is an entity, to any affiliate of the undersigned or any investment fund or other entity controlled or managed by the undersigned in a transaction, *provided* that in connection with transactions described in clauses (ii), (iii) and (iv) above, the recipient (as applicable) agrees to be bound in writing by the restrictions set forth herein for the remainder of the Lock-Up Period and the related transfer shall not involve a disposition for value; (b) the exercise, conversion or exchange of any options, warrants, rights or convertible securities outstanding on the date hereof as described in the Registration Statement, including any exercise effected by the delivery or sale of Common Stock held by the undersigned to the Company (including, without limitation, to finance a cashless exercise, to satisfying tax withholding obligations or to exchange underwater options with the Company); or (c) the establishment of a trading plan pursuant to Rule 10b5-1 under the Securities Exchange Act of 1934, as amended (the ***Exchange Act***), for the transfer of shares of Common Stock or other securities, *provided* that such plan does not provide for the transfer of shares of Common Stock or other securities during the Lock-Up Period and no public announcement or filing under the Exchange Act regarding the establishment of such plan shall be required of or voluntarily made by or on behalf of the undersigned or the Company during the Lock-Up Period. For purposes of this Lock-Up Agreement, immediate family shall mean any relationship by blood, marriage or adoption, not more remote than first cousin.

Anything herein to the contrary notwithstanding, if

(1) during the last 17 days of the Lock-Up Period the Company issues an earnings release or other material news or a material event relating to the Company occurs; or

(2) prior to the expiration of the Lock-Up Period, the Company announces that it will release earnings results during the 16-day period beginning on the last day of the Lock-Up Period,

the Lock-Up Period shall be extended and the restrictions imposed by this letter shall continue to apply until the expiration of the 18-day period beginning on the date of issuance of the earnings release or the occurrence of the material news or material event if, within three days of that issuance or occurrence, the Underwriter publishes or otherwise distributes a research report or makes a public appearance concerning the Company, unless the Underwriter waives, in writing, such extension.

The undersigned hereby acknowledges and agrees that written notice of any extension of the Lock-Up Period pursuant to the previous paragraph will be delivered by the Underwriter to the Company (in accordance with the notice provision in the Purchase Agreement) and that any such notice properly delivered will be deemed to have been given

to, and received by, the undersigned. The undersigned hereby further agrees that, prior to engaging in any transaction or taking any other action that is subject to the terms of this Lock-Up Agreement during the period from the date of this Lock-Up Agreement to and including the 34th day following the expiration of the initial Lock-Up Period, it will give notice thereof to the Company and will not consummate such transaction or take any such action unless it has received written confirmation from the Company that the Lock-Up Period (as such may have been extended pursuant to the previous paragraph) has expired. Notwithstanding the foregoing, if the Company has actively traded securities within the meaning of Rule 101(c)(1) of Regulation M of the Exchange Act, and otherwise satisfies the requirements set forth in Rule 139 of the Securities Act of 1933 that would permit Piper Jaffray & Co. or any underwriter to publish issuer-specific research reports pursuant to Rule 139, the Lock-Up Period shall not be extended upon the occurrence of (1) or (2) above.

The undersigned hereby agrees and consents to the entry of stop transfer instructions with the Company s transfer agent against the transfer of securities of the Company held by the undersigned during the Lock-Up Period (as may have been extended pursuant hereto), except in compliance with this Lock-Up Agreement.

Anything to the contrary notwithstanding, if (i) the Purchase Agreement does not become effective by October 31, 2013, (ii) after becoming effective, the Purchase Agreement (other than the provisions thereof which survive termination) shall terminate or be terminated prior to payment for and delivery of the Shares to be sold thereunder, (iii) prior to the Purchase Agreement becoming effective, the Company notifies the Underwriters in writing that it does not intend to proceed with the Offering, or (iv) the Offering is not completed by October 31, 2013, this Lock-Up Agreement shall lapse and become null and void and the undersigned shall be released from all obligations under this Lock-Up Agreement.

The undersigned hereby represents and warrants that the undersigned has full power and authority to enter into this Lock-Up Agreement. This Lock-Up Agreement may not be revoked by the undersigned or the Company. All authority herein conferred or agreed to be conferred shall survive the death or incapacity of the undersigned and any obligations of the undersigned shall be binding upon the heirs, personal representatives, successors and assigns of the undersigned.

The undersigned understands that the Underwriters are entering into the Purchase Agreement and proceeding with the Offering in reliance upon this Agreement.

This Agreement shall be governed by, and construed in accordance with, the laws of the State of New York.

Very truly yours,

Printed Name of Holder

Signature

Printed Name of Person Signing (and indicate capacity of person signing if signing on behalf of an entity)

EXHIBIT B

IDERA PHARMACEUTICALS, INC.

CHIEF FINANCIAL OFFICER S CERTIFICATE

Louis Arcudi, III, solely in his capacity as Chief Financial Officer of Idera Pharmaceuticals, Inc., a Delaware corporation (the ***Company***), pursuant to Section 5(i) of that certain Purchase Agreement, dated as of September [ ], 2013 (the ***Purchase Agreement***), by and between the Company and Piper Jaffray & Co., as representative of the several underwriters named therein (the ***Underwriters***), hereby certifies on behalf of the Company that (capitalized terms used and not defined herein have the meanings ascribed to them in the Purchase Agreement):

1. I, or members of my staff, have read the amounts circled on the copies of certain pages of the Registration Statement, Time of Sale Disclosure Package and Prospectus attached hereto as Exhibit A.

2. With regard to these amounts, I, or members of my staff, compared such amounts to the corresponding amounts included in or derived from the Company s internal accounting records or schedules prepared by management from such accounting records for the applicable periods and found them to be in agreement.

3. Based on such examination and review, nothing came to my attention that caused me to believe that such amounts are not accurate and complete in all material respects as of the date indicated and as of the date hereof.

4. This certificate is to assist the Underwriters in conducting and documenting their investigation of the affairs of the Company in connection with the offering of the Securities covered by the Registration Statement, Time of Sale Disclosure Package and the Prospectus.

[Signature page follows]

IN WITNESS WHEREOF, the undersigned has executed this certificate this [ ] day of [ ], 2013.

IDERA PHARMACEUTICALS, INC.

By: Louis Arcudi, III
Title: Chief Financial Officer

EXHIBIT C

Pre-Funded Warrant

Exhibit 4.1

IDERA PHARMACEUTICALS, INC.

WARRANT TO PURCHASE COMMON STOCK

Number of Shares: [ ]

(subject to adjustment)

Warrant No. Original Issue Date: [ ], 2013

Idera Pharmaceuticals, Inc., a Delaware corporation (the *Company*), hereby certifies that, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, or its permitted registered assigns (the *Holder*), is entitled, subject to the terms set forth below, to purchase from the Company up to a total of shares of common stock, $0.001 par value per share (the *Common Stock*), of the Company (each such share, a *Warrant Share* and all such shares, the *Warrant Shares*) at an exercise price per share equal to $0.01 per share (as adjusted from time to time as provided in Section 9 herein, the *Exercise Price*), upon surrender of this Warrant to Purchase Common Stock (including any Warrants to Purchase Common Stock issued in exchange, transfer or replacement hereof, the *Warrant*) at any time and from time to time on or after the date hereof (the *Original Issue Date*) and through and including 5:30 P.M., New York City time, on the date that is seven years following the Original Issue Date (the *Expiration Date*), and subject to the following terms and conditions:

1. Definitions. For purposes of this Warrant, the following terms shall have the following meanings:

(a) *Commission* means the United States Securities and Exchange Commission.

(b) *Closing Sale Price* means, for any security as of any date, the last trade price for such security on the Principal Trading Market for such security, as reported by Bloomberg Financial Markets, or, if such Principal Trading Market begins to operate on an extended hours basis and does not designate the last trade price, then the last trade price of such security prior to 4:00 P.M., New York City time, as reported by Bloomberg Financial Markets, or if the foregoing do not apply, the last trade price of such security in the over-the-counter market on the electronic bulletin board for such security as reported by Bloomberg Financial Markets, or, if no last trade price is reported for such security by Bloomberg Financial Markets, the average of the bid and ask prices, of any market makers for such security as reported in the pink sheets by Pink Sheets LLC. If the Closing Sale Price cannot be calculated for a security on a particular date on any of the foregoing bases, the Closing Sale Price of such security on such date shall be the fair market value as mutually determined by the Company and the Holder. If the Company and the Holder are unable to agree upon the fair market value of such security, then the Board of Directors of the Company shall use its good faith judgment to determine the fair market value. The Board of Directors determination shall be binding upon all parties absent demonstrable error. All such determinations shall be appropriately adjusted for any stock dividend, stock split, stock combination or other similar transaction during the applicable calculation period.

(c) *Principal Trading Market* means the Trading Market on which the Common Stock is primarily listed on and quoted for trading, which, as of the Original Issue Date shall be the Nasdaq Capital Market.

(d) *Registration Statement* means the Company s Registration Statement on Form S-3 (File No. 333-191073), initially filed on March 11, 2013.

(e) *Securities Act* means the Securities Act of 1933, as amended.

(f) *Transfer Agent* means Computershare Shareowner Services LLC, the Company s transfer agent for the Common Stock and Warrants.

2. Registration of Warrants. The Company shall register this Warrant, upon records to be maintained by the Company for that purpose (the *Warrant Register*), in the name of the record Holder (which shall include the initial Holder or, as the case may be, any registered assignee to which this Warrant is permissibly assigned hereunder) from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

3. Registration of Transfers. Subject to compliance with all applicable securities laws, the Company shall, or will cause its Transfer Agent to, register the transfer of all or any portion of this Warrant in the Warrant Register, upon surrender of this Warrant, and payment for all applicable transfer taxes. Upon any such registration or transfer, a new warrant to purchase Common Stock in substantially the form of this Warrant (any such new warrant, a *New Warrant*) evidencing the portion of this Warrant so transferred shall be issued to the transferee, and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations in respect of the New Warrant that the Holder has in respect of this Warrant. The Company shall, or will cause its Transfer Agent to, prepare, issue and deliver at the Company s own expense any New Warrant under this Section 3. Until due presentment for registration of transfer, the Company may treat the registered Holder hereof as the owner and holder for all purposes, and the Company shall not be affected by any notice to the contrary.

4. Exercise and Duration of Warrants.

(a) All or any part of this Warrant shall be exercisable by the registered Holder in any manner permitted by Section 10 of this Warrant at any time and from time to time on or after the Original Issue Date and through and including 5:30 P.M. New York City time, on the Expiration Date. At 5:30 P.M., New York City time, on the Expiration Date, the portion of this Warrant not exercised prior thereto shall be and become void and of no value and this Warrant shall be terminated and no longer outstanding.

(b) The Holder may exercise this Warrant by delivering to the Company (i) an exercise notice, in the form attached as Schedule 1 hereto (the *Exercise Notice*), completed and duly signed, and (ii) payment of the Exercise Price for the number of Warrant Shares as to which this Warrant is being exercised (which may take the form of a cashless exercise pursuant to Section 10 below), and the date on which the last of such items is delivered to the Company (as determined in accordance with the notice provisions hereof) is an *Exercise Date*. The Holder shall not be required to deliver the original Warrant in order to effect an exercise hereunder. Execution and delivery of the Exercise Notice shall have the same effect as cancellation of the original Warrant and issuance of a New Warrant evidencing the right to purchase the remaining number of Warrant Shares.

5. Delivery of Warrant Shares.

(a) Upon exercise of this Warrant, the Company shall promptly (but in no event later than three (3) Trading Days after the Exercise Date), upon the request of the Holder, credit such aggregate number of shares of Common Stock to which the Holder is entitled pursuant to such exercise to the Holder s or its designee s balance account with The Depository Trust Company (*DTC*) through its Deposit Withdrawal Agent Commission system, or if the Transfer Agent is not participating in the Fast Automated Securities Transfer Program (the *FAST Program*) or if the certificates are required to bear a legend regarding restriction on transferability, issue and dispatch by overnight courier to the address as specified in the Exercise Notice, a certificate, registered in the Company s share register in the name of the Holder or its designee, for the number of shares of Common Stock to which the Holder is entitled pursuant to such exercise. The Holder, or any Person permissibly so designated by the Holder to receive Warrant Shares, shall be deemed to have become the holder of record of such Warrant Shares as of the Exercise Date, irrespective of the date such Warrant Shares are credited to the Holder s DTC account or the date of delivery of the certificates evidencing such Warrant Shares, as the case may be.

(b) If by the close of the third (3rd) Trading Day after the Exercise Date, the Company fails to deliver to the Holder a certificate representing the required number of Warrant Shares in the manner required pursuant to Section 5(a) or fails to credit the Holder s balance account with DTC for such number of Warrant Shares to which the Holder is entitled, and if after such third (3rd) Trading Day and prior to the receipt of such Warrant Shares, the Holder purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a *Buy-In*), then the Company shall, within three (3) Trading Days after the Holder s request and in the Holder s sole discretion, either (1) pay in cash to the Holder an amount equal to the Holder s total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased (the *Buy-In Price*), at which point the Company s obligation to deliver such certificate (and to issue such Warrant Shares) shall terminate or (2) promptly honor its obligation to deliver to the Holder a certificate or certificates representing such Warrant Shares and pay cash to the Holder in an amount equal to the excess (if any) of Holder s total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased in the Buy-In over the product of (A) the number of shares of Common Stock purchased in the Buy-In, times (B) the closing bid price of a share of Common Stock on the Exercise Date.

(c) To the extent permitted by law, the Company s obligations to issue and deliver Warrant Shares in accordance with and subject to the terms hereof (including the limitations set forth in Section 11 below) are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance that might otherwise limit such obligation of the Company to the Holder in connection with the issuance of Warrant Shares. Nothing herein shall limit the Holder s right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company s failure to timely deliver certificates representing shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof.

6. Charges, Taxes and Expenses. Issuance and delivery of certificates for shares of Common Stock upon exercise of this Warrant shall be made without charge to the Holder for any issue or transfer tax, transfer agent fee or other incidental tax or expense in respect of the issuance of such certificates, all of which taxes and expenses shall be paid by the Company; *provided, however*, that the Company shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any certificates for Warrant Shares or the Warrants in a name other than that of the Holder or an Affiliate thereof. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring this Warrant or receiving Warrant Shares upon exercise hereof.

7. Replacement of Warrant. If this Warrant is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for this Warrant, a New Warrant, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction (in such case) and, in each case, a customary and reasonable indemnity and surety bond, if requested by the Company. Applicants for a New Warrant under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Company may prescribe. If a New Warrant is requested as a result of a mutilation of this Warrant, then the Holder shall deliver such mutilated Warrant to the Company as a condition precedent to the Company s obligation to issue the New Warrant.

8. Reservation of Warrant Shares. The Company covenants that it will at all times while this Warrant is outstanding reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of this Warrant as herein provided, the number of Warrant Shares that are initially issuable and deliverable upon the exercise of this entire Warrant, free from preemptive rights or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 9). The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and nonassessable. The Company will take all such action as may be reasonably necessary to assure that such shares of Common Stock may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any securities exchange or automated quotation system upon which the Common Stock may be listed.

9. Certain Adjustments. The Exercise Price and number of Warrant Shares issuable upon exercise of this Warrant are subject to adjustment from time to time as set forth in this Section 9.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock, other than Series E Preferred Stock or Series D Preferred Stock issued and outstanding on the Original Issue Date and in accordance with the terms of such stock on the Original Issue Date or as amended, as described in the Registration Statement, that is payable in shares of Common Stock, (ii) subdivides its outstanding shares of Common Stock into a larger number of shares of Common Stock, (iii) combines its outstanding shares of Common Stock into a smaller number of shares of Common Stock or (iv) issues by reclassification of shares of capital stock any additional shares of Common Stock of the Company, then in each such case the Exercise Price shall be multiplied by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately before such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant

to clause (i) of this paragraph shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution, provided, however, that if such record date shall have been fixed and such dividend is not fully paid on the date fixed therefor, the Exercise Price shall be recomputed accordingly as of the close of business on such record date and thereafter the Exercise Price shall be adjusted pursuant to this paragraph as of the time of actual payment of such dividends. Any adjustment pursuant to clause (ii) or (iii) of this paragraph shall become effective immediately after the effective date of such subdivision or combination.

(b) Pro Rata Distributions. If the Company, at any time while this Warrant is outstanding, distributes to all holders of Common Stock for no consideration (i) evidences of its indebtedness, (ii) any security (other than a distribution of Common Stock covered by the preceding paragraph) or (iii) rights or warrants to subscribe for or purchase any security, or (iv) any other asset (in each case, *Distributed Property*), then, upon any exercise of this Warrant that occurs after the record date fixed for determination of stockholders entitled to receive such distribution, the Holder shall be entitled to receive, in addition to the Warrant Shares otherwise issuable upon such exercise (if applicable), the Distributed Property that such Holder would have been entitled to receive in respect of such number of Warrant Shares had the Holder been the record holder of such Warrant Shares immediately prior to such record date without regard to any limitation on exercise contained therein.

(c) Fundamental Transactions. If, at any time while this Warrant is outstanding (i) the Company effects any merger or consolidation of the Company with or into another Person, in which the Company is not the surviving entity or the stockholders of the Company immediately prior to such merger or consolidation do not own, directly or indirectly, at least 50% of the voting power of the surviving entity immediately after such merger or consolidation, (ii) the Company effects any sale to another Person of all or substantially all of its assets in one or a series of related transactions, (iii) pursuant to any tender offer or exchange offer (whether by the Company or another Person), holders of capital stock who tender shares representing more than 50% of the voting power of the capital stock of the Company and the Company or such other Person, as applicable, accepts such tender for payment, (iv) the Company consummates a stock purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another Person whereby such other Person acquires more than the 50% of the voting power of the capital stock of the Company or (v) the Company effects any reclassification of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (other than as a result of a subdivision or combination of shares of Common Stock covered by Section 9(a) above) (in any such case, a *Fundamental Transaction*), then following such Fundamental Transaction the Holder shall have the right to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of Warrant Shares then issuable upon exercise in full of this Warrant without regard to any limitations on exercise contained herein (the *Alternate Consideration*). The Company shall not effect any Fundamental Transaction in which the Company is not the surviving entity or the Alternate Consideration includes securities of another Person unless prior to or simultaneously with the consummation thereof, any successor to the Company, surviving entity or other Person (including any purchaser of assets of the Company) shall assume the obligation to deliver to the Holder, such Alternate Consideration as, in accordance with the foregoing provisions, the Holder may be entitled to receive, and the other obligations under this Warrant. The provisions of this paragraph (c) shall similarly apply to subsequent transactions analogous of a Fundamental Transaction type.

(d) Number of Warrant Shares. Simultaneously with any adjustment to the Exercise Price pursuant to paragraphs (a) of this Section 9, the number of Warrant Shares that may be purchased upon exercise of this Warrant shall be increased or decreased proportionately, so that after such adjustment the aggregate Exercise Price payable hereunder for the increased or decreased number of Warrant Shares shall be the same as the aggregate Exercise Price in effect immediately prior to such adjustment.

(e) Calculations. All calculations under this Section 9 shall be made to the nearest cent or the nearest share, as applicable.

(f) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 9, the Company at its expense will, at the written request of the Holder, promptly compute such adjustment, in good faith, in accordance with the terms of this Warrant and prepare a certificate setting forth such adjustment, including a statement of the adjusted Exercise Price and adjusted number or type of Warrant Shares or other securities issuable upon exercise of this Warrant (as applicable), describing the transactions giving rise to such adjustments and showing in detail the facts upon which such adjustment is based. Upon written request, the Company will promptly deliver a copy of each such certificate to the Holder and to the Company s transfer agent.

(g) Notice of Corporate Events. If, while this Warrant is outstanding, the Company (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including, without limitation, any granting of rights or warrants to subscribe for or purchase any capital stock of the Company or any subsidiary, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Company, then, except if such notice and the contents thereof shall be deemed to constitute material non-public information, the Company shall deliver to the Holder a notice of such transaction at least ten (10) days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate

in or vote with respect to such transaction; *provided, however*, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice. In addition, if while this Warrant is outstanding, the Company authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction contemplated by Section 9(c), other than a Fundamental Transaction under clause (iii) of Section 9(c), the Company shall deliver to the Holder a notice of such Fundamental Transaction at least seventy five (75) days prior to the date such Fundamental Transaction is consummated. To the extent that any notice provided hereunder constitutes, or contains, material, non-public information regarding the Company or any of its subsidiaries, the Company shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K.

10. Payment of Exercise Price. Notwithstanding anything contained herein to the contrary, the Holder may, in its sole discretion, satisfy its obligation to pay the Exercise Price through a cashless exercise , in which event the Company shall issue to the Holder the number of Warrant Shares determined as follows:

X = Y [(A-B)/A]

where:

X equals the number of Warrant Shares to be issued to the Holder;

Y equals the total number of Warrant Shares with respect to which this Warrant is then being exercised;

A equals the average of the Closing Sale Prices of the shares of Common Stock (as reported by Bloomberg Financial Markets) for the five (5) consecutive Trading Days ending on the date immediately preceding the Exercise Date; and

B equals the Exercise Price then in effect for the applicable Warrant Shares at the time of such exercise.

For purposes of Rule 144 promulgated under the Securities Act, it is intended, understood and acknowledged that the Warrant Shares issued in a cashless exercise transaction shall be deemed to have been acquired by the Holder, and the holding period for the Warrant Shares shall be deemed to have commenced, on the date this Warrant was originally issued (provided that the Commission continues to take the position that such treatment is proper at the time of such exercise).

11. Limitations on Exercise.

(a) Notwithstanding anything to the contrary contained herein, the number of Warrant Shares that may be acquired by the Holder upon any exercise of this Warrant (or otherwise in respect hereof) shall be limited to the extent necessary to ensure that, following such exercise (or other issuance), the total number of shares of Common Stock then beneficially owned by the Holder and its Affiliates and any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder s for purposes of Section 13(d) of the Exchange Act, does not exceed 4.999% of the total number of then issued and outstanding shares of Common Stock (including for such purpose the shares of Common Stock issuable upon such exercise), it being acknowledged by the Holder that the Company is not representing to such Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and such Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that the limitation contained in this Section 11(a) applies, the determination of whether this Warrant is exercisable (in relation to other securities owned by such Holder) and of which a portion of this Warrant is exercisable shall be in the sole discretion of a Holder, and

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the submission of a Notice of Exercise shall be deemed to be the Holder s determination of whether this Warrant is exercisable (in relation to other securities owned by such Holder) and of which portion of this Warrant is exercisable, in each case subject to such aggregate percentage limitation, and the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination under this Section 11(a) as to any group status shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 11(a), in determining the number of outstanding shares of Common Stock, the Holder may rely on the number of outstanding shares of Common Stock as reflected in (x) the Company s most recent Form 10-Q or Form 10-K, as the case may be, (y) a more recent public announcement by the Company or (z) any other notice by the Company or the Transfer Agent setting forth the number of shares of Common Stock outstanding. Upon the written request of the Holder, the Company shall within three (3) Trading Days confirm orally and in writing to such Holder the number of shares of Common Stock then outstanding. By written notice to the Company, which will not be effective until the sixty-first (61st) day after such notice is delivered to the Company, the Holder may waive the provisions of this Section 11(a) (but such waiver will not affect any other holder) to change the beneficial ownership limitation to such percentage of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of this Warrant as the Holder shall determine, in its sole discretion, subject to Section 11(b), and the provisions of this Section 11(a) shall continue to apply. Upon such a change by a Holder of the beneficial ownership limitation from such 4.999% limitation to such other percentage limitation, the beneficial ownership limitation may not be further waived by such Holder without first providing the minimum notice required by this Section 11(a). Notwithstanding the foregoing, at any time following notice of a Fundamental Transaction under Section 9(g)(ii) with respect to a Section 9(c)(iii) Fundamental Transaction, the Holder may waive and/or change the beneficial ownership limitation effective immediately upon written notice to the Company and may reinstitute a beneficial ownership limitation at any time thereafter effective immediately upon written notice to the Company.

(b) Notwithstanding anything to the contrary contained herein, including Section 11(a), the Company shall not effect any exercise of this Warrant, and the Holder shall not be entitled to exercise this Warrant for a number of Warrant Shares in excess of that number of Warrant Shares which, upon giving effect to such exercise, would cause (i) the aggregate number of shares of Common Stock beneficially owned by the Holder and its Affiliates and any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder s for purposes of Section 13(d) of the Exchange Act, to exceed 19.99% of the total number of issued and outstanding shares of Common Stock of the Company following such exercise, or (ii) the combined voting power of the securities of the Company beneficially owned by the Holder and its Affiliates and any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder s for purposes of Section 13(d) of the Exchange Act to exceed 19.99% of the combined voting power of all of the securities of the Company then outstanding following such exercise. For purposes of this Section 11(b), the aggregate number of shares of Common Stock or voting securities beneficially owned by the Holder and its Affiliates and any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder s for purposes of Section 13(d) of the Exchange Act shall include the shares of Common Stock issuable upon the exercise of this Warrant with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which would be issuable upon (x) exercise of the remaining unexercised and non-cancelled portion of this Warrant by the Holder and (y) exercise or conversion of the unexercised, non-converted or non-cancelled portion of any other securities of the Company that do not have voting power (including without limitation any securities of the Company which would entitle the holder thereof to acquire at any time Common Stock, including without limitation any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock), is subject to a limitation on conversion or exercise analogous to the limitation contained herein and is beneficially owned by the Holder or any of its Affiliates and other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder s for purposes of Section 13(d) of the Exchange Act.

(c) This Section 11 shall not restrict the number of shares of Common Stock which a Holder may receive or beneficially own in order to determine the amount of securities or other consideration that such Holder may receive in the event of a Fundamental Transaction as contemplated in Section 9 of this Warrant.

12. No Fractional Shares. No fractional Warrant Shares will be issued in connection with any exercise of this Warrant. In lieu of any fractional shares that would otherwise be issuable, the number of Warrant Shares to be issued shall be rounded down to the next whole number and the Company shall pay the Holder in cash the fair market value (based on the Closing Sale Price) for any such fractional shares.

13. Notices. Any and all notices or other communications or deliveries hereunder (including, without limitation, any Exercise Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile or confirmed e-mail at the facsimile number or e-mail address specified in the books and records of the Transfer Agent prior to 5:30 P.M., New York City time, on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile or confirmed e-mail at the facsimile number or e-mail address specified in the books and records of the Transfer Agent on a day that is not a Trading Day or later than 5:30 P.M., New York City time, on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service specifying next business day delivery, or (iv) upon actual receipt by the Person to whom such notice is required to be given, if by hand delivery.

14. Warrant Agent. The Transfer Agent shall serve as warrant agent under this Warrant. Upon thirty (30) days notice to the Holder, the Company may appoint a new warrant agent. Any corporation into which the Company or any new warrant agent may be merged or any corporation resulting from any consolidation to which the Company or any new warrant agent shall be a party or any corporation to which the Company or any new warrant agent transfers substantially all of its corporate trust or shareholders services business shall be a successor warrant agent under this Warrant without any further act. Any such successor warrant agent shall promptly cause notice of its succession as warrant agent to be mailed (by first class mail, postage prepaid) to the Holder at the Holder s last address as shown on the Warrant Register.

15. Miscellaneous.

(a) No Rights as a Stockholder. The Holder, solely in such Person s capacity as a holder of this Warrant, shall not be entitled to vote or receive dividends or be deemed the holder of share capital of the Company for any purpose, nor shall anything contained in this Warrant be construed to confer upon the Holder, solely in such Person s capacity as the Holder of this Warrant, any of the rights of a stockholder of the Company or any right to vote, give or withhold consent to any corporate action (whether any reorganization, issue of stock, reclassification of stock, consolidation, merger, amalgamation, conveyance or otherwise), receive notice of meetings, receive dividends or subscription rights, or otherwise, prior to the issuance to the Holder of the Warrant Shares which such Person is then entitled to receive upon the due exercise of this Warrant. In addition, nothing contained in this Warrant shall be construed as imposing any liabilities on the Holder to purchase any securities (upon exercise of this Warrant or otherwise) or as a stockholder of the Company, whether such liabilities are asserted by the Company or by creditors of the Company.

(b) Authorized Shares. (i) Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its certificate or articles of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (a) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (b) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant, and (c) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof as may be necessary to enable the Company to perform its obligations under this Warrant.

(ii) Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

(c) Successors and Assigns. Subject to the restrictions on transfer set forth in this Warrant and compliance with applicable securities laws, this Warrant may be assigned by the Holder. This Warrant may not be assigned by the Company without the written consent of the Holder except to a successor in the event of a Fundamental Transaction. This Warrant shall be binding on and inure to the benefit of the Company and the Holder and their respective successors and assigns. Subject to the preceding sentence, nothing in this Warrant shall be construed to give to any Person other than the Company and the Holder any legal or equitable right, remedy or cause of action under this Warrant. This Warrant may be amended only in writing signed by the Company and the Holder, or their successors and assigns.

(d) Amendment and Waiver. Except as otherwise provided herein, the provisions of the Warrants may be amended and the Company may take any action herein prohibited, or omit to perform any act herein required to be performed by it, only if the Company has obtained the written consent of the Holders of Warrants representing no less than a majority of the Warrant Shares obtainable upon exercise of the Warrants then outstanding.

(e) Acceptance. Receipt of this Warrant by the Holder shall constitute acceptance of and agreement to all of the terms and conditions contained herein.

(f) Governing Law; Jurisdiction. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS WARRANT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAW THEREOF. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HEREWITH OR WITH ANY TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH

RESPECT TO THE ENFORCEMENT OF ANY OF THE TRANSACTION DOCUMENTS), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF VIA REGISTERED OR CERTIFIED MAIL OR OVERNIGHT DELIVERY (WITH EVIDENCE OF DELIVERY) TO SUCH PERSON AT THE ADDRESS IN EFFECT FOR NOTICES TO IT AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. EACH OF THE COMPANY AND THE HOLDER HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

(g) Headings. The headings herein are for convenience only, do not constitute a part of this Warrant and shall not be deemed to limit or affect any of the provisions hereof.

(h) Severability. In case any one or more of the provisions of this Warrant shall be invalid or unenforceable in any respect, the validity and enforceability of the remaining terms and provisions of this Warrant shall not in any way be affected or impaired thereby, and the Company and the Holder will attempt in good faith to agree upon a valid and enforceable provision which shall be a commercially reasonable substitute therefor, and upon so agreeing, shall incorporate such substitute provision in this Warrant.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the Company has caused this Warrant to be duly executed by its authorized officer as of the date first indicated above.

IDERA PHARMACEUTICALS, INC.

By:
Name:
Title:

SCHEDULE 1

FORM OF EXERCISE NOTICE

[To be executed by the Holder to purchase shares of Common Stock under the Warrant]

Ladies and Gentlemen:

(1) The undersigned is the Holder of Warrant No. (the *Warrant*) issued by Idera Pharmaceuticals, Inc., a Delaware corporation (the *Company*). Capitalized terms used herein and not otherwise defined herein have the respective meanings set forth in the Warrant.

(2) The undersigned hereby exercises its right to purchase Warrant Shares pursuant to the Warrant.

(3) The Holder intends that payment of the Exercise Price shall be made as (check one):

¨ Cash Exercise

¨ Cashless Exercise under Section 10 of the Warrant

(4) If the Holder has elected a Cash Exercise, the Holder shall pay the sum of $ in immediately available funds to the Company in accordance with the terms of the Warrant.

(5) Pursuant to this Exercise Notice, the Company shall deliver to the Holder Warrant Shares determined in accordance with the terms of the Warrant.

(6) By its delivery of this Exercise Notice, the undersigned represents and warrants to the Company that in giving effect to the exercise evidenced hereby the Holder will not beneficially own in excess of the number of shares of Common Stock (as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934) permitted to be owned under Section 11(a) or Section 11(b), as applicable, of the Warrant to which this notice relates.

Dated: _____

Name of Holder: _____

By: _____

Name: _____

Title: _____

(Signature must conform in all respects to name of Holder as specified on the face of the Warrant)

Exhibit 5.1

September 26, 2013

Idera Pharmaceuticals, Inc.

167 Sidney Street

Cambridge, MA 02139
Registration Statement on Form S-3

Ladies and Gentlemen:

This opinion is being furnished to you in connection with (i) the Registration Statement on Form S-3 (File No. 333-191073) (the Registration Statement) filed by Idera Pharmaceuticals, Inc., a Delaware corporation (the Company), with the Securities and Exchange Commission (the Commission) under the Securities Act of 1933, as amended (the Securities Act), for the registration of the following securities of the Company:

1. common stock, $0.001 par value per share (the Common Stock);

2. preferred stock, $0.01 par value per share (the Preferred Stock);

3. depositary shares representing a fractional interest in or multiple shares of Preferred Stock (the Depositary Shares); and

4. warrants to purchase Common Stock, Preferred Stock or Depositary Shares (the Warrants);

all of which may be issued from time to time on a delayed or continuous basis pursuant to Rule 415 under the Securities Act for an indeterminate initial offering price, as set forth in the Registration Statement and the prospectus contained therein (the Base Prospectus) and (ii) the prospectus supplement, dated September 26, 2013 (the Prospectus Supplement and, together with the Base Prospectus, the Prospectus) relating to the issuance and sale pursuant to the Registration Statement of up to 13,727,251 shares of Common Stock (the Shares) and Warrants to purchase up to 4,175,975 shares of Common Stock (Pre-Funded Warrants and, together with the Shares, the Securities).

The Securities are to be issued and sold by the Company pursuant to the purchase agreement, dated as of September 25, 2013 (the Underwriting Agreement), among the Company and the several Underwriters listed on Schedule I to the Underwriting Agreement, the form of which is being filed with the Commission as Exhibit 1.1 to the Company s Current Report on Form 8-K, filed on the date hereof.

We are acting as counsel for the Company in connection with the issue and sale by the Company of the Securities pursuant to the Underwriting Agreement. We have examined and relied upon signed copies of the Registration Statement and a copy of the Prospectus Supplement, each as filed with the Commission. We have also examined and relied upon the

minutes of meetings of the stockholders and the Board of Directors of the Company (the Board of Directors) as provided to us by the Company, the Certificate of Incorporation and By-Laws of the Company, each as restated and/or amended to date, and such other documents as we have deemed necessary for purposes of rendering the opinions hereinafter set forth.

In our examination of the foregoing documents, we have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as copies, the authenticity of the originals of such latter documents and the legal capacity of all signatories to such documents.

Our opinions set forth below are qualified to the extent that they may be subject to or affected by (i) applicable bankruptcy, insolvency, reorganization, moratorium, fraudulent conveyance or similar laws relating to or affecting the rights of creditors generally, (ii) statutory or decisional law concerning recourse by creditors to security in the absence of notice or hearing, (iii) duties and standards imposed on creditors and parties to contracts, including, without limitation, requirements of good faith, reasonableness and fair dealing, and (iv) general equitable principles. We express no opinion as to the availability of any equitable or specific remedy upon any breach of any of the agreements as to which we are opining herein, or any of the agreements, documents or obligations referred to therein, or to the successful assertion of any equitable defenses, inasmuch as the availability of such remedies or the success of any equitable defense may be subject to the discretion of a court.

We also express no opinion herein as to the laws of any state or jurisdiction other than the state laws of the State of New York, the General Corporation Law of the State of Delaware and the federal laws of the United States of America.

Based upon and subject to the foregoing, we are of the opinion that:

1. The Shares have been duly authorized for issuance and, when the Shares are issued and paid for in accordance with the terms and conditions of the Underwriting Agreement, the Shares will be validly issued, fully paid and non-assessable.

2. The Pre-Funded Warrants have been duly authorized for issuance and, when the Pre-Funded Warrants are issued and paid for in accordance with the terms and conditions of the Underwriting Agreement and the Pre-Funded Warrants will constitute valid and legally binding obligations of the Company, enforceable against the Company in accordance with their terms.

3. The shares of the Company s Common Stock issuable upon exercise of the Pre-Funded Warrants (the Warrant Shares) have been duly authorized for issuance and, when issued and paid for in accordance with the provisions of the Pre-Funded Warrants, including the payment of the exercise price therefor, the Warrant Shares will be validly issued, fully paid and non-assessable.

It is understood that this opinion is to be used only in connection with the offer and sale of the Securities while the Registration Statement is in effect.

Please note that we are opining only as to the matters expressly set forth herein, and no opinion should be inferred as to any other matters. This opinion is based upon currently existing statutes, rules, regulations and judicial decisions, and we disclaim any obligation to advise you of any change in any of these sources of law or subsequent legal or factual developments which might affect any matters or opinions set forth herein.

We hereby consent to the filing of this opinion in accordance with the requirements of Item 601(b)(5) of Regulation S-K under the Securities Act with the Commission as an exhibit to the Current Report on Form 8-K to be filed by the Company on the date hereof in connection with the issue and sale of the Securities and to the use of our name in the Prospectus Supplement under the caption Legal Matters. In giving such consent, we do not hereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission.

Very truly yours,

WILMER CUTLER PICKERING

HALE AND DORR LLP

By: /s/ Stuart M. Falber
Stuart M. Falber, a Partner

Exhibit 99.1

Idera Pharmaceuticals Announces Pricing of Public Offering of Common Stock

and Pre-Funded Warrants

CAMBRIDGE, Mass. (BUSINESS WIRE) September 25, 2013 Idera Pharmaceuticals, Inc. (Nasdaq: IDRA) (Idera or, the Company) today announced the pricing of an underwritten public offering of 13,727,251 shares of common stock for a public offering price of $1.55 per share, and pre-funded warrants to purchase up to an aggregate of 4,175,975 shares of common stock at the per share public offering price for the common stock less the $0.01 per share exercise price for each such pre-funded warrant. The gross proceeds to Idera from this offering are expected to be approximately $27.7 million, before deducting the underwriting discounts and commissions and other estimated offering expenses payable by Idera and excluding the proceeds, if any, from the exercise of the pre-funded warrants. The offering is expected to close on or about September 30, 2013, subject to customary closing conditions.

Idera anticipates using the net proceeds from the offering to fund its planned Phase 1/2 clinical trials of IMO-8400 intended to evaluate its use in certain genetically defined forms of B-cell lymphomas, to fund its planned Phase 1 clinical trial of IMO-9200 and for working capital and other general corporate purposes.

Piper Jaffray & Co. is acting as sole manager for the offering.

The securities described above are being offered by the Company pursuant to a shelf registration statement previously filed with and declared effective by the Securities and Exchange Commission (the SEC) on September 18, 2013. The offering will be made only by means of the written prospectus and prospectus supplement that form a part of the registration statement. A preliminary prospectus supplement and the accompanying prospectus relating to the securities being offered has been filed with the SEC and is available on the SEC s website at http://www.sec.gov. Copies of the preliminary prospectus supplement and the accompanying prospectus relating to the securities being offered may also be obtained from Piper Jaffray & Co., Attention: Prospectus Department, 800 Nicollet Mall, J12S03, Minneapolis, MN 55402, via telephone at 800-747-3924 or email at prospectus@pjc.com.

This press release shall not constitute an offer to sell or the solicitation of an offer to buy the securities being offered, nor shall there be any sale of the securities being offered in any state or other jurisdiction in which such offer, solicitation or sale would be unlawful prior to the registration or qualification under the securities laws of any such state or other jurisdiction.

About Idera Pharmaceuticals, Inc.

Idera s technology platform involves creating novel synthetic RNA- and DNA-based compounds to modulate immune responses. Idera has applied this platform to develop proprietary Toll-like receptor (TLR) antagonists as immunomodulatory drug candidates. Toll-like receptor antagonists block the overactivation of immune factors which can cause a range of pathological effects. Idera is conducting clinical development of TLR antagonists in autoimmune and inflammatory diseases, and preclinical development of their use in certain genetically defined forms of B-cell lymphoma. More information on Idera is available at iderapharma.com.

Forward Looking Statements

This press release contains 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 press release, including statements regarding the Company s 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, and would and similar expressions are intended to identify forward-looking

statements, although not all forward-looking statements contain these identifying words. Idera cannot guarantee that it will actually achieve the plans, intentions or expectations disclosed in its forward-looking statements and you should not place undue reliance on the Company s forward-looking statements. There are a number of important factors that could cause Idera s actual results to differ materially from those indicated or implied by its forward-looking statements. Factors that may cause such a difference include: whether Idera s cash resources will be sufficient to fund its continuing operations and the further development of the Company s programs; whether results obtained in early research, preclinical studies and clinical trials will be indicative of the results that will be generated in future clinical studies; whether products based on Idera s technology will advance into or through the clinical trial process on a timely basis or at all and receive approval from the United States Food and Drug Administration or equivalent foreign regulatory agencies; whether, if the Company s products receive approval, they will be successfully distributed and marketed; whether Idera will be able to enter into collaborations that will advance the development of its compounds for autoimmune disease indications; and such other important factors as are set forth under the caption Risk Factors in the Company s Quarterly Report on Form 10-Q and the Current Report on Form 8-K that was filed on September 24, 2013. Although Idera may elect to do so at some point in the future, the Company does not assume any obligation to update any forward-looking statements and it disclaims any intention or obligation to update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.

Source: Idera Pharmaceuticals, Inc.

Idera Pharmaceuticals, Inc.

Lou Arcudi, 617-679-5517

larcudi@iderapharma.com