

IDERA PHARMACEUTICALS, INC.

Form 424B5

August 03, 2010

Table of Contents

Filed Pursuant to Rule 424(b)(5)
 Registration No. 333-145556

PROSPECTUS SUPPLEMENT

(To Prospectus dated August 31, 2007)

4,071,005 Shares of Common Stock

Warrants to Purchase 1,628,402 Shares of Common Stock

Pursuant to this prospectus supplement and the accompanying prospectus, we are offering up to 4,071,005 shares of our common stock, par value \$0.001 per share, and warrants to purchase up to 1,628,402 shares of our common stock. The common stock and warrants will be sold in units, with each unit consisting of one share of common stock and warrants to purchase 0.4 shares of common stock at an initial exercise price of \$3.71 per share of common stock. Each unit will be sold to investors in this offering at a negotiated price of \$3.71 per unit. The shares of common stock and warrants will be issued separately but can only be purchased together in this offering. We refer to the shares of common stock issued in this offering, and the warrants to purchase common stock issued in this offering, collectively as the securities. The shares of common stock issuable from time to time upon exercise of the warrants are also being offered pursuant to this prospectus supplement and the accompanying prospectus.

Our common stock is listed on the Nasdaq Global Market under the symbol IDRA. On July 30, 2010, the closing consolidated bid price of our common stock on the Nasdaq Global Market was \$3.66 per share. The warrants are not and will not be listed on any national securities exchange.

Investing in our securities involves a high degree of risk. See Risk Factors, beginning on page S-5 of this prospectus supplement and page 3 of the accompanying prospectus, as well as the documents incorporated by reference into this prospectus supplement and the accompanying prospectus, to read about factors you should consider before buying our securities.

We have retained Rodman & Renshaw, LLC to act as our exclusive placement agent in connection with the securities offered by this prospectus supplement. The placement agent has agreed to use its reasonable best efforts to sell the securities offered by this prospectus supplement. We have agreed to pay the placement agent the placement agent fees set forth in the table below, which assumes that we sell all of the securities we are offering.

	Per Unit	Total (1)
Public offering price of units	\$ 3.71	\$ 15,103,428.55(2)
Placement agent fees (3)	\$0.2226	\$ 906,205.71
Proceeds, before expenses, to us	\$3.4874	\$ 14,197,222.84

(1) Assumes all units offered under this prospectus are sold.

(2) The proceeds shown exclude proceeds that we may receive upon exercise of the warrants.

(3) In addition to the placement

agent fees, we have agreed to reimburse the placement agent for certain of its expenses as described under Plan of Distribution on page S-12 of this prospectus supplement.

We estimate the total expenses of this offering, excluding the placement agent's fees, will be approximately \$100,000. Because there is no minimum offering amount required as a condition to closing in this offering, the actual public offering amount, placement agent fees and net proceeds to us, if any, in this offering are not presently determinable and may be substantially less than the total maximum offering amounts set forth above. The placement agent is not required to place any specific number or dollar amount of the units offered in this offering, but will use its reasonable best efforts to place the units. Pursuant to an escrow agreement among us, the placement agent and an escrow agent, a portion of the funds received in payment for the units sold in this offering will be wired to a non-interest bearing escrow account and held until we and the placement agent notify the escrow agent that this offering has closed, indicating the date on which the units are to be delivered to the purchasers and the proceeds are to be delivered to us. The placement agent is not purchasing or selling any units pursuant to this prospectus supplement or the accompanying prospectus.

You should carefully read this prospectus supplement and the accompanying prospectus, together with the documents we incorporate by reference, before you invest in our securities.

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

Delivery of the shares and warrants will take place on or about August 5, 2010, subject to the satisfaction of certain conditions.

Rodman & Renshaw, LLC

The date of this prospectus supplement is August 2, 2010.

TABLE OF CONTENTS
Prospectus Supplement

	Page
<u>ABOUT THIS PROSPECTUS SUPPLEMENT</u>	S-1
<u>PROSPECTUS SUPPLEMENT SUMMARY</u>	S-2
<u>THE OFFERING</u>	S-4
<u>RISK FACTORS</u>	S-5
<u>SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS</u>	S-6
<u>USE OF PROCEEDS</u>	S-7
<u>DILUTION</u>	S-8
<u>DESCRIPTION OF SECURITIES WE ARE OFFERING</u>	S-9
<u>PLAN OF DISTRIBUTION</u>	S-12
<u>LEGAL MATTERS</u>	S-13
<u>EXPERTS</u>	S-13
<u>WHERE YOU CAN FIND MORE INFORMATION</u>	S-13
<u>INCORPORATION OF CERTAIN INFORMATION BY REFERENCE</u>	S-13

Prospectus

<u>ABOUT THIS PROSPECTUS</u>	2
<u>IDERA PHARMACEUTICALS, INC</u>	2
<u>RISK FACTORS</u>	3
<u>SPECIAL NOTE REGARDING FORWARD-LOOKING INFORMATION</u>	3
<u>USE OF PROCEEDS</u>	3
<u>THE SECURITIES WE MAY OFFER</u>	3
<u>DESCRIPTION OF COMMON STOCK</u>	4
<u>DESCRIPTION OF WARRANTS</u>	4
<u>PLAN OF DISTRIBUTION</u>	6
<u>VALIDITY OF SECURITIES</u>	8
<u>EXPERTS</u>	8
<u>WHERE YOU CAN FIND MORE INFORMATION</u>	8
<u>INCORPORATION OF DOCUMENTS BY REFERENCE</u>	8

Table of Contents

ABOUT THIS PROSPECTUS SUPPLEMENT

This document is in two parts. The first part is this prospectus supplement, which describes the terms of this offering of the securities. This prospectus supplement also adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus. The second part, the accompanying prospectus, provides more general information. Generally, when we refer to this prospectus, we are referring to both parts of this document combined together with all documents incorporated by reference. To the extent there is a conflict between the information contained in this prospectus supplement or any free writing prospectus we may authorize to be delivered to you, on the one hand, and the information contained in the accompanying prospectus or any document incorporated by reference therein, on the other hand, you should rely on the information in this prospectus supplement or such free writing prospectus, as the case may be, provided that, if any statement in one of these documents is inconsistent with a statement in another document having a later date for example, a document incorporated by reference in the accompanying prospectus the statement in the document having the later date modifies or supersedes the earlier statement.

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference in the accompanying prospectus were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

You should rely only on the information contained in this prospectus supplement, contained in the accompanying prospectus or incorporated herein and therein by reference, the information to which we have referred you, and any free writing prospectus we may authorize to be delivered to you. We have not authorized anyone to provide you with information that is different. We are offering to sell, and seeking offers to buy, the securities only in jurisdictions where offers and sales are permitted. The information contained, or incorporated by reference, in this prospectus supplement and contained, or incorporated herein by reference, in the accompanying prospectus is accurate only as of the respective dates thereof, regardless of the time of delivery of this prospectus supplement and the accompanying prospectus, or of any sale of the securities. It is important for you to read and consider all information contained in this prospectus supplement and the accompanying prospectus, including the documents we have referred you to in the section entitled **Where You Can Find More Information below and in the accompanying prospectus and any free writing prospectus we may authorize to be delivered to you.**

Unless the context otherwise requires, in this prospectus supplement, Idera, the Company, we, us, our and similar names refer to Idera Pharmaceuticals, Inc. Our name and logo and the names of our products are our trademarks or registered trademarks. Other trademarks mentioned in this prospectus supplement are the property of their respective owners.

Table of Contents

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights selected information about us and this offering. This information is not complete and does not contain all the information you should consider before investing in our common stock. You should carefully read this entire prospectus supplement and the entire accompanying prospectus, including the Risk Factors section beginning on page S-5 of this prospectus supplement and the financial statements and the other information incorporated by reference in this prospectus supplement and the accompanying prospectus, before making an investment decision.

Our Business

We are engaged in the discovery and development of DNA- and RNA-based drug candidates targeted to Toll-Like Receptors, or TLRs, to treat infectious diseases, autoimmune and inflammatory diseases, cancer, and asthma and allergies, and for use as vaccine adjuvants. Drug candidates are compounds that we are developing and that have not been approved for any commercial use. TLRs are specific receptors present in immune system cells that recognize the DNA or RNA of bacteria or viruses and initiate an immune response. Relying on our expertise in DNA and RNA chemistry, we have designed and created proprietary TLR agonists and antagonists to modulate immune responses. A TLR agonist is a compound that stimulates an immune response through the targeted TLR. A TLR antagonist is a compound that blocks activation of an immune response through the targeted TLR.

Our business strategy is to advance applications of our TLR-targeted drug candidates in multiple disease areas simultaneously. We are advancing some of these applications through internal programs, and we seek to advance other applications through collaborative alliances with pharmaceutical companies. Collaborators provide the necessary resources and drug development experience to advance our compounds in their programs. 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 infectious diseases, autoimmune and inflammatory diseases, asthma and allergies, and cancer. We are conducting two Phase 1 clinical trials of IMO-2125, our lead TLR9 agonist drug candidate for infectious diseases, as monotherapy in patients with chronic hepatitis C virus, or HCV, infection who had no response to prior standard of care therapy, and in combination with ribavirin in treatment-naïve HCV patients. As a first step in the clinical development of IMO-3100, our lead TLR7 and TLR9 antagonist drug candidate for potential applications in autoimmune and inflammatory diseases, we are conducting Phase 1 clinical trials in healthy subjects to evaluate safety and mechanism of action prior to the initiation of clinical trials in patients with autoimmune disease. We have conducted a single-dose, dose escalation Phase 1 clinical trial of IMO-3100 in healthy subjects, and currently are conducting a multiple-dose Phase 1 clinical trial of IMO-3100 in healthy subjects. We are evaluating the next steps in the development of IMO-2134, our lead TLR9 agonist drug candidate for respiratory diseases, for which Novartis initiated a Phase 1 clinical trial under our prior collaborative agreement. . We are evaluating dual agonists of TLR7 and TLR8 in preclinical models of hematological cancers and intend to select a lead drug candidate by the end of 2010.

In addition to our internal programs, we currently are collaborating with two pharmaceutical companies to advance other applications of our TLR-targeted compounds. We are collaborating with Merck KGaA, Darmstadt, Germany, for cancer treatment, excluding cancer vaccines. Merck KGaA currently is conducting three clinical trials of IMO-2055, a TLR9 agonist drug candidate which Merck KGaA refers to as EMD 1201081: a Phase 1b clinical trial in non-small cell lung cancer; a Phase 1b clinical trial in colorectal cancer and a Phase 2 clinical trial in patients with recurrent or metastatic squamous cell carcinoma of the head and neck. We also are collaborating with Merck Sharp & Dohme Corp. (previously known as Merck & Co., Inc. and which we refer to herein as Merck) for vaccine adjuvants in the fields of cancer, infectious diseases, and Alzheimer's disease. Merck KGaA and Merck are not related.

You can get more information regarding our business and industry by reading our annual report on Form 10-K for the year ended December 31, 2009 filed with the Securities and Exchange Commission, or SEC, on March 10, 2010, our quarterly report on Form 10-Q for the quarter ended March 31, 2010 filed with the SEC on May 4, 2010, and the other reports we file with the SEC.

Table of Contents

Corporate Information

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

S-3

Table of Contents

THE OFFERING

Common stock offered by us pursuant to this prospectus supplement	4,071,005 shares
Common stock to be outstanding after this offering	27,559,930 shares
Warrants offered by us pursuant to this prospectus supplement	We are offering warrants to purchase 1,628,402 shares of common stock. Each warrant has an exercise price of \$3.71 per share and is exercisable immediately for a period of five years. This prospectus supplement also relates to the offering of the shares of common stock issuable upon exercise of the warrants. There is currently no market for the warrants and none is expected to develop after this offering. See <i>Description of Securities We are Offering</i> beginning on page S-9 for a description of the terms of the warrants.
Use of proceeds	We intend to use the net proceeds from this offering for general corporate purposes including continuing to fund clinical development of our lead drug candidates, IMO-2125 and IMO-3100, and the development of other preclinical candidates targeted to Toll-Like Receptors. See <i>Use of Proceeds</i> beginning on page S-7 for a further discussion of our intended use of proceeds.
Risk Factors	See <i>Risk Factors</i> beginning on page S-5 and in our quarterly report on Form 10-Q for the quarter ended March 31, 2010 for a discussion of factors you should consider carefully before deciding to invest in the securities.
NASDAQ Global Market symbol	IDRA
<p>The number of shares of our common stock to be outstanding after this offering is based on 23,488,925 shares of common stock outstanding as of March 31, 2010. Unless specifically stated otherwise, the information in this prospectus supplement excludes:</p> <ul style="list-style-type: none"> 4,532,205 shares of our common stock issuable upon the exercise of stock options outstanding as of March 31, 2010, at a weighted average exercise price of \$7.30 per share; 1,876,297 shares of our common stock reserved for future grants of stock options (or other similar equity instruments) under our 2008 Stock Incentive Plan as of March 31, 2010; 132,021 shares of our common stock reserved for future issuance under our 1995 Employee Stock Purchase Plan; 1,926 shares of our common stock reserved for issuance upon conversion of our Series A convertible preferred stock; 1,628,402 shares of our common stock issuable upon exercise of the warrants to be issued in this offering at an initial exercise price of \$3.71 per share; and 	

2,466,263 shares of our common stock issuable upon exercise of other warrants at a weighted-average exercise price of \$5.42 per share.

S-4

Table of Contents

RISK FACTORS

Investing in our securities involves a high degree of risk and uncertainty. In addition to the other information included or incorporated by reference in this prospectus supplement and the accompanying prospectus, you should carefully consider the risks described under the heading Risk Factors in our quarterly report on Form 10-Q for the quarter ended March 31, 2010 as filed with the SEC on May 4, 2010. If any of the risk factors in such quarterly report on Form 10-Q or any of the following risks actually occurs, our business, financial condition or results of operations would likely suffer, possibly materially. In that case, the trading price of our common stock could fall, and you may lose all or part of your investment.

Risks Relating to this Offering

Investors in this offering will pay a much higher price than the book value of our stock.

If you purchase units in this offering, you will incur an immediate and substantial dilution in net tangible book value of \$2.02 per share, after giving effect to the sale by us of the 4,071,005 shares of common stock included in the units offered in this offering at an offering price of \$3.71 per share. See Dilution on page S-8 for a more detailed discussion of the dilution you will incur in connection with this offering.

Our management will have broad discretion over the use of the net proceeds from this offering, and you may not agree with how we use the proceeds and the proceeds may not be invested successfully.

Our management will have broad discretion as to the use of the net proceeds from this offering by us and could use them for purposes other than those contemplated at the time of this offering. Accordingly, you may be relying on the judgment of our management with regard to the use of these net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. It is possible that the proceeds will be invested in a way that does not yield a favorable, or any, return for our company.

S-5

Table of Contents

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

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

S-6

Table of Contents

USE OF PROCEEDS

We estimate that the net proceeds from the sale of the 4,071,005 units offered by this prospectus supplement, after deducting placement agent fees and expenses, will be approximately \$14.1 million, assuming that we sell the maximum number of units we are offering pursuant to this prospectus supplement. Because there is no minimum offering amount required as a condition to the closing of this offering, the actual number of units sold, placement agent fees and proceeds to us are not presently determinable and may be substantially less than the maximum amount set forth above.

We intend to use the net proceeds from this offering for general corporate purposes including continuing to fund clinical development of IMO-2125, a TLR9 agonist, currently in two Phase 1 trials for the treatment of Hepatitis C Virus infection and IMO-3100, a TLR 7/9 antagonist currently in Phase 1 trials for the treatment of autoimmune and inflammatory diseases, and development of other preclinical candidates targeted to Toll-like receptors.

We have not determined the amounts we plan to spend on any of the areas listed above or the timing of these expenditures. As a result, our management will have broad discretion to allocate the net proceeds from this offering. Pending application of the net proceeds as described above, we intend to invest the net proceeds of the offering in investment-grade and U.S. government securities.

S-7

Table of Contents**DILUTION**

Our net tangible book value on March 31, 2010 was approximately \$32.4 million, or approximately \$1.38 per share of common stock. Net tangible book value per share is determined by dividing our net tangible book value, which consists of tangible assets less total liabilities, by the number of shares of common stock outstanding on that date. Without taking into account any other changes in our net tangible book value after March 31, 2010, other than to give effect to our receipt of the estimated net proceeds from the sale of 4,071,005 units at an offering price of \$3.71 per unit, less the placement agent fees and our estimated offering expenses, our net tangible book value as of March 31, 2010, after giving effect to the items above, would have been approximately \$46.5 million, or \$1.69 per share. This represents an immediate increase in net tangible book value of \$0.31 per share of common stock to our existing stockholders and an immediate dilution in net tangible book value of \$2.02 per share of common stock to purchasers of units in this offering. The following table illustrates this per share dilution:

Offering purchase price per unit		\$3.71
Net tangible book value per share as of March 31, 2010	\$1.38	
Increase per share attributable to new investors	0.31	
Adjusted net tangible book value per share as of March 31, 2010		1.69
Dilution per share to new investors		\$2.02

The above table is based on 23,488,925 shares of our common stock outstanding as of March 31, 2010 and excludes, as of March 31, 2010:

4,532,205 shares of our common stock issuable upon the exercise of stock options outstanding as of March 31, 2010, at a weighted average exercise price of \$7.30 per share;

1,876,297 shares of our common stock reserved for future grants of stock options (or other similar equity instruments) under our 2008 Stock Incentive Plan as of March 31, 2010;

132,021 shares of our common stock reserved for future issuance under our 1995 Employee Stock Purchase Plan;

1,926 shares of our common stock reserved for issuance upon conversion of our Series A convertible preferred stock;

1,628,402 shares of our common stock issuable upon exercise of the warrants to be issued in this offering at an initial exercise price of \$3.71 per share; and

2,466,263 shares of our common stock issuable upon exercise of other warrants at a weighted-average exercise price of \$5.42 per share.

Table of Contents

DESCRIPTION OF SECURITIES WE ARE OFFERING

In this offering, we are offering a maximum of 4,071,005 units, consisting of 4,071,005 shares of common stock and warrants to purchase up to 1,628,402 shares of common stock. Each unit consists of one share of common stock and warrants to purchase 0.40 shares of common stock at an initial exercise price of \$3.71 per share. This prospectus supplement also relates to the offering of shares of our common stock upon exercise, if any, of the warrants. Units will not be issued or certificated. The shares of common stock and warrants will be issued separately but can only be purchased together in units in this offering.

The units offered in this offering will be issued pursuant to a subscription agreement between each of the purchasers and us. You should review a copy of the form of subscription agreement and the form of warrant, each of which have been filed by us as an exhibit to a Current Report on Form 8-K filed with the SEC in connection with this offering, for a complete description of the terms and conditions applicable to the units. This description of the units in this prospectus supplement is qualified in its entirety by reference to the warrants.

Common Stock

The material terms and provisions of our common stock are described in our Registration Statement on Form 8-A dated December 4, 2003, as amended by Amendment No. 1 on Form 8-A/A filed with the SEC on August 17, 2007 and by Amendment No. 2 on Form 8-A/A filed with the SEC on December 7, 2007, which is incorporated by reference in this prospectus.

Warrants

The material terms and provisions of the warrants to purchase 1,628,402 shares of common stock being offered pursuant to this prospectus supplement and the accompanying prospectus are summarized below. This summary is subject to and qualified in its entirety by the form of warrant, which will be provided to each investor in this offering and will be filed on a Current Report on Form 8-K in connection with this offering.

General Terms of the Warrants

The warrants to be issued in this offering represent the rights to purchase up to a total of 1,628,402 shares of common stock at an initial exercise price of \$3.71 per share. Each warrant may be exercised at any time and from time to time on or after the date of delivery of the warrants through and including the five-year anniversary thereof.

Exercise

Holder of the warrants may exercise their warrants to purchase shares of our common stock on or before the expiration date by delivering notice of exercise, appropriately completed and duly signed, and, within three trading days following delivery of the notice of exercise, payment of the exercise price for the number of shares with respect to which the warrant is being exercised, if such holder is not utilizing the cashless exercise provisions with respect to the warrants. Warrants may be exercised in whole or in part, but only for full shares of common stock.

In addition, the warrant holders are entitled to a cashless exercise option if, at any time of exercise, there is no effective registration statement registering, or no current prospectus available for, the issuance or resale of the shares of common stock underlying the warrants. This option entitles the warrant holders to elect to receive fewer shares of common stock without paying the cash exercise price. The number of shares to be issued would be determined by a formula based on the total number of shares with respect to which the warrant is being exercised, the closing price per share of our common stock on the trading date immediately prior to the date of exercise and the applicable exercise price of the warrants issued in this offering.

The shares of common stock issuable on exercise of the warrants will be, when issued and paid for in accordance with the warrants, duly and validly authorized, issued and fully paid and non-assessable. We will authorize and reserve at least that number of shares of common stock equal to the number of shares of common stock issuable upon exercise of all outstanding warrants.

Table of Contents

Delivery of Certificates; Failure to Deliver Certificates

Upon the holder's exercise of a warrant, we will promptly, but in no event later than three trading days after the later of (1) delivery of the warrant exercise notice and (2) delivery of the exercise price of the warrant, issue and deliver, or cause to be issued and delivered, a certificate for the shares of common stock issuable upon exercise of the warrant. If we are then a participant in the Deposit or Withdrawal at Custodian System (DWAC) of The Depository Trust Corporation, we will issue and deliver the shares electronically through such system.

If we fail to deliver the shares of common stock underlying the warrants by the third trading day after the date on which delivery of the stock certificate is required by the warrant, we are required to pay to the holder cash damages of \$10 per trading day (increasing to \$20 per trading day on the fifth trading day we are delinquent) for each \$1,000 of warrant shares (calculated based on the fair market value of the shares on the date of exercise of the warrant) that we fail to deliver. In addition, if we continue to fail to deliver these shares and, after the third trading day after the date on which delivery of the stock certificate is required by the warrant, the holder, or any third party acting on behalf of the holder or for the holder's account, purchases, in an open market transaction or otherwise, shares of our common stock to deliver in satisfaction of a sale by the holder of the warrant shares that the holder anticipated receiving from us upon exercise of the warrant we are required to:

pay in cash to the holder the amount equal to the excess, if any, of the holder's purchase price over the product of (A) the number of warrant shares that we were required to deliver to the holder and (B) the price at which the sell order giving rise to holder's purchase obligation was executed; and

at the election of holder, either (A) reinstate the portion of the warrant as to the number of shares of common stock for which the warrant was exercised (with such exercise being deemed rescinded), or (B) deliver to the holder a certificate or certificates representing the number of shares of common stock for which the warrant was exercised.

Limitations on Exercise

The number of warrant shares that may be acquired by any holder upon any exercise of the warrant may be limited (if specified by the holder at the time of the issuance of the warrant) to the extent necessary to insure that, following such exercise, or other issuance, the total number of shares of common stock then beneficially owned by such 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 4.99% of the total number of issued and outstanding shares of common stock, including for such purpose the shares of common stock issuable upon such exercise, or the beneficial ownership limitation. The holder may elect to increase this beneficial ownership limitation from 4.99% to up to 9.99% of the total number of issued and outstanding shares of common stock, including for such purpose the shares of common stock issuable upon such exercise, upon not less than 61 days' prior written notice.

Certain Adjustments

The exercise price and the number of shares of common stock purchasable upon the exercise of the warrants are subject to adjustment upon the occurrence of specific events, including stock dividends, stock splits, combinations and reclassifications of our common stock.

Fundamental Transactions

If, at any time while warrants are outstanding, any of the following transactions, which we refer to as fundamental transactions occurs:

- (1) we consolidate or merge with or into another corporation,
- (2) we sell all or substantially all of our assets
- (3) we are subject to or complete a tender or exchange offer pursuant to which holders of our common stock are permitted to tender or exchange their shares for other securities, cash or property and such offer is accepted by holders of more than 50% of our outstanding shares of common stock,

Table of Contents

(4) we effect any reclassification, reorganization or recapitalization of our common stock or any compulsory share exchange pursuant to which our common stock is converted into or exchanged for other securities, cash or property; or

(5) we engage in one or more transactions with another party that results in that party acquiring more than 50% of our outstanding shares of common stock;

then each holder of warrants will have the right to receive, upon exercise of the 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 of the warrant. If the holders of our common stock are given any choice as to the securities, cash or property to be received in a fundamental transaction, the holder will be given the same choice as to the consideration that it receives upon exercise of the warrant. Any successor to us or surviving entity shall assume these obligations under the warrant.

Pro Rata Distributions

If, at any time while warrants are outstanding, we distribute evidences of our indebtedness, assets, or rights or warrants to purchase any security to all holders of our common stock, then each holder of warrants will have the right to receive with each share acquired upon exercise of the warrant, the same amount and kind of indebtedness, assets, or rights or warrants as it would have been entitled to receive upon the occurrence of such distribution if it had, immediately prior to the record date for such distribution, exercised the warrant with respect to that warrant share.

Additional Provisions

The above summary of certain terms and provisions of the warrants is qualified in its entirety by reference to the detailed provisions of the warrants, the form of which will be filed as an exhibit to a current report on Form 8-K that is incorporated herein by reference. We are not required to issue fractional shares upon the exercise of the warrants. No holders of the warrants will possess any rights as a stockholder under those warrants until the holder exercises those warrants. The warrants may be transferred independent of the common stock they were issued with, on a form of assignment, subject to all applicable laws.

Table of Contents**PLAN OF DISTRIBUTION**

Pursuant to a placement agent agreement, dated as of August 2, 2010, between us and Rodman & Renshaw, LLC, we engaged Rodman & Renshaw, LLC as our exclusive placement agent to solicit offers to purchase the securities offered by this prospectus supplement.

Rodman & Renshaw, LLC has agreed to use its reasonable best efforts to arrange for the sale of all of the securities in this offering. There is no requirement that any minimum number of securities or dollar amount of securities be sold in this offering and there can be no assurance that we will sell all or any of the securities being offered. We will enter into subscription agreements directly with the investors who purchase securities in this offering. The placement agent agreement provides that the obligations of Rodman & Renshaw, LLC and the investors, and the closing of the sale of the securities offered in this offering, are subject to certain conditions precedent, including, among other things, the absence of any material adverse change in our business and the receipt of certain opinions, letters and certificates from us or our counsel.

We currently anticipate that the closing of this offering will take place no later than August 5, 2010. On the closing date, the following will occur:

we will receive funds up to the amount of the aggregate purchase price;

we will deliver the shares of common stock and warrants to the investors; and

Rodman & Renshaw, LLC will receive the placement agent fees in accordance with the terms of the engagement letter.

We have agreed to pay Rodman & Renshaw, LLC an aggregate fee equal to 6% of the gross proceeds from the sale of the units in this offering. We have also agreed to reimburse Rodman & Renshaw, LLC for expenses incurred by it in connection with this offering. Such reimbursement will be up to 0.8% of the aggregate gross offering proceeds, and in no event more than \$40,000.

The following table shows the per share and total placement agent fees we will pay to Rodman & Renshaw, LLC in connection with the sale of the units, assuming the purchase of all of the units we are offering.

Per unit placement agent fees	\$ 0.2226
Total	\$906,205.71

We estimate the total expenses of this offering which will be payable by us, excluding the placement agent fees, will be approximately \$100,000. After deducting the fees due to the placement agent and our estimated offering expenses, we expect the net proceeds from this offering to be approximately \$14.1 million.

We have agreed to indemnify Rodman & Renshaw, LLC and certain other persons against certain liabilities relating to or arising out of Rodman & Renshaw, LLC's activities under the engagement letter. We have also agreed to contribute to payments Rodman & Renshaw, LLC may be required to make in respect of such liabilities.

Rodman & Renshaw, LLC may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act, and any commissions received by it and any profit realized on the resale of the units sold by it while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. As an underwriter, Rodman & Renshaw, LLC would be required to comply with the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 415(a)(4) under the Securities Act and Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of shares of common stock and warrants by Rodman & Renshaw, LLC acting as principal. Under these rules and regulations, Rodman & Renshaw, LLC:

may not engage in any stabilization activity in connection with our securities; and

may not bid for or purchase any of our securities or attempt to induce any person to purchase any

Table of Contents

of our securities, other than as permitted under the Exchange Act, until it has completed its participation in the distribution.

Our common stock is traded on NASDAQ Global Market under the symbol IDRA. The warrants to purchase common stock issued to the investors in this offering are not expected to be eligible for trading on any market.

LEGAL MATTERS

The validity of the shares of common stock we are offering will be passed upon by Wilmer Cutler Pickering Hale and Dorr LLP, Boston, Massachusetts. Weinstein Smith LLP, New York, New York, is counsel for the placement agent.

EXPERTS

The financial statements of Idera Pharmaceuticals, Inc. as of December 31, 2009 and 2008 and for each of the three years in the period ended December 31, 2009 and management's assessment of the effectiveness of internal control over financial reporting as of December 31, 2009 of Idera Pharmaceuticals, Inc. appearing in its Annual Report on Form 10-K and incorporated herein by reference have been so incorporated by reference in reliance upon the reports of Ernst & Young LLP, independent registered public accountants, upon the authority of such firm as experts in accounting and auditing in giving said reports.

WHERE YOU CAN FIND MORE INFORMATION

We file reports, proxy statements and other information with the SEC as required by the Securities Exchange Act of 1934, as amended. You can find, copy and inspect information we file at the SEC's public reference room at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You can call the SEC at 1-800-SEC-0330 for further information about the public reference room. You can review our electronically filed reports, proxy and information statements on the SEC's web site at <http://www.sec.gov> or on our web site at <http://www.iderapharma.com>. Information included on our web site is not a part of this prospectus supplement or the accompanying prospectus.

This prospectus supplement is part of a registration statement that we filed with the SEC. The registration statement contains more information than this prospectus regarding us and the securities, including certain exhibits and schedules. You can obtain a copy of the registration statement from the SEC at the address listed above or from the SEC's internet site.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to incorporate into this prospectus information that we file with the SEC in other documents. This means that we can disclose important information to you by referring to other documents that contain that information. The information incorporated by reference is considered to be part of this prospectus. Information that we file with the SEC in the future and incorporate by reference in this prospectus automatically updates and supersedes previously filed information as applicable. The following documents filed with the SEC pursuant to the Exchange Act of 1934, as amended, are incorporated herein by reference (other than, in each case, documents or information deemed to have been furnished and not filed in accordance with SEC rules):

our Annual Report on Form 10-K for the year ended December 31, 2009, filed with the SEC on March 10, 2010;

our Quarterly Report on Form 10-Q for the quarter ended March 31, 2010, filed with the SEC on May 4, 2010;

S-13

Table of Contents

our Current Reports on Form 8-K filed with the SEC on January 27, 2010, April 7, 2010 and June 21, 2010; and

the description of our common stock, and the associated preferred stock purchase rights, contained in our Registration Statement on Form 8-A filed with the SEC on December 4, 2003, as amended by Amendment No. 1 to Form 8-A on Form 8-A/A filed with the SEC on August 17, 2007 and Amendment No. 2 to Form 8-A on Form 8-A/A filed with the SEC on December 7, 2007.

In addition, all documents filed by us pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act (1) after the date of the filing of this prospectus supplement and (2) until all of the common stock to which this prospectus relates has been sold or the offering is otherwise terminated, except in each case for information contained in any such filing where we indicate that such information is being furnished and is not to be considered filed under the Exchange Act, will be deemed to be incorporated by reference in this prospectus supplement and the accompanying prospectus and to be a part hereof from the date of filing of such documents.

You may request, orally or in writing, a copy of the documents which are incorporated by reference, which will be provided to you at no cost by contacting: Idera Pharmaceuticals, Inc., 167 Sidney Street, Cambridge, Massachusetts 02139, Attention: Investor Relations Department, (617) 679-5500.

S-14

Table of Contents

PROSPECTUS

\$50,000,000
IDERA PHARMACEUTICALS, INC.
Common Stock
Warrants

We may from time to time sell common stock and warrants to purchase common stock in one or more offerings for an aggregate initial offering price of \$50,000,000. We refer to the common stock and the warrants to purchase common stock collectively as the securities. This prospectus describes the general manner in which our securities may be offered using this prospectus. We will specify in the accompanying prospectus supplement the terms of the securities to be offered and sold. We may sell these securities to or through underwriters or dealers, directly to purchasers or through agents. We will set forth the names of any underwriters, dealers or agents in the accompanying prospectus supplement.

Our common stock is traded on the American Stock Exchange under the symbol IDP.

Investing in our securities involves risks. See Risk Factors on page 3 of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

This prospectus may not be used to consummate sales of securities unless it is accompanied by a prospectus supplement.

Prospectus dated August 31, 2007.

Table of Contents

TABLE OF CONTENTS

ABOUT THIS PROSPECTUS	2
IDERA PHARMACEUTICALS, INC.	2
RISK FACTORS	3
SPECIAL NOTE REGARDING FORWARD-LOOKING INFORMATION	3
USE OF PROCEEDS	3
THE SECURITIES WE MAY OFFER	3
DESCRIPTION OF COMMON STOCK	4
DESCRIPTION OF WARRANTS	4
PLAN OF DISTRIBUTION	6
VALIDITY OF SECURITIES	8
EXPERTS	8
WHERE YOU CAN FIND MORE INFORMATION	8
INCORPORATION OF DOCUMENTS BY REFERENCE	8

You should rely only on the information contained in this prospectus and the documents incorporated by reference in this prospectus or to which we have referred you. We have not authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. This prospectus does not constitute an offer to sell, or a solicitation of an offer to purchase, the securities offered by this prospectus in any jurisdiction to or from any person to whom or from whom it is unlawful to make such offer or solicitation of an offer in such jurisdiction. You should not assume that the information contained in this prospectus or any document incorporated by reference is accurate as of any date other than the date on the front cover of the applicable document. Neither the delivery of this prospectus nor any distribution of securities pursuant to this prospectus shall, under any circumstances, create any implication that there has been no change in the information set forth or incorporated by reference into this prospectus or in our affairs since the date of this prospectus. Our business, financial condition, results of operations and prospects may have changed since that date.

Table of Contents

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission using a shelf registration process. Under this shelf registration process, we may, from time to time, sell any combination of the securities described in this prospectus in one or more offerings up to a total dollar amount of \$50,000,000. This prospectus describes the securities we may offer and the general manner in which our securities may be offered by this prospectus. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the terms of that offering. We may also add, update or change in the prospectus supplement any of the information contained in this prospectus. To the extent there is a conflict between the information contained in this prospectus and the prospectus supplement, you should rely on the information in the prospectus supplement, provided that if any statement in one of these documents is inconsistent with a statement in another document having a later date for example, a document incorporated by reference in this prospectus or any prospectus supplement the statement in the document having the later date modifies or supersedes the earlier statement.

IDERA PHARMACEUTICALS, INC.

We are engaged in the discovery and development of synthetic DNA- and RNA-based compounds for the treatment of cancer, infectious diseases, autoimmune diseases, and asthma/allergies, and for use as vaccine adjuvants. We have designed proprietary product candidates to modulate immune responses through Toll-like Receptors, or TLRs. TLRs are specific receptors present in immune system cells that direct the immune system to respond to potential disease threats. Relying on our expertise in DNA and RNA chemistry, we are identifying product candidates targeted to TLRs 7, 8 or 9 for our internal development programs and for collaborative alliances. We are developing both agonists and antagonists of TLRs 7, 8 and 9. We have three internal programs, in oncology, infectious diseases, and autoimmune diseases, and two collaborative alliances relating to the development of treatments for asthma and allergies and the development of adjuvants for vaccines.

Our most advanced product candidate, IMO-2055, is an agonist of TLR9. We recently closed enrollment of a Phase 2 trial of IMO-2055 in oncology and a Phase 1/2 trial of IMO-2055 in combination with chemotherapy in oncology. We plan to initiate additional studies with IMO-2055 in combination with approved, targeted anti-cancer agents in patients with non-small cell in the third quarter of 2007 and in patients with colorectal cancer in the fourth quarter of 2007. We have selected a second TLR9 agonist, IMO-2125, as a lead product candidate for treating infectious diseases and recently submitted an Investigational New Drug application, or IND, to the U.S. Food and Drug Administration, or FDA, for this product candidate. We received a safe to proceed acknowledgement from the FDA on June 15, 2007 and are planning to initiate a Phase 1 clinical trial of IMO-2125 in patients with hepatitis C virus infection in the third quarter of 2007. In our autoimmune disease program, which is in earlier stages of research, we are evaluating TLR antagonists in preclinical models. We are collaborating with Novartis International Pharmaceutical, Ltd. for the discovery, development, and commercialization of our TLR9 agonists for the treatment of asthma/allergy indications and with Merck & Co., Inc. for the use of our TLR7, 8 and 9 agonists in combination with Merck's therapeutic and prophylactic vaccines in the areas of oncology, infectious diseases, and Alzheimer's disease.

Our executive offices are located at 167 Sidney Street, Cambridge, MA 02139, our telephone number is (617) 679-5500 and our Internet address is www.iderapharma.com. The information on our Internet website is not incorporated by reference in this prospectus and should not be considered to be part of this prospectus. Our website address is included in this prospectus as an inactive technical reference only. Our name and logo and the names of our products are our trademarks or registered trademarks. Unless the context otherwise requires, references in this prospectus to Idera, we, us, and our refer to Idera Pharmaceuticals, Inc.

Table of Contents

RISK FACTORS

An investment in our securities involves significant risks. You should carefully consider the risk factors contained in any prospectus supplement and in our filings with the Securities and Exchange Commission, as well as all of the information contained in this prospectus, any prospectus supplement and the documents incorporated by reference in this prospectus, before you decide to invest in our securities. The risks and uncertainties we have described are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations.

SPECIAL NOTE REGARDING FORWARD-LOOKING INFORMATION

This prospectus, any prospectus supplement and the documents we incorporate by reference in this prospectus contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, or the Exchange Act. All statements, other than statements of historical fact, that we include in this prospectus, any prospectus supplement and in the documents we incorporate by reference in this prospectus, may be deemed forward-looking statements for purposes of the Securities Act and the Exchange Act. We use the words anticipate, believe, estimate, expect, intend, may, plan, would and similar expressions to identify forward-looking statements, although not all forward-looking statements contain these identifying words. We cannot guarantee that we actually will achieve the plans, intentions or expectations disclosed in our forward-looking statements and, accordingly, you should not place undue reliance on our forward-looking statements. There are a number of important factors that could cause actual results or events to differ materially from the forward-looking statements that we make, including the factors included in the documents we incorporate by reference in this prospectus. You should read these factors and the other cautionary statements made in the documents we incorporate by reference as being applicable to all related forward-looking statements wherever they appear in this prospectus, any prospectus supplement and any document incorporated by reference. We caution you that we do not undertake any obligation to update forward-looking statements we make.

USE OF PROCEEDS

Unless we otherwise indicate in the applicable prospectus supplement, we currently intend to use the net proceeds from the sale of the securities for research and product development activities, including costs of conducting preclinical studies and clinical trials, and for working capital and other general corporate purposes.

We may set forth additional information on the use of net proceeds from the sale of securities we offer under this prospectus in a prospectus supplement relating to the specific offering. Pending the application of the net proceeds, we intend to invest the net proceeds in investment-grade, interest-bearing securities.

THE SECURITIES WE MAY OFFER

The descriptions of the securities contained in this prospectus, together with the applicable prospectus supplement, summarize the material terms and provisions of the various types of securities that we may offer. We will describe in the applicable prospectus supplement relating to any securities the particular terms of the securities offered by that prospectus supplement. If we so indicate in the applicable prospectus supplement, the terms of the securities may differ from the terms we have summarized below. We will also include in the prospectus supplement information, where applicable, about material United States federal income tax considerations relating to the securities, and the securities exchange or market, if any, on which the securities will be listed.

We may sell from time to time, in one or more offerings, one or more of the following securities:

common stock; and

warrants to purchase common stock.

Table of Contents

The total initial offering price of all securities that we may issue in these offerings will not exceed \$50,000,000.

This prospectus may not be used to consummate a sale of securities unless it is accompanied by a prospectus supplement.

DESCRIPTION OF COMMON STOCK

For a description of the material terms and provisions of our common stock and each other class of our securities which qualifies or limits our common stock, please see the applicable prospectus supplement, as well as the description of our capital stock in our Registration Statement on Form 8-A dated December 4, 2003, as amended by Amendment No. 1 on Form 8-A/A filed with the SEC on August 17, 2007, which is incorporated by reference in this prospectus.

DESCRIPTION OF WARRANTS

The following description, together with the additional information we may include in any applicable prospectus supplement, summarizes the material terms and provisions of the warrants that we may offer under this prospectus and the related warrant agreements and warrant certificates. While the terms summarized below will apply generally to any warrants that we may offer, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement. If we so indicate in a prospectus supplement, the terms of any warrants offered under that prospectus supplement may differ from the terms we describe below. Specific warrant agreements will contain additional important terms and provisions and will be incorporated by reference as an exhibit to the registration statement.

General

We may issue warrants for the purchase of common stock in one or more series. We may issue warrants independently or together with common stock, and the warrants may be attached to or separate from the common stock.

We will evidence each series of warrants by warrant certificates that we will issue under a separate agreement or by warrant agreements that we will enter into directly with the purchasers of the warrants. If we evidence warrants by warrant certificates, we will enter into the warrant agreement with a warrant agent. We will indicate the name and address of the warrant agent, if any, in the applicable prospectus supplement relating to a particular series of warrants.

We will describe in the applicable prospectus supplement the terms of the series of warrants, including:

the offering price and aggregate number of warrants offered;

the currency for which the warrants may be purchased;

if applicable, the terms of the common stock with which the warrants are issued and the number of warrants issued with such common stock;

if applicable, the date on and after which the warrants and the related common stock will be separately transferable;

the number of shares of common stock purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;

the manner in which the warrants may be exercised, which may include by cashless exercise;

Table of Contents

the effect of any merger, consolidation, sale or other disposition of our business on the warrant agreement and the warrants;

the terms of any rights to redeem or call the warrants;

any provisions for changes to or adjustments in the exercise price or number of shares of common stock issuable upon exercise of the warrants;

the dates on which the right to exercise the warrants will commence and expire;

the manner in which the warrant agreement and warrants may be modified;

the material United States federal income tax consequences of holding or exercising the warrants;

the terms of the common stock issuable upon exercise of the warrants; and

any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

Before exercising their warrants, holders of warrants will not have any of the rights of holders of the common stock purchasable upon such exercise, including the right to receive dividends, if any, or payments upon our liquidation, dissolution or winding up or to exercise voting rights, if any.

Exercise of Warrants

Each warrant will entitle the holder to purchase the number of shares of common stock that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to 5:00 P.M., Eastern time, on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Holders of the warrants may exercise the warrants by delivering to the warrant agent or us the warrant certificate or warrant agreement representing the warrants to be exercised together with specified information, and by paying the required amount to the warrant agent or us in immediately available funds, as provided in the applicable prospectus supplement. We will set forth on the reverse side of the warrant certificate or in the warrant agreement and in the applicable prospectus supplement the information that the holder of the warrant will be required to deliver to the warrant agent or us in connection with such exercise.

Upon receipt of the required payment and the warrant certificate or the warrant agreement, as applicable, properly completed and duly executed at the corporate trust office of the warrant agent, at our offices or at any other office indicated in the applicable prospectus supplement, we will issue and deliver the common stock purchasable upon such exercise. If fewer than all of the warrants represented by the warrant certificate or warrant agreement are exercised, then we will issue a new warrant certificate or warrant agreement for the remaining amount of warrants.

Enforceability of Rights by Holders of Warrants

Any warrant agent will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder of any warrant. A single bank or trust company may act as warrant agent for more than one issue of warrants. A warrant agent will have no duty or responsibility in case of any default by us under the applicable warrant agreement or warrant, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a warrant may, without the consent of the related warrant agent or the holder of any other warrant, enforce by appropriate legal action its right to exercise, and receive the securities purchasable upon exercise of, its warrants.

Table of Contents

PLAN OF DISTRIBUTION

We may sell the securities being offered hereby in one or more of the following ways from time to time:
through agents to the public or to investors;

to one or more underwriters for resale to the public or to investors;

in at the market offerings, within the meaning of Rule 415(a)(4) of the Securities Act, to or through a market maker or into an existing trading market, on an exchange or otherwise;

directly to investors in privately negotiated transactions; or

through a combination of these methods of sale.

The securities that we distribute by any of these methods may be sold, in one or more transactions, at:
a fixed price or prices, which may be changed;

market prices prevailing at the time of sale;

prices related to prevailing market prices; or

negotiated prices.

The accompanying prospectus supplement will describe the terms of the offering of our securities, including:
the name or names of any agents or underwriters;

any securities exchange or market on which the common stock may be listed;

the purchase price or other consideration to be paid in connection with the sale of the securities being offered and the proceeds we will receive from the sale;

any over-allotment options pursuant to which underwriters may purchase additional securities from us;

any underwriting discounts or agency fees and other items constituting underwriters or agents compensation;

any public offering price; and

any discounts or concessions allowed or reallocated or paid to dealers.

Underwriters

If underwriters are used in the sale, they will acquire the securities for their own account and may resell the securities from time to time in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of the sale. The obligations of the underwriters to purchase the securities will be subject to the conditions set forth in the applicable underwriting agreement. We may offer the securities to the public through underwriting syndicates represented by managing underwriters or by underwriters without a syndicate. Subject to certain conditions, the underwriters will be obligated to purchase all the securities offered by the prospectus supplement. We may change from time to time the public offering price and any discounts or concessions allowed or reallocated or paid to dealers.

Table of Contents

Agents

We may sell our securities directly or through agents we designate from time to time. We will name any agent involved in the offering and sale of our common stock, and we will describe any commissions we will pay the agent in the prospectus supplement. Unless the prospectus supplement states otherwise, our agent will act on a best-efforts basis for the period of its appointment.

We may provide underwriters and agents with indemnification against civil liabilities related to this offering, including liabilities under the Securities Act, or contribution with respect to payments that the underwriters or agents may make with respect to these liabilities. Underwriters and agents may engage in transactions with, or perform services for, us in the ordinary course of business. We will describe such relationships in the prospectus supplement naming the underwriter or agent and the nature of any such relationship.

Rules of the Securities and Exchange Commission may limit the ability of any underwriters to bid for or purchase securities before the distribution of the shares of common stock is completed. However, underwriters may engage in the following activities in accordance with the rules:

Stabilizing transactions Underwriters may make bids or purchases for the purpose of pegging, fixing or maintaining the price of the shares, so long as stabilizing bids do not exceed a specified maximum.

Over-allotments and syndicate covering transactions Underwriters may sell more shares of our common stock than the number of shares that they have committed to purchase in any underwritten offering. This over-allotment creates a short position for the underwriters. This short position may involve either covered short sales or naked short sales. Covered short sales are short sales made in an amount not greater than the underwriters' over-allotment option to purchase additional shares in any underwritten offering. The underwriters may close out any covered short position either by exercising their over-allotment option or by purchasing shares in the open market. To determine how they will close the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market, as compared to the price at which they may purchase shares through the over-allotment option. Naked short sales are short sales in excess of the over-allotment option. The underwriters must close out any naked position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that, in the open market after pricing, there may be downward pressure on the price of the shares that could adversely affect investors who purchase shares in the offering.

Penalty bids If underwriters purchase shares in the open market in a stabilizing transaction or syndicate covering transaction, they may reclaim a selling concession from other underwriters and selling group members who sold those shares as part of the offering.

Similar to other purchase transactions, an underwriter's purchases to cover the syndicate short sales or to stabilize the market price of our common stock may have the effect of raising or maintaining the market price of our common stock or preventing or mitigating a decline in the market price of our common stock. As a result, the price of the shares of our common stock may be higher than the price that might otherwise exist in the open market. The imposition of a penalty bid might also have an effect on the price of shares if it discourages resales of the shares.

If commenced, the underwriters may discontinue any of these activities at any time.

Our common stock is listed on the American Stock Exchange. One or more underwriters may make a market in our common stock, but the underwriters will not be obligated to do so and may discontinue market making at any time without notice. We cannot give any assurance as to liquidity of the trading market for our common stock.

Any underwriters who are qualified market makers on the American Stock Exchange may engage in passive market making transactions in the common stock on the American Stock Exchange in accordance with Rule 103 of Regulation M, during the business day prior to the pricing of the offering, before the commencement of

Table of Contents

offers or sales of the common stock. Passive market makers must comply with applicable volume and price limitations and must be identified as passive market makers. In general, a passive market maker must display its bid at a price not in excess of the highest independent bid for such security; if all independent bids are lowered below the passive market maker's bid, however, the passive market maker's bid must then be lowered when certain purchase limits are exceeded.

In compliance with guidelines of the National Association of Securities Dealers, or NASD, the maximum consideration or discount to be received by any NASD member or independent broker dealer may not exceed 8% of the aggregate amount of the securities offered pursuant to this prospectus and any applicable prospectus supplement.

VALIDITY OF SECURITIES

The validity of the securities offered hereby will be passed upon for us by Wilmer Cutler Pickering Hale and Dorr LLP, Boston, Massachusetts.

EXPERTS

The financial statements of Idera Pharmaceuticals, Inc. appearing in Idera Pharmaceuticals, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2006, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon, included therein, and incorporated herein by reference. Such financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file reports, proxy statements and other documents with the Securities and Exchange Commission. You may read and copy any document we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the public reference room.

The SEC also maintains an Internet site, the address of which is www.sec.gov. That site also contains our annual, quarterly and current reports, proxy statements, information statements and other information.

We have filed this prospectus with the SEC as part of a registration statement on Form S-3 under the Securities Act. This prospectus does not contain all of the information set forth in the registration statement because some parts of the registration statement are omitted in accordance with the rules and regulations of the SEC. You can obtain a copy of the registration statement from the SEC at the address listed above or from the SEC's Internet site.

We also maintain an Internet site at www.iderapharma.com, through which you can access our SEC filings. The information set forth on our Internet site is not part of this prospectus.

INCORPORATION OF DOCUMENTS BY REFERENCE

We are incorporating by reference certain documents we file with the SEC, which means that we can disclose important information to you by referring you to those documents. The information in the documents incorporated by reference is considered to be part of this prospectus. Statements contained in documents that we file with the SEC and that are incorporated by reference in this prospectus will automatically update and supersede information contained in this prospectus, including information in previously filed documents or reports that have been incorporated by reference in this prospectus, to the extent the new information differs from or is inconsistent with the old information.

We have filed or may file the following documents with the SEC. These documents are incorporated herein by reference as of their respective dates of filing:

Table of Contents

- (1) Our Annual Report on Form 10-K for the year ended December 31, 2006, as filed with the SEC on March 30, 2007;
 - (2) Our Amendment No. 1 on Form 10-K/A to Annual Report on Form 10-K for the year ended December 31, 2006, as filed with the SEC on May 8, 2007;
 - (3) Our Quarterly Report on Form 10-Q for the quarter ended March 31, 2007, as filed with the SEC on May 14, 2007;
 - (4) Our Quarterly Report on Form 10-Q for the quarter ended June 30, 2007, as filed with the SEC on August 1, 2007;
 - (5) Our Current Report on Form 8-K, as filed with the SEC on May 21, 2007;
 - (6) Our Current Report on Form 8-K, as filed with the SEC on June 15, 2007;
 - (7) Our Current Report on Form 8-K, as filed with the SEC on June 26, 2007;
 - (8) Our Current Report on Form 8-K, as filed with the SEC on June 28, 2007;
 - (9) Our Current Report on Form 8-K, as filed with the SEC on August 3, 2007;
 - (10) The description of our common stock contained in our Registration Statement on Form 8-A filed with the SEC on December 4, 2003, as amended by Amendment No. 1 to Form 8-A on Form 8-A/A filed with the SEC on August 17, 2007; and
 - (11) All documents filed by us pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act (1) after the date of the filing of this registration statement and prior to its effectiveness and (2) until all of the common stock to which this prospectus relates has been sold or the offering is otherwise terminated, except in each case for information contained in any such filing where we indicate that such information is being furnished and is not to be considered filed under the Exchange Act, will be deemed to be incorporated by reference in this prospectus and the accompanying prospectus supplement and to be a part hereof from the date of filing of such documents.
- We will provide a copy of the documents we incorporate by reference, at no cost, to any person who receives this prospectus. To request a copy of any or all of these documents, you should write or telephone us at 167 Sidney Street, Cambridge, Massachusetts 02139, Attention: Investor Relations, (617) 679-5500.