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As filed with the Securities and Exchange Commission on January 17, 2013

Registration No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM S-3
REGISTRATION STATEMENT

UNDER

THE SECURITIES ACT OF 1933

MEI PHARMA, INC.

(Exact name of registrant as specified in its charter)

Delaware	**51-0407811**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

11975 El Camino Real, Suite 101
San Diego, California 92130
(858) 792-6300
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Daniel P. Gold
President & Chief Executive Officer
MEI Pharma, Inc.
11975 El Camino Real, Suite 101
San Diego, California 92130
(858) 792-6300
(Name, address, including zip code, and telephone number, including area code of agent for service)

Copies to:
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101 Park Avenue
New York, New York 10178
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Approximate date of commencement of proposed sale to the public: From time to time after this Registration Statement becomes effective, as determined by the selling stockholders.

If the only securities being registered on this form are being offered pursuant to dividend or interest reinvestment plans, please check the following box. ☐

If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box. ☒

If this form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act of 1933, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act of 1933, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box. ☐

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box. ☐

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

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

CALCULATION OF REGISTRATION FEE

Title of each Class of Securities to be Registered	**Amount to be Registered (1)(2)**	**Proposed Maximum Offering Price Per Share**	**Proposed Maximum Aggregate Offering Price**	**Amount of Registration Fee**
Common Stock, $0.00000002 par value per share	15,118,609	$7.15(3)	$108,098,055(3)	$14,745

(1) Pursuant to Rule 416 under the Securities Act of 1933, as amended (the "Securities Act"), this registration statement shall also cover any additional shares of common stock which become issuable by reason of any stock dividend, stock split or other similar transaction that results in an increase in the number of the outstanding shares of common stock of the registrant.

(2) The number of shares of common stock includes 10,479,548 issued shares of common stock and 4,639,061 shares of common stock, in the aggregate, issuable upon exercise of the Company's outstanding warrants issued pursuant to the terms of the Securities Purchase Agreement, dated as of November 4, 2012, between the Company and the investors named therein.

(3) In accordance with Rule 457(c) under the Securities Act, the aggregate offering price of the common stock is estimated solely for the purpose of calculating the registration fees due for this filing. This estimate was based on the average of the high and low sales price of our stock reported by The NASDAQ Capital Market on January 10, 2013.

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

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THE INFORMATION IN THIS PROSPECTUS IS NOT COMPLETE AND MAY BE CHANGED. THESE SECURITIES MAY NOT BE SOLD UNTIL THE REGISTRATION STATEMENT FILED WITH THE SECURITIES AND EXCHANGE COMMISSION IS EFFECTIVE. THIS PROSPECTUS IS NOT AN OFFER TO SELL THESE SECURITIES, AND IS NOT SOLICITING OFFERS TO BUY THESE SECURITIES IN ANY STATE WHERE THE OFFER OR SALE IS NOT PERMITTED.

Subject to Completion, Dated January 17, 2013

PROSPECTUS

MEI PHARMA, INC.

15,118,609 Shares of Common Stock

This prospectus relates to the proposed resale of up to 15,118,609 shares of our common stock, $0.00000002 par value per share, by the selling stockholders identified in this prospectus. Of these shares, 10,479,548 shares are outstanding shares of common stock held by the selling stockholders identified in this prospectus and 4,639,061 shares are shares of common stock issuable upon exercise of warrants held by the selling stockholders identified in this prospectus. We are not selling any common stock under this prospectus and will not receive any of the proceeds from the sale of shares by the selling stockholders. We will, however, receive the net proceeds of any warrants exercised for cash.

The selling stockholders may sell the shares of common stock described in this prospectus in a number of different ways and at varying prices. We provide more information about how the selling stockholders may sell their shares of common stock in the section titled “Plan of Distribution” on page 15. We will pay the expenses incurred in registering the shares of common stock covered by the prospectus, including legal and accounting fees.

Our common stock is listed on The NASDAQ Capital Market, or NASDAQ, under the symbol “MEIP.” On January 16, 2013, the last reported sale price of our common stock was $7.34 per share.

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

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

The date of this prospectus is , 2013.

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Unless we have indicated otherwise, references in this prospectus to “MEI Pharma,” “the Company,” “we,” “us” and “our” or similar terms are to MEI Pharma, Inc., a Delaware corporation. References in this prospectus to “Novogen” refer to Novogen Limited and its consolidated subsidiaries. References in this prospectus to “FDA” refer to the United States Food and Drug Administration.

As we describe in the sections entitled “Incorporation of Certain Information by Reference” and “Where You Can Find More Information,” we have filed and plan to continue to file other documents with the Securities and Exchange Commission, or SEC, that contain information about us. Before you decide whether to invest in our securities, you should read this prospectus and the information we otherwise file with the SEC.

The registration statement that contains this prospectus, including the exhibits to the registration statement, contains additional information about us and the securities being offered under this prospectus. You should read the registration statement and the accompanying exhibits for further information. The registration statement and exhibits can be read and are available to the public over the Internet at the SEC’s website at http://www.sec.gov.

You should rely only on the information contained or incorporated by reference into this prospectus. We have not, and the selling stockholder has not, authorized anyone to provide you with additional or different information. These securities are not being offered in any jurisdiction where the offer is not permitted. You should assume that the information in this prospectus is accurate only as of the date on the front of the document and that any information we have incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus or of any sale of our common stock.

PROSPECTUS SUMMARY

The following is only a summary. We urge you to read the entire prospectus, including the more detailed consolidated financial statements, notes to the consolidated financial statements and other information included herein or incorporated by reference from our other filings with the U.S. Securities and Exchange Commission ("SEC"). Investing in our securities involves risks. Therefore, please carefully consider the information provided under the heading "Risk Factors" starting on page 3.

The Company

MEI Pharma, Inc. (formerly Marshall Edwards Inc.) is a development-stage oncology company focused on the clinical development of novel therapies for cancer. We were incorporated in Delaware in 2000 as a wholly owned subsidiary of Novogen Limited ("Novogen"). Our common stock is listed on the Nasdaq Capital Market and was previously listed under the symbol "MSHL" through June 30, 2012. On July 2, 2012, in conjunction with the change of our corporate name to MEI Pharma, Inc., our common stock began trading under the symbol "MEIP". In December 2012, Novogen distributed to its shareholders substantially all of its MEI Pharma common stock. Please refer to "Relationship with Novogen" below for a discussion of Novogen's distribution.

Our business purpose is the development of drugs for the treatment of cancer. We are currently focused on the clinical development of our three lead drug candidates, Pracinostat, ME-143 and ME-344. In August 2012, we completed the acquisition of certain assets and intellectual property, including those related to Pracinostat, from S*BIO Pte Ltd ("S*BIO"). In May 2011, we completed the acquisition of certain assets and intellectual property, including those related to ME-143 and ME-344, from Novogen, in accordance with the terms of an Asset Purchase Agreement, dated as of December 21, 2010, between us, Novogen and Novogen Research Pty Limited.

As of September 30, 2012, our existing cash balances were approximately $3.7 million. On December 18, 2012, we completed the sale of 9,166,665 shares of our common stock and warrants to purchase an additional 6,416,665 shares of common stock in a private placement for an aggregate offering price of $27.5 million. In order to continue the development of our lead drug candidates, at some point in the future we may pursue one or more capital raising transactions, whether through the sale of equity securities or the entry into strategic partnerships.

Relationship with Novogen

Novogen was our majority shareholder from our inception through December 3, 2012. On such date, Novogen completed the distribution of substantially all of its MEI Pharma common stock to its shareholders. Historically, we licensed from Novogen the rights to Novogen patents and applications for our lead isoflavone-based drug candidates, as well as other compounds. Additionally, Novogen historically provided research and development services and administrative and finance services to us under service agreements. The license agreements were terminated in May 2011 in conjunction with our purchase of a portfolio of isoflavone-related assets from Novogen, which we refer to as the "Isoflavone Transaction". The service agreements were terminated in December 2010.

December 2012 Private Placement

As previously disclosed in our Current Report on Form 8-K filed with the SEC on December 19, 2012, on December 18, 2012, the Company completed the sale (the "December 2012 private placement") of 9,166,665 shares (the "Initial Shares") of common stock and warrants (the "Warrants") to purchase an additional 6,416,665 shares (the "Warrant Shares" and, together with the Initial Shares, the "Shares") of common stock for an aggregate offering price of $27.5 million, pursuant to the terms of the previously announced Securities Purchase

Agreement, dated November 4, 2012, between the Company and certain accredited investors identified therein. The Shares are being registered under the registration statement of which this prospectus forms a part. As a result of the December 2012 private placement, two of the investors, Vivo Ventures Fund VII, L.P. ("Vivo") and New Leaf Ventures II, L.P. ("New Leaf") each separately own in excess of 20% of our outstanding Common Stock. We have entered into a separate governance agreement with each of Vivo and New Leaf pursuant to which each of them is entitled to propose a candidate for election to our board of directors for consideration by the nominating committee of the board of directors in connection with each annual meeting of our stockholders following the effectiveness of an amended and restated certificate of incorporation eliminating our classified board of directors, and at such other times as such investor may propose. Each governance agreement will terminate with respect to the applicable investor at the earliest of (i) such time as such investor and its affiliates beneficially owns all of the shares of common stock then outstanding, (ii) such time as such investor and its affiliates beneficially own less than 10% of the shares of common stock then outstanding, or (iii) the effectiveness of certain change of control transactions resulting in continuing stockholders of the Company holding less than 50% of the outstanding voting securities of the Company, its successor entity or a parent or subsidiary of its successor entity.

Recent Events

Waiver Agreement

As previously disclosed in our Current Report on Form 8-K filed with the SEC on December 7, 2012, on December 5, 2012, we entered into an agreement (the "Waiver Agreement") with Novogen and Novogen Research Pty Limited, a wholly-owned subsidiary of Novogen (together, the "Novogen Parties"), Graham Kelly, an individual ("Kelly"), and Andrew Heaton, an individual ("Heaton"), pursuant to which we granted a limited waiver with respect to certain non-compete provisions contained in the Asset Purchase Agreement dated as of December 20, 2010, between us and the Novogen Parties. In consideration of our grant of the limited waiver, upon the execution of the Waiver Agreement, Novogen surrendered to us for cancellation warrants held by Novogen for the purchase of 166,666 shares of Common Stock, as adjusted for the Reverse Stock Split (described below).

Reverse Stock Split

As previously disclosed in our Current Report on Form 8-K filed with the SEC on December 19, 2012, on December 18, 2012, the Company filed a Certificate of Amendment to its Restated Certificate of Incorporation in order to effect a 1-for-6 reverse stock split of the Company's common stock (the "Reverse Stock Split") effective as of 9:00 a.m. on December 18, 2012. As a result of the Reverse Stock Split, every six shares of the Company's issued and outstanding common stock were combined into one share of common stock. The Reverse Stock Split did not change the number of authorized shares of the Company's common stock. Except as otherwise indicated, financial data and share information presented in this prospectus is presented on an as-adjusted basis to give effect to the Reverse Stock Split.

Corporate Information

Our principal executive offices are located at 11975 El Camino Real, Suite 101, San Diego, California, 92130, and our phone number is (858) 792-6300. Our website address is www.meipharma.com.

RISK FACTORS

Any investment in our securities involves a high degree of risk. In addition to the other information included or incorporated by reference in this prospectus and any accompanying prospectus supplement, you should carefully consider the important factors set forth under the heading "Risk Factors" starting on page 17 of our Annual Report on Form 10-K for the fiscal year ended June 30, 2012, as well as in our subsequent annual reports on Form 10-K and in other reports we file with the SEC from time to time and incorporated herein by reference, before investing in our securities. For further details, see the sections entitled "Where You Can Find More Information" and "Incorporation of Certain Information by Reference."

Any of the risk factors set forth below or referred to above could significantly and negatively affect our business, results of operations or financial condition, which may lower the trading price of our common stock. The risks referred to above are not the only ones that may exist. Additional risks not currently known by us or that we deem immaterial may also impair our business operations. You may lose all or a part of your investment.

Risks Related to Our Business

We will need additional funds to progress the clinical trial program for our drug candidates Pracinostat, ME-143 and ME-344 and to develop new compounds. The actual amount of funds we will need will be determined by a number of factors, some of which are beyond our control.

We will need additional funds to progress the clinical trial program for our drug candidates Pracinostat, ME-143 and ME-344 and to develop any additional compounds. The factors which will determine the actual amount of funds that we will need to progress the clinical trial programs for Pracinostat, ME-143 and ME-344 may include the following:

- the number of sites included in the trials;
- the length of time required to enroll suitable patients;
- the number of patients who participate in the trials and the rate that they are recruited;
- the number of treatment cycles patients complete while they are enrolled in the trials; and
- the efficacy and safety profile of the product.

If we are unable to obtain additional funds on favorable terms or at all, we may be required to cease or reduce our operations. Also, if we raise more funds by selling additional securities, the ownership interests of holders of our securities will be diluted.

We cannot assure you that we will be able to obtain financing sufficient to meet our future capital and operating needs.

We may sell additional shares of common stock, and securities exercisable for or convertible into shares of our common stock, to satisfy our capital and operating needs; however, such transactions will be subject to market conditions and there can be no assurance any such transactions will be completed. The investors in our May 2011 private placement have the right to acquire up to 35% of any securities we offer through September 28, 2013. Additionally, the investors who participated in the December 2012 private placement have the right to purchase their pro rata portion of equity securities we offer through December 31, 2013 based on their equity ownership of the Company, after giving effect to the exercise of the participation right, if any, by the investors in our May 2011 private placement.

Future sales of our common stock, including common stock issued upon exercise of our outstanding warrants and common stock that becomes available for resale in the public market as a result of the registration statement of which this prospectus forms a part, may depress the market price of our common stock and cause stockholders to experience dilution.

The market price of our common stock could decline as a result of sales of substantial amounts of our common stock in the public market, including shares of common stock issued upon exercise of outstanding warrants and any subsequent sales of such shares as well as shares of common stock that become generally available for immediate resale in the public market as a result of the registration statement of which this prospectus forms a part. As of January 17, 2013, in addition to the shares of common stock issuable upon exercise of the Warrants to which this prospectus relates, we had outstanding (i) warrants issued in our May 2012 rights offering exercisable to purchase 319,191 shares of Common Stock at an exercise price of $7.14, which expire on May 10, 2017; (ii) Series A warrants issued in our May 2011 private placement exercisable to purchase 215,721 shares of Common Stock at an exercise price of $6.00, which expire on May 11, 2016, and (iii) other outstanding warrants exercisable to purchase 768 shares of our Common Stock at an exercise price of $130.20 per share, which expire in calendar year 2013. We may seek additional capital through one or more additional equity transactions in the future; however, such transactions will be subject to market conditions and there can be no assurance any such transactions will be completed. If we sell shares in the future, the prices at which we sell these future shares will vary, and these variations may be significant. Purchasers of the Shares will experience significant dilution if we sell these future shares at prices significantly below the price at which previous shareholders invested.

The number of shares of our common stock outstanding has increased substantially as a result of our December 2012 private placement, and some of the purchasers in the private placement beneficially own significant amounts of our common stock.

In December 2012, we completed the private placement of an aggregate of (i) 9,166,665 shares of our common stock and (ii) warrants to purchase an aggregate of 6,416,665 shares of our common stock. Some of the purchasers in the private placement beneficially own significant amounts of our common stock and will have a corresponding influence over the outcome of any stockholder vote, including the election of directors and the approval of mergers or other business combination transactions.

Negative global economic conditions may pose challenges to our business strategy, which relies on access to capital from the markets or collaborators.

Negative conditions in the global economy, including credit markets and the financial services industry, have generally made equity and debt financing more difficult to obtain, and may negatively impact our ability to complete financing transactions. The duration and severity of these conditions is uncertain, as is the extent to which they may adversely affect our business and the business of current and prospective vendors and collaborators. If negative global economic conditions persist or worsen, we may be unable to secure additional funding to sustain our operations or to find suitable collaborators to advance our internal programs, even if we achieve positive results from our research and development efforts.

We have a limited operating history and are likely to incur operating losses for the foreseeable future.

You should consider our prospects in light of the risks and difficulties frequently encountered by early stage and developmental companies. We were incorporated in December 2000, and have been in operation since May 2002. We have incurred net losses of $87.6 million from our inception through September 30, 2012, including net losses of $7.5 million and $6.8 million for the years ended June 30, 2012 and 2011, respectively. We anticipate that we will incur operating losses and negative operating cash flow for the foreseeable future. We have not yet commercialized any drug candidates and cannot be sure that we will ever be able to do so, or that we may ever become profitable.

Our stockholders may not realize a benefit from the purchase of intellectual property commensurate with the associated ownership dilution experienced.

In May 2011, we completed the acquisition (the "Isoflavone Transaction") of certain assets used in or generated under or in connection with the discovery, development, manufacture and marketing of intellectual property and products based on the field of isoflavonoid technology and on compounds known as isoflavones, including those related to the drug candidates ME-143 and ME-344 (the "Isoflavone-related Assets"), from Novogen. Additionally, in August 2012, we completed the acquisition of certain assets and intellectual property, including those related to Pracinostat, from S*BIO.

If we are unable to realize the expected strategic and financial benefits from the purchase of intellectual property, our stockholders may experience substantial dilution of their ownership interest resulting from the issuance of shares of common stock upon the conversion of the Series A Convertible Preferred Stock issued to Novogen to acquire the Isoflavone-related Assets and as a result of the issuance of shares of common stock to S*BIO to acquire certain assets and intellectual property, including those related to Pracinostat, without receiving any commensurate benefit. Upon consummation of the Isoflavone Transaction, we issued to Novogen 1,000 shares of our Series A Convertible Preferred Stock which were initially convertible into an aggregate of 804,500 shares of our common stock. In November 2012, we issued 804,500 shares of common stock to Novogen upon its conversion of the Series A Convertible Preferred Stock. Although in the Isoflavone Asset Purchase Agreement Novogen made certain representations and warranties regarding its intellectual property rights in respect of the Isoflavone-related Assets, Novogen's indemnification obligations, which were limited and payable solely by the forfeiture of our securities issued as consideration in the Isoflavone Transaction, expired on June 30, 2011. Similarly, in the asset purchase agreement relating to the acquisition of certain assets and intellectual property from S*BIO, S*BIO made certain representations and warranties regarding its intellectual property rights to such assets; however, its indemnification obligations with respect to such representations and warranties are limited.

Accordingly, we do not expect to be adequately compensated, if at all, for the loss of any such intellectual property rights acquired in the Isoflavone Transaction or in the acquisition from S*BIO.

The results of pre-clinical studies and completed clinical trials are not necessarily predictive of future results, and our current drug candidates may not have favorable results in later studies or trials.

Pre-clinical studies and Phase I clinical trials are not primarily designed to test the efficacy of a drug candidate, but rather to test safety, to study pharmacokinetics and pharmacodynamics, and to understand the drug candidate's side effects at various doses and schedules. Favorable results in early studies or trials may not be repeated in later studies or trials, including continuing pre-clinical studies, Phase II and large-scale Phase III clinical trials, and our drug candidates in later-stage trials may fail to show desired safety and efficacy despite having progressed through earlier-stage trials. Unfavorable results from ongoing pre-clinical studies or clinical trials could result in delays, modifications or abandonment of ongoing or future clinical trials, or abandonment of a clinical program. Pre-clinical and clinical results are frequently susceptible to varying interpretations that may delay, limit or prevent regulatory approvals or commercialization. Negative or inconclusive results or adverse medical events during a clinical trial could cause a clinical trial to be delayed, repeated or terminated, or a clinical program to be abandoned.

Final approval by regulatory authorities of our drug candidates for commercial use may be delayed, limited or prevented, any of which would adversely affect our ability to generate operating revenues.

We will not generate any operating revenue until we successfully license or commercialize one of our drug candidates. Currently, we have drug candidates at different stages of development, and each will need to successfully complete a number of studies and obtain regulatory approval before potential commercialization.

In particular, any of the following factors may serve to delay, limit or prevent the final approval by regulatory authorities of our drug candidates for commercial use:

- Pracinostat, ME-143 and ME-344 are in the early stages of development, and we will need to conduct significant clinical testing to demonstrate safety and efficacy of these drug candidates before applications for marketing can be filed with the FDA, or with the regulatory authorities of other countries;
- data obtained from pre-clinical and clinical studies can be interpreted in different ways, which could delay, limit or prevent regulatory approval;
- development and testing of product formulation, including identification of suitable excipients, or chemical additives intended to facilitate delivery of our drug candidates;
- it may take us many years to complete the testing of our drug candidates, and failure can occur at any stage of this process; and
- negative or inconclusive results or adverse medical events during a clinical trial could cause us to delay or terminate our development efforts.

The successful development of any of these drug candidates is uncertain and, accordingly, we may never commercialize any of these drug candidates or generate revenue.

Even if we receive regulatory approval to commercialize our drug candidates, our ability to generate revenues from any resulting products will be subject to a variety of risks, many of which are out of our control.

Even if our drug candidates obtain regulatory approval, resulting products may not gain market acceptance among physicians, patients, healthcare payers or the medical community. We believe that the degree of market acceptance and our ability to generate revenues from such products will depend on a number of factors, including:

- timing of market introduction of our drugs and competitive drugs;
- actual and perceived efficacy and safety of our drug candidates;
- prevalence and severity of any side effects;
- potential or perceived advantages or disadvantages over alternative treatments;
- strength of sales, marketing and distribution support;
- price of our future products, both in absolute terms and relative to alternative treatments;
- the effect of current and future healthcare laws on our drug candidates; and
- availability of coverage and reimbursement from government and other third-party payers.

If any of our drugs are approved and fail to achieve market acceptance, we may not be able to generate significant revenue to achieve or sustain profitability.

We may not be able to establish the contractual arrangements necessary to develop, market and distribute our product candidates.

A key part of our business plan is to establish contractual relationships with third parties to package, market and distribute our product candidates. There is no assurance that we will be able to negotiate commercially acceptable licensing or other agreements for the future exploitation of our drug product candidates, including continued clinical development, manufacture or marketing. If we are unable to successfully contract for these services, or if arrangements for these services are terminated, we may have to delay our commercialization program which will adversely affect our ability to generate operating revenues.

Our commercial opportunity will be reduced or eliminated if competitors develop and market products that are more effective, have fewer side effects or are less expensive than our drug candidates.

The development of drug candidates is highly competitive. A number of other companies have products or drug candidates in various stages of pre-clinical or clinical development that are intended for the same therapeutic indications for which our drug candidates are being developed. Some of these potential competing drugs are further advanced in development than our drug candidates and may be commercialized sooner. Even if we are successful in developing effective drugs, our compounds may not compete successfully with products produced by our competitors.

Our competitors include pharmaceutical companies and biotechnology companies, as well as universities and public and private research institutions. In addition, companies active in different but related fields represent substantial competition for us. Many of our competitors developing oncology drugs have significantly greater capital resources, larger research and development staffs and facilities and greater experience in drug development, regulation, manufacturing and marketing than we do. These organizations also compete with us and our service providers, to recruit qualified personnel, and with us to attract partners for joint ventures and to license technologies that are competitive with us. As a result, our competitors may be able to more easily develop technologies and products that would render our technologies or our drug candidates obsolete or non-competitive.

We rely on third parties to conduct our clinical trials and many of our pre-clinical studies. If those parties do not successfully carry out their contractual duties or meet expected deadlines, our drug candidates may not advance in a timely manner or at all.

In the course of our discovery, pre-clinical testing and clinical trials, we rely on third parties, including laboratories, investigators, clinical contract research organizations, or CROs, and manufacturers, to perform critical services for us. For example, we rely on third parties to conduct our clinical trials and many of our pre-clinical studies. CROs are responsible for many aspects of the trials, including finding and enrolling subjects for testing and administering the trials. Although we rely on these third parties to conduct our clinical trials, we are responsible for ensuring that each of our clinical trials is conducted in accordance with its investigational plan and protocol. Moreover, the FDA and foreign regulatory authorities require us to comply with regulations and standards, commonly referred to as good clinical practices, or GCPs, for conducting, monitoring, recording, and reporting the results of clinical trials to ensure that the data and results are scientifically credible and accurate, and that the trial subjects are adequately informed of the potential risks of participating in clinical trials. Our reliance on third parties does not relieve us of these responsibilities and requirements. These third parties may not be available when we need them or, if they are available, may not comply with all regulatory and contractual requirements or may not otherwise perform their services in a timely or acceptable manner, and we may need to enter into new arrangements with alternative third parties and our clinical trials may be extended, delayed or terminated. These independent third parties may also have relationships with other commercial entities, some of which may compete with us. In addition, if such third parties fail to perform their obligations in compliance with our clinical trial protocols or GCPs, our clinical trials may not meet regulatory requirements or may need to be repeated. As a result of our dependence on third parties, we may face delays or failures outside of our direct control. These risks also apply to the development activities of collaborators, and we do not control their research and development, clinical trial or regulatory activities.

We have no direct control over the cost of manufacturing our drug candidates. Increases in the cost of manufacturing our drug candidates would increase our costs of conducting clinical trials and could adversely affect our future profitability.

We do not intend to manufacture our drug product candidates ourselves, and we will rely on third parties for our drug supplies both for clinical trials and for commercial quantities in the future. We have taken the strategic decision not to manufacture active pharmaceutical ingredients (“API”) for our drug candidates, as these can be

more economically supplied by third parties with particular expertise in this area. We have identified contract facilities that are registered with the FDA, have a track record of large scale API manufacture, and have already invested in capital and equipment. We have no direct control over the cost of manufacturing our product candidates. If the cost of manufacturing increases, or if the cost of the materials used increases, these costs will be passed on to us, making the cost of conducting clinical trials more expensive. Increases in manufacturing costs could adversely affect our future profitability if we are unable to pass all of the increased costs along to our customers.

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

Our business exposes it to the risk of product liability claims. This risk is inherent in the manufacturing, testing and marketing of human therapeutic products. We have product liability insurance coverage of $5 million. The coverage is subject to deductibles and coverage limitations. We may not be able to obtain or maintain adequate protection against potential liabilities, or claims may exceed our insurance limits. If we cannot or do not sufficiently insure against potential product liability claims, we may be exposed to significant liabilities, which may materially and adversely affect our business development and commercialization efforts.

Our financial results are affected by fluctuations in currency exchange rates.

A portion of our expenditures and potential revenue may be spent or derived outside of the United States. As a result, fluctuations between the U.S. dollar and the currencies of the countries in which we operate may increase our costs or reduce our potential revenue. At present, we do not engage in hedging transactions to protect against uncertainty in future exchange rates between particular foreign currencies and the U.S. dollar.

Risks Related to Securities Markets and Investment in Our Stock

The trading price of the shares of our common stock has been and may continue to be highly volatile and could decline in value and we may incur significant costs from class action litigation.

The trading price of our common stock could be highly volatile in response to various factors, many of which are beyond our control, including:

- failure to successfully develop drug candidates Pracinostat, ME-143 or ME-344;
- announcements of technological innovations by us or our competitors;
- new products introduced or announced by us or our competitors;
- changes in financial estimates by securities analysts;
- actual or anticipated variations in operating results;
- expiration or termination of licenses, research contracts or other collaboration agreements;
- conditions or trends in the regulatory climate and the biotechnology, pharmaceutical and genomics industries;
- instability in the stock market as a result of current global events;
- changes in the market valuations of similar companies;
- the liquidity of any market for our securities;
- additional sales by us of shares of our common stock; and
- threatened or actual delisting of our common stock from a national stock exchange.

Equity markets in general, and the market for biotechnology and life sciences companies in particular, have experienced substantial price and volume fluctuations that have often been unrelated or disproportionate to the

operating performance of companies traded in those markets. In addition, changes in economic conditions in the U.S., Europe or globally, particularly in the context of current global events, could impact upon our ability to grow profitably. Adverse economic changes are outside our control and may result in material adverse impacts on our business or our results of operations. These broad market and industry factors may materially affect the market price of shares of our common stock, regardless of our development and operating performance. In the past, following periods of volatility in the market price of a company's securities, securities class-action litigation has often been instituted against that company. Such litigation, if instituted against us, could cause us to incur substantial costs and divert management's attention and resources.

In addition, if the market price of our common stock falls below $5.00 per share, under stock exchange rules, our stockholders will not be able to use such shares as collateral for borrowing in margin accounts. Further, certain institutional investors are restricted from investing in shares priced below $5.00. This inability to use shares of our common stock as collateral and the inability of certain institutional investors to invest in our shares may depress demand and lead to sales of such shares creating downward pressure on and increased volatility in the market price of our common stock.

Because we do not intend to pay, and have not paid, any cash dividends on our shares of common stock, our stockholders will not be able to receive a return on their shares unless the value of our common stock appreciates and they sell their shares.

We have never paid or declared any cash dividends on our common stock, and we intend to retain any future earnings to finance the development and expansion of our business. We do not anticipate paying any cash dividends on our common stock in the foreseeable future. Therefore, our stockholders will not be able to receive a return on their investment unless the value of our common stock appreciates and they sell their shares.

We will have broad discretion over the use of the net proceeds from any exercise of outstanding warrants.

We will have broad discretion to use the net proceeds to us upon any exercise of outstanding warrants, and investors in our stock will be relying on the judgment of our board of directors and management regarding the application of these proceeds. Although we expect to use a substantial portion of the net proceeds from any exercise of the warrants for general corporate purposes and progression of our clinical trial program, we have not allocated these net proceeds for specific purposes.

We are authorized to issue blank check preferred stock, which could adversely affect the holders of our common stock.

Our restated certificate of incorporation allows us to issue blank check preferred stock with rights potentially senior to those of our common stock without any further vote or action by the holders of our common stock. The issuance of a class of preferred stock could decrease the amount of earnings and assets available for distribution to the holders of our common stock or could adversely affect the rights and powers, including voting rights, of such holders. In certain circumstances, such issuance could have the effect of decreasing the market price of our shares, or making a change in control of us more difficult.

Laws, rules and regulations relating to public companies may be costly and impact our ability to attract and retain directors and executive officers.

Laws and regulations affecting public companies, including rules adopted by the SEC and by Nasdaq, may result in increased costs to us. These laws, rules and regulations could make it more difficult or costly for us to obtain certain types of insurance, including director and officer liability insurance, and we may be forced to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. The impact of these events could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors, on our board committees or as executive officers. We cannot estimate accurately the amount or timing of additional costs we may incur to respond to these laws, rules and regulations.

Our executive officers and directors may sell shares of their stock, and these sales could adversely affect our stock price.

Sales of our stock by our executive officers and directors, or the perception that such sales may occur, could adversely affect the market price of our stock. Our executive officers and directors may sell stock in the future, either as part, or outside, of trading plans under Securities and Exchange Commission, or SEC, Rule 10b5-1.

Risks Relating to Our Intellectual Property

Our commercial success is dependent, in part, on obtaining and maintaining patent protection and preserving trade secrets, which cannot be guaranteed.

Patent protection and trade secret protection are important to our business and our future will depend, in part on our ability maintain trade secret protection, obtain patents and operate without infringing the proprietary rights of others both in the United States and abroad. Litigation or other legal proceedings may be necessary to defend against claims of infringement, to enforce our patents or to protect our trade secrets. Such litigation could result in substantial costs and diversion of our management's attention.

The patent positions of pharmaceutical and biotechnology companies can be highly uncertain and involve complex legal and factual questions. Prior to the Isoflavone Transaction, Novogen had applied for patents in a number of countries with respect to the use of their isoflavone compounds, including ME-143 and ME-344, for the treatment, prevention or cure of cancer and methods of production. We acquired both issued patents and pending patent applications from Novogen in relation to these technologies, which we previously licensed from Novogen. Additionally, in August 2012 we acquired patents and patent applications related to Pracinostat from S*BIO. The patent applications may not proceed to grant or may be amended to reduce the scope of protection of any patent granted. The applications and patents may also be opposed or challenged by third parties. Our commercial success will depend, in part, on our ability to obtain and maintain effective patent protection for our compounds and their use in treating, preventing, or curing cancer, and to successfully defend patent rights in those technologies against third-party challenges. As patent applications in the United States are maintained in secrecy until published or issued and as publication of discoveries in the scientific or patent literature often lag behind the actual discoveries, we cannot be certain that Novogen or S*BIO were the first to make the inventions covered by its pending patent applications or issued patents that we acquired or that it was the first to file patent applications for such inventions. Additionally, the breadth of claims allowed in biotechnology and pharmaceutical patents or their enforceability cannot be predicted. We cannot be sure that, should any patents issue, we will be provided with adequate protection against potentially competitive products. Furthermore, we cannot be sure that should patents issue, they will be of commercial value to us, or that private parties, including competitors, will not successfully challenge our patents or circumvent our patent position in the United States or abroad.

Claims by other companies that we infringe on their proprietary technology may result in liability for damages or stop our development and commercialization efforts.

The pharmaceutical industry is highly competitive and patents have been applied for by, and issued to, other parties relating to products competitive with the compounds that we have acquired. Therefore, Pracinostat, ME-143, ME-344, and any other drug candidates may give rise to claims that they infringe the patents or proprietary rights of other parties existing now and in the future.

Furthermore, to the extent that we or our consultants or research collaborators use intellectual property owned by others in work performed for us, disputes may also arise as to the rights in such intellectual property or in resulting know-how and inventions. An adverse claim could subject us to significant liabilities to such other parties and/or require disputed rights to be licensed from such other parties.

We have contracted formulation development and manufacturing process development work for our product candidates. This process has identified a number of excipients, or additives to improve drug delivery, which may

be used in the formulations. Excipients, among other things, perform the function of a carrier of the active drug ingredient. Some of these identified excipients or carriers may be included in third party patents in some countries. We intend to seek a license if we decide to use a patented excipient in the marketed product or we may choose one of those excipients that does not have a license requirement.

We cannot be sure that any license required under any such patents or proprietary rights would be made available on terms acceptable to us, if at all. If we do not obtain such licenses, we may encounter delays in product market introductions, or may find that the development, manufacture or sale of products requiring such licenses may be precluded. We have not conducted any searches or made any independent investigations of the existence of any patents or proprietary rights of other parties.

We may be subject to substantial costs stemming from our defense against third-party intellectual property infringement claims.

Third parties may assert that we are using their proprietary information without authorization. Third parties may also have or obtain patents and may claim that technologies licensed to or used by us infringe their patents. If we are required to defend patent infringement actions brought by third parties, or if we sue to protect our own patent rights, we may be required to pay substantial litigation costs and managerial attention may be diverted from business operations even if the outcome is not adverse to us. In addition, any legal action that seeks damages or an injunction to stop us from carrying on our commercial activities relating to the affected technologies could subject us to monetary liability and require us or any third party licensors to obtain a license to continue to use the affected technologies. We cannot predict whether we would prevail in any of these types of actions or that any required license would be made available on commercially acceptable terms or at all.

CAUTIONARY STATEMENT ABOUT FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein include forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act") and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). All statements other than statements of historical facts contained in this prospectus and in the documents incorporated by reference herein, including statements regarding the future financial position, business strategy and plans and objectives of management for future operations, are forward-looking statements. The words "believe," "may," "will," "estimate," "continue," "anticipate," "intend," "should," "plan," "expect," and similar expressions, as they relate to us, are intended to identify forward-looking statements. We have based these forward-looking statements largely on current expectations and projections about future events and financial trends that we believe may affect our financial condition, results of operations, business strategy and financial needs. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including, without limitation, those described in "Risk Factors" and elsewhere in this prospectus and the documents incorporated by reference herein, including, among other things:

- our inability to obtain required additional financing or financing available to us on acceptable terms, or at all, which may cause us to delay, scale-back or eliminate plans related to development of our drug candidates;
- we are in an early stage of clinical studies for our product candidates on which our development plans are based; clinical studies by their nature typically have a high level of risk and may not produce successful results;
- our inability to maintain or enter into, and the risks resulting from our dependence upon, contractual arrangements necessary for the clinical development, manufacture, commercialization, marketing, sales and distribution of our product candidates;
- costs and delays in the clinical development programs and/or receipt of FDA or other required governmental approvals, or the failure to obtain such approvals, for our product candidates;
- our failure to successfully commercialize our product candidates;
- the failure of any products to gain market acceptance;
- our inability to control the costs of manufacturing our products;
- competition and competitive factors;
- our inability to protect our patents or proprietary rights and obtain necessary rights to third party patents and intellectual property to operate our business;
- our inability to operate our business without infringing the patents and proprietary rights of others;
- costs stemming from our defense against third party intellectual property infringement claims;
- general economic conditions;
- technological changes;
- government regulation generally and the receipt of regulatory approvals;
- changes in industry practice; and
- one-time events.

These risks are not exhaustive. Other sections of this prospectus and the documents incorporated by reference herein include additional factors which could adversely impact our business and financial performance. Moreover, we operate in a very competitive and rapidly changing environment. New risk factors emerge from time to time and it is not possible for us to predict all risk factors, nor can we assess the impact of all factors on

our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements.

You should not rely upon forward looking statements as predictions of future events. We cannot assure you that the events and circumstances reflected in the forward looking statements will be achieved or occur. Although we believe that the expectations reflected in the forward looking statements are reasonable, we cannot guarantee future results, levels of activity, performance or achievements.

USE OF PROCEEDS

We will not receive any of the proceeds from the sale of our common stock by the selling stockholders pursuant to this prospectus. Any proceeds we receive from the exercise of the Warrants for cash will be used for general corporate purposes and to progress our clinical trial programs.

SELLING STOCKHOLDERS

The Shares being offered by the selling stockholders are those shares of common stock previously issued and those issuable to the selling stockholders upon exercise of the Warrants in the December 2012 private placement. The Warrants are not being registered for resale. For additional information regarding the issuance of the Initial Shares and the Warrants, see "Prospectus Summary—December 2012 Private Placement" above. This prospectus covers the sale or other disposition by the selling stockholders or their transferees of up to the total number of Shares held by the selling stockholders.

In connection with the Purchase Agreement, we also entered into a registration rights agreement, dated as of December 18, 2012 (the "Registration Rights Agreement"), pursuant to which we granted certain registration rights related to the Shares. The registration statement of which this prospectus forms a part is being filed pursuant to the Registration Rights Agreement. We are registering the Shares in order to permit the selling stockholders to offer the Shares for resale from time to time. Except for the ownership of the securities issued pursuant to the Purchase Agreement, the selling stockholders have not had any material relationship with us within the past three years.

The table below lists each selling stockholder and other information known to us regarding the beneficial ownership (as determined under Section 13(d) of the Exchange Act and the rules and regulations thereunder) of the shares of common stock beneficially owned by such selling stockholder. The term "selling stockholder" also includes any transferees, pledgees, donees, or other successors in interest to the selling stockholder named in the table below. Any changes to the selling stockholder information and the names of any transferees, pledgees, donees and other successors in interest will be set forth in supplements to this prospectus as necessary. Column (D) lists the percentage of shares of common stock beneficially owned by each selling stockholder as of January 17, 2013, based on 15,015,454 shares of our common stock outstanding as of such date. The number of shares in Column (E) represents all of the Shares that the applicable selling stockholder may offer under this prospectus. Columns (F) and (G) in the table below reflecting shares of common stock beneficially owned after this offering are prepared on the basis that all Shares being registered in this prospectus are resold to third parties. Each selling stockholder may sell all, some or none of its Shares in this offering. See "Plan of Distribution."

	Shares of Common Stock Beneficially Owned Prior to the Offering					Shares of Common Stock Beneficially Owned After the Offering	
Name of Selling Stockholder	(A) Outstanding Shares Beneficially Owned	(B) Shares Underlying Warrants	(C) Total Shares Beneficially Owned	(D) Percentage	(E) Maximum Number of Shares of Common Stock to be Sold Pursuant to this Prospectus	(F) Number	(G) Percentage
Vivo Ventures Fund VII, L.P. (1)	4,150,340	411,041	4,561,381	29.57%	4,561,381	0	0
Vivo Ventures VII Affiliates Fund, L.P. (1)	90,456	8,959	99,415	*	99,415	0	0
Vivo Ventures Fund V, L.P. (2)	243,856	24,151	268,007	1.78%	268,007	0	0
Vivo Ventures V Affiliates Fund, L.P. (2)	2,524	250	2,774	*	2,774	0	0
New Leaf Ventures II, L.P. (3)	3,000,000	2,100,000	5,100,000	29.80%	5,100,000	0	0
667, L.P. (Account #1) (4)	42,300	29,610	71,910	*	71,910	0	0
667, L.P.(Account #2) (4)	32,600	22,820	55,420	*	55,420	0	0
Baker Brothers Life Sciences, L.P. (4)	903,500	632,450	1,535,950	9.82%	1,535,950	0	0
14159, L.P. (4)	21,600	15,120	36,720	*	36,720	0	0
Blackwell Partners, LLC (5)	217,583	152,308	369,891	2.44%	369,891	0	0
RA Capital Healthcare Fund, LP (5)	365,750	256,025	621,775	4.07%	621,775	0	0

Name of Selling Stockholder	Shares of Common Stock Beneficially Owned Prior to the Offering (A) Outstanding Shares Beneficially Owned	(B) Shares Underlying Warrants	(C) Total Shares Beneficially Owned	(D) Percentage	(E) Maximum Number of Shares of Common Stock to be Sold Pursuant to this Prospectus	Shares of Common Stock Beneficially Owned After the Offering (F) Number	(G) Percentage
Three Arch Opportunity Fund, L.P. (6)	100,000	70,000	170,000	1.13%	170,000	0	0
Three Arch Associates IV, L.P. (7)	9,370	6,559	15,929	*	15,929	0	0
Three Arch Partners IV, L.P. (7)	424,385	297,070	721,455	4.71%	721,455	0	0
Mahendra Shah (8)	16,666	11,666	28,332	*	28,332	0	0
Greg Baigent (9)	754	528	1,282	*	1,282	0	0
Sue Barrowcliffe (10)	939	657	1,596	*	1,596	0	0
Charter Life Sciences, L.P. (11)	71,683	50,178	121,861	*	121,861	0	0
Damon Todd Holdings, LLC (12)	6,433	4,503	10,936	*	10,936	0	0
Stephen G. Dilly (13)	1,132	792	1,924	*	1,924	0	0
Great Point Partners I, L.P. (14)	157,661	110,362	268,023	1.77%	268,023	0	0
InterWest Partners IX, L.P. (15)	330,031	231,022	561,053	3.68%	561,053	0	0
Charles Johnson (16)	905	634	1,539	*	1,539	0	0
Janice Lee (17)	905	634	1,539	*	1,539	0	0
Joe Melvin (18)	1,132	792	1,924	*	1,924	0	0
Amy Nader (19)	1,132	792	1,924	*	1,924	0	0
Ralph Niven (20)	792	554	1,346	*	1,346	0	0
Pinnacle Ventures II-A, L.P. (21)	1,220	854	2,074	*	2,074	0	0
Pinnacle Ventures II-B, L.P. (21)	51,239	35,868	87,107	*	87,107	0	0
Pinnacle Ventures II-C, L.P. (21)	4,270	2,989	7,259	*	7,259	0	0
Pinnacle Ventures II-R, L.P. (21)	4,270	2,989	7,259	*	7,259	0	0
Stanford University (DAPER I) (22)	453	317	770	*	770	0	0
Versant Side Fund III, L.P. (23)	1,313	919	2,232	*	2,232	0	0
Versant Venture Capital III, L.P. (23)	222,354	155,648	378,002	2.49%	378,002	0	0

* Less than one percent of the outstanding shares of common stock.

(1) Vivo Ventures VII, LLC (“Vivo VII LLC”) is the sole general partner of each of Vivo Ventures Fund VII, LP (“Vivo VII LP”) and Vivo Ventures VII Affiliates Fund, LP (“Vivo VII Affiliates LP”), and has voting and investment power over the shares held by Vivo VII LP and Vivo VII Affiliates LP. Vivo VII LLC disclaims beneficial ownership over all shares held by Vivo VII LP and Vivo VII Affiliates LP, except to the extent of its pecuniary interest in such shares. The address for each of Vivo VII LP and Vivo VII Affiliates LP is 575 High Street, Suite 201, Palo Alto, CA 9430.

(2) Vivo Ventures V, LLC (“Vivo V LLC”) is the sole general partner of each of Vivo Ventures Fund V, LP (“Vivo V LP”) and Vivo Ventures V Affiliates Fund, LP (“Vivo V Affiliates LP”), and has voting and investment power over the shares held by Vivo V LP and Vivo V Affiliates LP. Vivo V LLC disclaims beneficial ownership over all shares held by Vivo V LP and Vivo V Affiliates LP, except to the extent of its pecuniary interest in such shares. The address for each of Vivo V LP and Vivo V Affiliates LP is 575 High Street, Suite 201, Palo Alto, CA 9430.

(3) Srinivas Akkaraju, Philippe O. Chambon, Jeani Delagardelle, Ronald Hunt, Vijay K. Lathi and James Niedel (the “Individual Managers”), as managers New Leaf Venture Management II, L.L.C. (“NLV Management II”), the sole general partner of New Leaf Venture Associates II, L.P. (“NLV Associates II” and, together with NLV Management II and the Individual Managers, the “Indirect Reporting Persons”), which in turn is the sole general partner of New Leaf Ventures II, L.P., have the power to vote or dispose of the shares listed above. Each Indirect Reporting Person disclaims beneficial ownership of such shares except to the extent of their pecuniary interest therein. The address for New Leaf Ventures II, L.P. is 7 Times Square, Suite 3502, New York, NY 10036.

(4) Julian C. Baker and Felix J. Baker are the controlling members of the general partners of the general partners of the Baker Entities. Baker Bros. Advisors, LLC (the “Adviser”) serves as the Investment Adviser to each of 667, L.P., Baker Brothers Life Sciences, L.P. and 14159, L.P. (collectively, the “Baker Entities’). Pursuant to amended and restated

management agreements between the Adviser, each of the Baker Entities and the general partners of the Baker Entities, the Adviser has complete and unlimited discretion and authority with respect to the Baker Entities investments and voting power over investments. Julian C. Baker and Felix J. Baker are the principals of the Adviser and each may be deemed to control the Adviser and to indirectly beneficially own the shares listed above. Julian C. Baker and Felix J. Baker disclaim beneficial ownership of such shares except to the extent of their pecuniary interest therein. The address for each of the Baker Entities is 667 Madison Avenue, 21st Floor, New York, NY 10065.

(5) Peter Kolchinsky, as Manager of RA Capital Management, LLC, which is the general partner of RA Capital Healthcare Fund, LP and the investment advisor of Blackwell Partners, LLC, has voting and investment power over the shares held by Blackwell Partners, LLC and RA Capital Healthcare Fund, LP. Mr. Kolchinsky disclaims beneficial ownership over all shares held by Blackwell Partners, LLC and RA Capital Healthcare Fund, LP, except to the extent of any pecuniary interest in such shares. The address for Blackwell Partners, LLC and RA Capital Healthcare Fund, LP is 20 Park Plaza, Suite 120A, Boston, MA 02116.

(6) Richard Lin, as Manager of Longwood Capital Partners LLC, the general partner of Three Arch Opportunity Fund, L.P., has voting and investment control over all shares held by Three Arch Opportunity Fund, L.P. Mr. Lin disclaims beneficial ownership over all shares held by Three Arch Opportunity Fund, L.P., except to the extent of his pecuniary interest in such shares. The address for Three Arch Opportunity Fund, L.P. is 3200 Alpine Road, Portola Valley, CA 94028.

(7) Mark A. Wan and Wilfred E. Jaeger, Managing Members of Three Arch Management IV, LLC, General Partner of each of Three Arch Partners IV, L.P. and Three Arch Associates IV, L.P. (collectively, the “Three Arch IV Entities”), have voting and investment control over all shares held by the Three Arch IV Entities. Each of Mr. Wan and Mr. Jaeger disclaims beneficial ownership over all shares held by the Three Arch IV Entities, except to the extent of his pecuniary interest in such shares. The address for the Three Arch IV Entities is 3200 Alpine Road, Portola Valley, CA 94028.

(8) The address for Mr. Shah is 849 Avery Drive, Mountain View, CA 94043.

(9) The address for Mr. Baigent is 114 Chula Vista Avenue, #1, Burlingame, CA 941010.

(10) The address for Ms. Barrowcliffe is 44 Mymms Drive, Brookmans Park, Hertfordshire AL97AF, UK.

(11) The address for Charter Life Sciences, L.P. is 2041 Mission College Blvd., Suite 210, Santa Clara, CA 95054.

(12) The address for Damon Todd Holdings LLC is 7830 N. Regent Road, Fox Point, WI 53217.

(13) The address for Mr. Dilly is 500 Remillard Drive, Hillborough, California 94010.

(14) David Kroin, as Managing Member of Great Point Partners I GP, LLC, the general partner of Great Point Partners I, L.P., has voting and investment power over the shares held by Great Point Partners I, L.P. Mr. Kroin disclaims beneficial ownership over all shares held by Great Point Partners I, L.P., except to the extent of his pecuniary interest in such shares. The address for Great Point is 165 Mason Street, 3rd Floor, Greenwich, CT 06830.

(15) Harvey B. Cash, Philip T. Gianos, W. Stephen Holmes, Gilbert H. Kliman, Arnold L. Oronsky, Thomas L. Rosch, Bruce A. Cleveland, Christopher B. Ehrlich, Nina Kjellson, Khaled A. Nasr and Douglas A. Pepper, as managing directors and venture members of InterWest Management Partners IX, LLC, the general partner of InterWest Partners IX, L.P., have voting and investment power over the shares held by InterWest Partners IX, L.P.; however, they disclaim any beneficial ownership over all shares held by InterWest Partners IX, L.P., except to the extent of their pecuniary interest in such shares. The address for InterWest Partners IX, L.P. is 2710 Sand Hill Road, Second Floor, Menlo Park, CA 94025.

(16) The address for Mr. Johnson is 169 Marlborough Street, Apt 3, Boston, MA 02116.

(17) The address for Ms. Lee is 3566 Jefferson Avenue, Redwood City, CA 94062.

(18) The address for Mr. Melvin is 1292 Dolores Street, San Francisco, CA 94110.

(19) The address for Ms. Nader is 19 Ridgecrest Terrace, San Mateo, CA 94110.

(20) The address for Mr. Niven is 422 Clifton Avenue, San Carlos, CA 94070.

(21) Kenneth R. Pelowski and Robert N. Savoie, as Managing Member and Chief Financial Officer, respectively, of Pinnacle Ventures Management II, L.L.C., the general partner of each of Pinnacle Ventures II-A, L.P., Pinnacle Ventures II-A, L.P., Pinnacle Ventures II-A, L.P., and Pinnacle Ventures II-A, L.P., (collectively, the “Pinnacle Entities”) have voting and investment power over the shares held by the Pinnacle Entities. Mr. Pelowski and Mr. Savoie disclaim beneficial ownership over all shares held by the Pinnacle Entities, except to the extent of their pecuniary interest in such shares. The address for each of the Pinnacle Entities is 1600 El Camino Real, Suite 250, Menlo Park, CA 94025.

(22) The address for Stanford University (DAPER I) is Stanford Management Company, Attn: Direct Investment, 635 Knight Way, Stanford, CA 94305-7207.

(23) Versant Ventures III, LLC (“VV III”) serves as the sole general partner of Versant Side Fund III, L.P. (“VSF III”) and Versant Venture Capital III, L.P. (“VVC III”) and owns no securities of the registrant directly. Brian G. Atwood, Samuel D Colella, Ross A Jaffe, William J. Link, Barbara N. Lubash, Donald B. Milder, Rebecca B. Robertson, Camille D. Samuels, Bradley J. Bolzon, Charles M. Warden, Robin L. Praeger and Kevin J. Wasserstein are directors and/or members of VV III and share voting and dispositive power over the shares held by VSF III and VVC III; however, they disclaim beneficial ownership of the shares held by VSF III and VVC III except to the extent of their pecuniary interests therein. The address for the Versant Entities is 3000 Sand Hill Road, Building 4, Suite 210, Menlo Park, CA 94025.

PLAN OF DISTRIBUTION

We are registering the Shares to permit the resale of the Shares by the selling stockholders from time to time after the date of this prospectus. We will not receive any of the proceeds from the sale by the selling stockholders of the Shares. We will bear all fees and expenses incident to our obligation to register the Shares.

The selling stockholders may sell all or a portion of the Shares held by them and offered hereby from time to time directly or through one or more underwriters, broker-dealers or agents. If the Shares are sold through underwriters or broker-dealers, the selling stockholders will be responsible for underwriting discounts or commissions or agents' commissions. The Shares may be sold in one or more transactions at fixed prices, at prevailing market prices at the time of the sale, at varying prices determined at the time of sale or at negotiated prices. These sales may be effected in transactions, which may involve crosses or block transactions, pursuant to one or more of the following methods:

- on any national securities exchange or quotation service on which the securities may be listed or quoted at the time of sale;
- in the over-the-counter market;
- in transactions otherwise than on these exchanges or systems or in the over-the-counter market;
- through the writing or settlement of options, whether such options are listed on an options exchange or otherwise;
- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the Shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales;
- agreements between broker-dealers and a selling stockholder to sell a specified number of such shares at a stipulated price per share;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

The selling stockholders may also sell the Shares under Rule 144 promulgated under the Securities Act, if available, rather than under this prospectus. In addition, the selling stockholders may transfer the Shares by other means not described in this prospectus. If the selling stockholders effect such transactions by selling Shares to or through underwriters, broker-dealers or agents, such underwriters, broker-dealers or agents may receive commissions in the form of discounts, concessions or commissions from the selling stockholders or commissions from purchasers of the Shares for whom they may act as agent or to whom they may sell as principal (which discounts, concessions or commissions as to particular underwriters, broker-dealers or agents may be in excess of those customary in the types of transactions involved). In connection with sales of the Shares or otherwise, the selling stockholders may enter into hedging transactions with broker-dealers, which may in turn engage in short sales of the Shares in the course of hedging in positions they assume. The selling stockholders may also sell shares of common stock short and deliver shares of common stock covered by this prospectus to close out short positions and to return borrowed shares in connection with such short sales. The selling stockholders may also loan or pledge the Shares to broker-dealers that in turn may sell such shares.

The selling stockholders may pledge or grant a security interest in some or all of the Shares owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and

sell the Shares from time to time pursuant to this prospectus or any amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act amending, if necessary, the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholders under this prospectus. The selling stockholders also may transfer and donate the Shares in other circumstances in which case the transferees, donees, pledgees or other successors in interest will be the selling beneficial owners for purposes of this prospectus.

To the extent required by the Securities Act and the rules and regulations thereunder, the selling stockholders and any broker-dealer participating in the distribution of the Shares may be deemed to be "underwriters" within the meaning of the Securities Act, and any commission paid, or any discounts or concessions allowed to, any such broker-dealer may be deemed to be underwriting commissions or discounts under the Securities Act. At the time a particular offering of the Shares is made, a prospectus supplement, if required, will be distributed, which will set forth the aggregate amount of Shares being offered and the terms of the offering, including the name or names of any broker-dealers or agents, any discounts, commissions and other terms constituting compensation from the applicable selling stockholder(s), any discounts, commissions or concessions allowed or re-allowed or paid to broker-dealers and the proposed selling price to the public.

Under the securities laws of some states, the Shares may be sold in such states only through registered or licensed brokers or dealers. In addition, in some states the Shares may not be sold unless such shares have been registered or qualified for sale in such state or an exemption from registration or qualification is available and is complied with.

There can be no assurance that any selling stockholder will sell any or all of the Shares registered pursuant to the registration statement, of which this prospectus forms a part.

Each selling stockholder and any other person participating in such distribution will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including, without limitation, to the extent applicable, Regulation M of the Exchange Act, which may limit the timing of purchases and sales of any of the Shares by a selling stockholder and any other participating person. To the extent applicable, Regulation M may also restrict the ability of any person engaged in the distribution of the Shares to engage in market-making activities with respect to the Shares. All of the foregoing may affect the marketability of the Shares and the ability of any person or entity to engage in market-making activities with respect to the Shares.

Pursuant to the Registration Rights Agreement, we agreed to file, within 30 days of the December 18, 2012 closing under the Purchase Agreement (the "Filing Deadline"), a registration statement with the SEC registering the Shares for resale. In addition, we agreed to use our commercially reasonable efforts to cause such registration statement to be declared effective on or before the 60th calendar day following the date on which the registration statement is filed and to maintain the effectiveness of such registration statement, other than during certain permitted grace periods, until the date when all of the Shares have been sold pursuant to the registration statement of which this prospectus forms a part or pursuant to Rule 144 under the Securities Act.

We will pay all expenses of the registration of the shares of common stock pursuant to the Registration Rights Agreement, estimated to be $38,745 in total, including, without limitation, SEC filing fees and expenses of compliance with state securities or "blue sky" laws; provided, however, that the selling stockholders will pay all underwriting discounts and selling commissions, if any. We will indemnify the selling stockholders against liabilities, including certain liabilities under the Securities Act in accordance with the Registration Rights Agreement, or the selling stockholders will be entitled to contribution in the event that indemnification if not available. We may be indemnified by the selling stockholders against certain liabilities, including liabilities under the Securities Act that may arise from any written information furnished to us by the selling stockholders specifically for use in this prospectus, in accordance with the Registration Rights Agreement or we may be entitled to contribution in the event that indemnification is not available.

Once sold under the registration statement of which this prospectus forms a part, the Shares will be freely tradable in the hands of persons other than our affiliates.

LEGAL MATTERS

The validity of the securities described herein will be passed upon for us by Morgan, Lewis & Bockius LLP.

EXPERTS

The financial statements as of June 30, 2012 and 2011, and for each of the two years in the period ended June 30, 2012, incorporated by reference into this prospectus have been so incorporated in reliance on the report of BDO USA, LLP, an independent registered public accounting firm, incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" into this prospectus the information we have filed with the SEC. The information we incorporate by reference into this prospectus is an important part of this prospectus. Any statement in a document we incorporate by reference into this prospectus will be considered to be modified or superseded to the extent a statement contained in this prospectus or any subsequently filed document that is incorporated by reference into this prospectus modifies or supersedes that statement. The modified or superseded statement will not be considered to be a part of this prospectus, except as modified or superseded.

We incorporate by reference into this prospectus the information contained in the documents listed below, which is considered to be a part of this prospectus:

- our Annual Report on Form 10-K for the fiscal year ended June 30, 2012 filed with the SEC on September 18, 2012;
- our Quarterly Report on Form 10-Q for the quarter ended September 30, 2012 filed with the SEC on November 13, 2012;
- our Current Reports on Form 8-K filed with the Commission on July 2, 2012, August 8, 2012, August 23, 2012, September 28, 2012, October 4, 2012, November 5, 2012, November 7, 2012, November 21, 2012, December 7, 2012 and December 19, 2012; and
- the description of our common stock contained in the Registration Statement on Form 8-A filed on November 26, 2003, and any further amendment or report filed thereafter for the purpose of updating such description.

We also incorporate by reference all documents filed pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after (i) the date of the initial registration statement of which this prospectus forms a part and prior to effectiveness of the registration statement and (ii) the date of this prospectus and prior to the termination of this offering; provided, however, that we are not incorporating any information furnished under Item 2.02 or Item 7.01 of any current report on Form 8-K we may subsequently file.

Statements made in this prospectus in any document incorporated by reference in this prospectus as to the contents of any contract or other document referred to herein or therein are not necessarily complete, and in each instance reference is made to the copy of such contract or other document filed as an exhibit to the documents incorporated by reference, each such statement being qualified in all material respects by such reference.

You may request a copy of these filings, at no cost, by writing or telephoning us at the following address:

MEI Pharma, Inc.
11975 El Camino Real, Suite 101
San Diego, California 92130
Tel: (858) 792-6300
Attn: Investor Relations

Copies of these filings are also available, without charge, through the “Investors” section of our website (www. meipharma.com) as soon as reasonably practicable after they are filed electronically with the SEC. The information contained on our website is not a part of this prospectus.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC’s website at *http://www.sec.gov*. The SEC’s website contains reports, proxy and information statements and other information regarding issuers, such as us, that file electronically with the SEC. You may also 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. You may also obtain copies of these documents at prescribed rates by writing to the SEC. Please call the SEC at 1-800-SEC-0330 for further information on the operation of its Public Reference Room.

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution

The following table sets forth the estimated costs and expenses, other than sales commissions or discounts, payable by the registrant in connection with the offering of the securities being registered.

SEC registration fee	$14,745
Printing and engraving fees	2,000
Legal fees	15,000
Accounting fees	5,000
Miscellaneous	2,000
Total	$38,745

Item 15. Indemnification of Directors and Officers

Our Restated Certificate of Incorporation, as amended, provides that we will indemnify our directors and officers to the full extent permitted by the Delaware General Corporation Law, or DGCL. Section 145 of the DGCL provides that the extent to which a corporation may indemnify its directors and officers depends on the nature of the action giving rise to the indemnification right. In actions not on behalf of the corporation, directors and officers may be indemnified for acts taken in good faith and in a manner reasonably believed to be in or not opposed to the best interests of the corporation. In actions on behalf of the corporation, directors and officers may be indemnified for acts taken in good faith and in a manner reasonably believed to be in or not opposed to the best interests of the corporation, except for acts as to which the director or officer is adjudged liable to the corporation, unless the relevant court determines that indemnification is appropriate despite such liability. Section 145 of the DGCL also permits a corporation to (i) reimburse present or former directors or officers for their defense expenses to the extent they are successful on the merits or otherwise and (ii) advance defense expenses upon receipt of an undertaking to repay the corporation if it is determined that payment of such expenses is unwarranted.

To supplement the general indemnification right contained in our Restated Certificate of Incorporation, our Amended and Restated By-Laws provide for the specific indemnification rights permitted by Section 145 (as described above). Our Amended and Restated By-Laws also permit us to purchase Directors & Officers insurance, but no director or officer has a right to require this. Our Amended and Restated By-laws also provide that the our obligations to indemnify any director serving at the request of a stockholder of the Company are primary and any obligation of such stockholder or any of its affiliates (a “Stockholder Indemnitor”) to provide indemnification for the same expenses or liabilities incurred by such directors are secondary. No advancement or payment by a Stockholder Indemnitor on behalf of such directors with respect to any claim for which any such director has sought indemnification from the Company will affect our primary indemnification obligations and a Stockholder Indemnitor will have a right of contribution and/or be subrogated to the extent of such advancement or payment to all of the rights of recovery of such directors against us. In the event of payment for indemnification to a person pursuant to the Amended and Restated By-laws, we will be subrogated to the extent of such payment to any right of recovery such person may have by reason of the fact that he is or was serving at the request of the Company as a director, officer, employee or agent of another enterprise, except that the foregoing will not apply with respect to any payment for indemnification received from a Stockholder Indemnitor.

In addition to the indemnification rights described above, our Restated Certificate of Incorporation, as amended, eliminates any monetary liability of directors to us or our stockholders for breaches of fiduciary duty except for (i) breaches of the duty of loyalty, (ii) acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) improper dividends or share redemptions and (iv) transactions from which the director derives an improper personal benefit.

Finally, we have entered into an indemnification agreement with each of our directors and executive officers. Subject to certain exceptions, the indemnification agreements provide that an indemnitee will be indemnified for all expenses incurred or paid by the indemnitee in connection with a proceeding to which the indemnitee was or is a party, or is threatened to be made a party, by reason of the indemnitee's status with or service to us or to another entity at our request. In connection with proceedings other than those by or in the right of our company and to which the indemnitee was or is a party, or is threatened to be made a party, by reason of the indemnitee's status with or service to us or to another entity at our request, the indemnification agreements provide that an indemnitee will also be indemnified for all liabilities incurred or paid by the indemnitee. The indemnification agreements also provide for advancement of expenses incurred by an indemnitee in connection with an indemnifiable claim, subject to reimbursement in certain circumstances.

Item 16. Exhibits

See Exhibit Index following signature page.

Item 17. Undertakings

The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided, however, that paragraphs (1)(i), (1)(ii) and (1)(iii) above do not apply if the registration statement is on Form S-3 or Form F-3 and the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b)) that is part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(i) If the registrant is relying on Rule 430B:

(a) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(b) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. Provided, however, that no statement made in a registration statement or prospectus that is a part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is a part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date; or

(ii) If the registration is subject to Rule 430C, each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statement relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Diego, California, on this 17th day of January, 2013.

MEI PHARMA, INC.

By: /s/ Daniel P. Gold
Name: Daniel P. Gold
Title: Chief Executive Officer

POWER OF ATTORNEY

Each person whose individual signature appears below hereby authorizes and appoints Daniel P. Gold and Thomas M. Zech, and each of them, with full power of substitution and resubstitution and full power to act without the other, as his or her true and lawful attorney-in-fact and agent to act in his or her name, place and stead and to execute in the name and on behalf of each person, individually and in each capacity stated below, and to file, any and all amendments to this registration statement, including any and all post-effective amendments and amendments thereto and any other registration statement relating to the same offering as this registration statement that is to be effective upon filing pursuant to Rule 462(b) under the Securities Act of 1933, as amended, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing, ratifying and confirming all that said attorneys-in-fact and agents or either of them or their or his or her substitute or substitutes may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities indicated below on January 17, 2013.

Signature	Title
/s/ Daniel P. Gold Daniel P. Gold	Chief Executive Officer, President and Director (Principal Executive Officer)
/s/ Thomas M. Zech Thomas M. Zech	Chief Financial Officer (Principal Financial and Accounting Officer)
/s/ Bryan R.G. Williams Bryan R.G. Williams	Chairman of Board of Directors
/s/ William D. Rueckert William D. Rueckert	Director
/s/ Christine A. White Christine A. White	Director
/s/ Leah R. Cann Leah R. Cann	Director
/s/ Charles V. Baltic III Charles V. Baltic III	Director

Exhibit Index

Exhibit Number	Description of Document
4.1	Specimen of Common Stock Certificate (incorporated by reference to Exhibit 4.1 to the registrant's Registration Statement on Form S-3 filed with the SEC on September 21, 2012 (File No. 333-184011)).
5.1	Opinion of Morgan, Lewis & Bockius LLP regarding legality of securities being registered.
10.1	Securities Purchase Agreement, dated as of November 4, 2012, between MEI Pharma, Inc. and the investors identified on Exhibit A thereto (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K filed with the SEC on November 5, 2012 (File No. 000-50484)).
10.2	Registration Rights Agreement, dated as of December 18, 2012, between MEI Pharma, Inc. and the investors named therein (incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K filed with the SEC on November 5, 2012 (File No. 000-50484)).
10.3	Form of Warrant (incorporated by reference to Exhibit 4.1 to the registrant's Current Report on Form 8-K filed with the SEC on November 5, 2012 (File No. 000-50484)).
23.1	Consent of BDO USA, LLP.
23.2	Consent of Morgan, Lewis & Bockius LLP (included in Exhibit 5.1).
24.1	Power of Attorney (included on signature page).

Exhibit 5.1

[Letterhead of Morgan, Lewis & Bockius LLP]

January 17, 2013

MEI Pharma, Inc.
11975 El Camino Real, Suite 101
San Diego, California 92130

Re: MEI Pharma, Inc. — Registration Statement on Form S-3

Ladies and Gentlemen:

We have acted as counsel to MEI Pharma, Inc., a Delaware corporation (the "Company"), in connection with the filing of the Registration Statement on Form S-3 (the "Registration Statement") under the Securities Act of 1933, as amended (the "Act"), with the Securities and Exchange Commission (the "SEC"). The Registration Statement relates to the offering for resale, on a delayed or continuous basis, of 15,118,609 shares of the Company's common stock, $0.00000002 par value per share (the "Common Stock"), including 10,479,548 shares of Common Stock (the "Shares") previously issued and 4,639,061 shares (the "Warrant Shares") of Common Stock reserved for issuance pursuant to warrants (the "Warrants") to purchase shares of Common Stock, in each case issued in connection with the Securities Purchase Agreement (the "Securities Purchase Agreement"), dated as of November 4, 2012, between the Company and the investors named therein.

In connection with this opinion letter, we have examined the Registration Statement and originals, or copies certified or otherwise identified to our satisfaction, of the Restated Certificate of Incorporation, as amended, and Amended and Restated Bylaws of the Company, the Warrants, the Securities Purchase Agreement and such other documents, records and other instruments as we have deemed appropriate for purposes of the opinions set forth herein.

We have assumed the genuineness of all signatures, the legal capacity of all natural persons, the authenticity of the documents submitted to us as originals, the conformity with the originals of all documents submitted to us as certified, facsimile or photostatic copies and the authenticity of the originals of all documents submitted to us as copies.

Based upon the foregoing, and subject to the qualifications, assumptions and limitations stated herein, we are of the opinion that:

1) the Shares are validly issued, fully paid and nonassessable; and

2) the Warrant Shares have been duly authorized and, when issued upon valid exercise of the Warrants in accordance with the terms thereof, will be validly issued, fully paid and nonassessable.

The opinions expressed herein are limited to the Delaware General Corporation Law and we express no opinion with respect to the laws of any other state or jurisdiction.

We hereby consent to the use of this opinion as Exhibit 5.1 to the Registration Statement and to the reference to us under the caption “Legal Matters” in the prospectus included in the Registration Statement. In giving such consent, we do not hereby admit that we are acting within the category of persons whose consent is required under Section 7 of the Act or the rules or regulations of the SEC thereunder.

Very truly yours,

/s/ Morgan, Lewis & Bockius LLP

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

MEI Pharma, Inc.
San Diego, California 92130

We hereby consent to the incorporation by reference in the Prospectus constituting a part of this Registration Statement of our report dated September 17, 2012, relating to the consolidated financial statements of MEI Pharma, Inc., appearing in the Company's Annual Report on Form 10-K for the fiscal year ended June 30, 2012.

We also consent to the reference to us under the caption "Experts" in the Prospectus.

/s/ BDO USA LLP

San Diego, California

January 17, 2013