As filed with the U.S. Securities and Exchange Commission on May 23, 2014

Registration No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC

FORM S-3

Registration Statement Under the Securities Act of 1933

PHARMATHENE, INC.
(Exact name of registrant as specified in its charter)

Delaware	**20-2726770**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

One Park Place, Suite 450
Annapolis, Maryland 21401
(410) 269-2600
(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)

Eric I. Richman
President and Chief Executive Officer
PharmAthene, Inc.
One Park Place, Suite 450
Annapolis, Maryland 21401
(410) 269-2600
(Name, address, including zip code, and telephone number, including area code, of agent for service)

With a copy to:
Jeffrey A. Baumel, Esq.
Anthony D. Foti, Esq.
Dentons US LLP
1221 Avenue of the Americas
New York, New York 10020
(212) 768-6700
Approximate date of commencement of proposed sale to the public:
From time to time after the effective date of this Registration Statement.

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

☐ Large Accelerated Filer	x 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)	Proposed maximum offering price per unit (1)	Proposed maximum aggregate offering price (1)(2)	Amount of registration fee (2)
Common Stock, par value $0.0001 per share (3)	—	—	—	—
Preferred Stock, par value $0.0001 per share (3)	—	—	—	—
Warrants (4)	—	—	—	—
Total	—	—	$ 100,000,000	$ 12,880

(1) There are being registered an indeterminate number of securities as shall have an aggregate offering price not to exceed $100,000,000. The securities registered hereunder may be sold separately or with other securities registered hereunder. The proposed maximum aggregate offering price per class of security will be determined from time to time by the registrant in connection with the issuance by the registrant of the securities registered under this registration statement and is not specified as to each class of security being registered under this registration statement pursuant to General Instruction II.D. of Form S-3 under the Securities Act of 1933, as amended (the "Securities Act"). The common stock to be issued pursuant to this registration statement may include the issuance of up to 2,899,991 shares of common stock issuable upon exercise of currently outstanding warrants.

(2) The proposed maximum offering price has been estimated solely for the purpose of calculating the registration fee in accordance with Rule 457(o) under the Securities Act.

(3) Subject to note 1 above, there is being registered hereunder an indeterminate number of shares of common and preferred stock of the registrant as may be sold from time to time by the registrant. Pursuant to Rule 416 under the Securities Act, the shares being registered hereunder include such indeterminate number of shares of common and preferred stock as may be issuable from time to time with respect to the shares being registered hereunder as a result of stock splits, stock dividends or similar transactions. Pursuant to Rule 457(i) under the Securities Act, the shares being registered hereunder include such indeterminate number of shares of common and preferred stock as may be issuable from time to time upon conversion, exercise or exchange of any preferred stock or warrants issued under this registration statement.

(4) Subject to note 1 above, there is being registered hereunder an indeterminate number of warrants to purchase common stock or preferred stock of one or more series. Pursuant to Rule 457(i) under the Securities Act, the warrants being registered hereunder include such indeterminate number of warrants as may be issuable upon conversion or exchange of any preferred stock issued under this registration statement.

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 or until the Registration Statement shall become effective on such date as the U.S. Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

EXPLANATORY NOTE

This registration statement contains two prospectuses:

- a base prospectus which covers the offering, issuance and sale by the Registrant of up to $100,000,000 of our common stock, preferred stock or warrants or any combination of those securities, either individually or in units, in one or more offerings; and
- a sales agreement prospectus covering the offering, issuance and sale by the Registrant of up to an additional $15,000,000 of our common stock that may be issued and sold under a sales agreement, as amended, with Cantor Fitzgerald & Co.

The base prospectus immediately follows this explanatory note. The sales agreement prospectus immediately follows the base prospectus. The additional $15,000,000 of common stock that may be offered, issued and sold by the Registrant under the sales agreement prospectus is included in the $100,000,000 of securities that may be offered, issued and sold by us under the base prospectus.

The information in this prospectus is not complete and may be changed. We may not sell these securities until the Registration Statement filed with the U.S. Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state or jurisdiction where the offer or sale is not permitted.

Subject to Completion, Dated May 23, 2014

PROSPECTUS

$100,000,000

PharmAthene

Common Stock
Preferred Stock
Warrants

From time to time, we may offer and sell common stock, preferred stock or warrants or any combination of those securities, either individually or in units, in one or more offerings. The aggregate public offering price of the securities offered by us pursuant to this prospectus will not exceed $100,000,000.

This prospectus provides you with a general description of the securities that we may offer. Each time we offer securities, we will provide a prospectus supplement that will contain more specific information about the terms of that offering, including the prices at which those securities will be sold. We may also add, update or change in the prospectus supplement any of the information contained in this prospectus.

The securities offered by us pursuant to this prospectus may be sold directly to investors, through agents, underwriters or dealers as designated from time to time, through a combination of these methods or in any other manner as described under the heading "Plan of Distribution" and in the corresponding section in the applicable prospectus supplement. Each time we offer securities, the relevant prospectus supplement will provide the specific terms of the plan of distribution for such offering and the net proceeds that we expect to receive from such offering.

Our common stock is listed on the NYSE MKT under the trading symbol "PIP." Each prospectus supplement will indicate if the securities offered pursuant to that prospectus supplement will be listed on any securities exchange.

This prospectus may not be used to sell any of our securities unless accompanied by a prospectus supplement or a free writing prospectus.

Investing in our securities involves certain risks. You should carefully read both this prospectus and the applicable prospectus supplement, as well as any documents incorporated by reference in this prospectus and/or the applicable prospectus supplement, before you make your investment decision. See "Risk Factors" beginning on page 2 of this prospectus and contained in other documents that are incorporated by reference in this prospectus.

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

The date of this prospectus is , 2014.

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ABOUT THIS PROSPECTUS

You should rely only on the information contained or incorporated by reference in this prospectus and any applicable prospectus supplements. We have not authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information in this prospectus is accurate as of the date appearing on the front cover of this prospectus only and that information contained in any prospectus supplement or document incorporated by reference in this prospectus is only accurate as of the date of such prospectus supplement or document. Our business, financial condition, results of operations and prospects may have subsequently changed.

This prospectus is part of a registration statement that we filed with the SEC to register an indeterminate number of shares of common stock, preferred stock and warrants as may from time to time be offered for sale, either individually or in units, at indeterminate prices (up to an aggregate maximum offering price for all such securities of $100,000,000), using a “shelf” registration process. By using a shelf registration statement, we may offer and sell from time to time in one or more offerings the securities described in this prospectus.

This prospectus provides you with some of the general terms that may apply to an offering of our securities. Each time we sell securities under this shelf registration statement, we will provide a prospectus supplement that will contain specific information about the terms of that specific offering, including the number and price (or exercise price) of the securities to be offered and sold in that offering and the specific manner in which such securities may be offered. The prospectus supplement may also add to, update or change any of the information contained in this prospectus. To the extent there is a conflict between the information contained in this prospectus, on the one hand, and the information contained in the applicable prospectus supplement, on the other hand, you should rely on the information in the prospectus supplement.

You should carefully read both this prospectus and the applicable prospectus supplement, as well as any documents incorporated by reference in this prospectus (as described under the heading “Incorporation by Reference”) and/or the applicable prospectus supplement, before you make your investment decision. The information incorporated by reference includes important business and financial information about us that is not included nor delivered with this document. This information is available without charge on the SEC’s website at www.sec.gov or upon written or oral request to PharmAthene, Inc., One Park Place, Suite 450, Annapolis, Maryland 21401, (410) 269-2600. If any statement in this prospectus, the applicable prospectus supplement or any document incorporated by reference into one of those documents is inconsistent with a statement in another of those documents having a later date, the statement in the document having the later date modifies or supersedes the earlier statement.

Unless otherwise mentioned or unless the context requires otherwise, all references to “PharmAthene,” the “Company,” “we,” “us,” “our,” and similar terms refer to PharmAthene, Inc. and its subsidiaries on a consolidated basis. The phrase “this prospectus” refers to this prospectus and any applicable prospectus supplement, unless the context otherwise requires. Whenever we refer to “you” or “yours,” we mean the persons to whom offers are made under this prospectus.

SPECIAL NOTE REGARDING FORWARD-LOOKING INFORMATION

This prospectus and any related prospectus supplement and the information incorporated by reference herein and therein contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 (the “Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended. This information may involve known and unknown risks, uncertainties and other factors that are difficult to predict and may cause our actual results, performance or achievements to be materially different from future results, performance or achievements expressed or implied by any forward-looking statements. These risks, uncertainties and other factors include, but are not limited to, risks associated with the following:

- the reliability of the results of the studies relating to human safety and possible adverse effects resulting from the administration of our product candidates,
- funding delays, reductions in or elimination of U.S. government funding and/or non-renewal of expiring funding for one or more of our development programs,
- our common stock,
- our Loan and Security Agreement, dated as of March 30, 2012, among General Electric Capital Corporation ("GE Capital"), in its capacity as agent for the lenders, and the Company (the "GE Loan Agreement"),
- our net operating loss carryforwards (“NOLs”),
- the award of government contracts to our competitors or delays caused by third parties challenging government contract awards to us,
- unforeseen safety and efficacy issues related to our product candidates,
- challenges related to the development, commercialization, technology transfer, scale-up, and/or process validation of manufacturing processes for our product candidates,
- unexpected determinations that these product candidates prove not to be effective and/or capable of being marketed as products,
- accomplishing future strategic acquisitions or business combinations,

as well as risks detailed under the caption “Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2013, Quarterly Report on Form 10-Q for the quarter ended March 31, 2014 and in our other reports filed with the SEC from time to time thereafter. In particular, in its May 2013 decision, the Delaware Supreme Court reversed the remedy ordered by the Delaware Court of Chancery which awarded PharmAthene 50% of all net profits (as defined in the court's final judgment) related to the sale of Arestvyr™ (formerly called ST 246®) and related products for 10 years following the initial commercial sale of the drug once SIGA Technologies, Inc. (“SIGA”) earns $40.0 million in net profits from the sale of Arestvyr™ and related products and remanded the issue of a remedy back to the trial court for reconsideration. As a result, there can be no assurance that the Delaware Court of Chancery will issue a remedy that provides us with a financial interest in Arestvyr™ and related products or any remedy. Furthermore, there is significant uncertainty regarding the level and timing of sales of Arestvyr™ and when and whether it will be approved by the U.S. Food and Drug Administration (the “FDA”), and corresponding health agencies around the world. Therefore, even if the Delaware Court of Chancery does award us a remedy that provides us monies related to sales or profit of Arestvyr™, we cannot predict with certainty if or when SIGA will begin recognizing profit on the sale thereof and there can be no assurance that any profits, if recognized, received by SIGA and paid to us will be significant. Significant additional non-clinical animal studies, human clinical trials, and manufacturing development work remain to be completed for all our products candidates, including Valortim, rBChE and SparVax®. At this point, future government funding to support the development of Valortim®, rBChE and SparVax® is unlikely and remains uncertain. It is also uncertain whether any of our product candidates will be shown to be safe and effective and approved by regulatory authorities for use in humans. Forward-looking statements describe management’s current expectations regarding our future plans, strategies and objectives and are generally identifiable by use of the words “may,” “will,” “should,” “expect,” “anticipate,” “estimate,” “believe,” “intend,” “project,” “potential” or “plan” or the negative of these words or other variations on these words or comparable terminology. Such statements include, but are not limited to:

- statements about potential future government contract or grant awards,
- potential payments under government contracts or grants,
- potential regulatory approvals,
- future product advancements, and
- anticipated financial or operational results.

Forward-looking statements are based on assumptions that may be incorrect, and we cannot assure you that the projections included in the forward-looking statements will come to pass.

We have based the forward-looking statements included in this prospectus on information available to us on the date of this prospectus, and we assume no obligation to update any such forward-looking statements, other than as required by law. Although we undertake no obligation to revise or update any forward-looking statements, whether as a result of new information, future events or otherwise, you are advised to consult any additional disclosures that we may make directly to you or through reports that we, in the future, may file with the SEC, including Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K.

All forward-looking statements included herein are expressly qualified in their entirety by the cautionary statements contained or referred to above.

PROSPECTUS SUMMARY

We are a biodefense company engaged in the development and commercialization of next generation medical countermeasures against biological and chemical threats. Our current biodefense portfolio includes the following product candidates:

- SparVax®, a next generation recombinant protective antigen anthrax vaccine;
- rBChE (recombinant butyrylcholinesterase) bioscavenger, a medical countermeasure for nerve agent poisoning by organophosphorous compounds, including nerve gases and pesticides; and
- Valortim®, a fully human monoclonal antibody for the prevention and treatment of anthrax infection.

In May 2013, the Delaware Supreme Court affirmed a September 2011 ruling of the Delaware Court of Chancery that SIGA had breached certain contractual obligations to us. The matter is on remand to the Delaware Court of Chancery to determine a remedy in light of the Delaware Supreme Court's decision. Previously, the Delaware Court of Chancery had awarded us the right to receive 50% of all net profits (as defined in the court's final judgment) related to the sale of SIGA, Arestvyr™ (formerly known as ST-246®) and related products for 10 years following initial commercial sale of the drug once SIGA earns $40.0 million in net profits from the sales of Arestvyr™ and related products and a portion of our attorney's fees and expert witness and other costs. While we believe there may be significant revenue potential under a potential damages award, there can be no assurance that the Delaware Court of Chancery will re-instate its prior remedy or order another remedy for us, that SIGA will not appeal any subsequent decision by the Delaware Court of Chancery, or that SIGA will not be successful in any subsequent appeal. Currently, because the Delaware Supreme Court remanded the issue of a remedy back to the Delaware Court of Chancery, we no longer have a financial interest in Arestvyr™ and may never receive any proceeds from the product.

On April 4, 2014, we received notification from the U.S. Department of Health and Human Services (HHS), Biomedical Advanced Research and Development Authority (BARDA), advising us of its decision to de-scope the current SparVax® anthrax vaccine contract through a partial termination for convenience. BARDA has subsequently provided guidance authorizing PharmAthene to complete six activities under the contract. All other activities were de-scoped, including the proposed Phase 2 clinical trial. PharmAthene has proposed a timeline for completing these contract activities up to and including the submission of its settlement proposal. The company expects these events to occur in the third or fourth quarter of 2014. We do not expect that we will receive additional significant funding from BARDA for the further development of SparVax®. Therefore, unless we are able to secure additional funding for our SparVax® development program, we anticipate that revenues for this program will be less in future periods than in prior years. We are continuing to explore different options for the future of the SparVax® program.

Our executive offices are located at One Park Place, Suite 450, Annapolis, Maryland 21401 and our telephone number is (410) 269-2600.

RISK FACTORS

Investing in our securities involves risks. In addition to the other information in this prospectus and any prospectus supplement, you should carefully consider the following risks before making an investment decision. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently consider immaterial may also impair our business operations. If any of the following risks actually occur, our business and financial results could be harmed. In that case, the trading price of our common stock could decline. You should also refer to the information included in our other filings with the SEC, including our most recent Annual Report on Form 10-K or Quarterly Report on Form 10-Q, as the case may be, and in any applicable prospectus supplement.

Risks Related to Our Financial Condition

We have a history of losses and negative cash flow, anticipate future losses and negative cash flow, and cannot provide assurances that we will achieve profitability.

We have incurred significant losses since we commenced operations. As of March 31, 2014, we had accumulated losses of $212.6 million since our inception, and had net losses of approximately $11.7 million, $4.9 million, and $3.8 million during the last three years, respectively. Our losses to date have resulted principally from research and development costs related to the development of our product candidates and general and administrative costs related to operations. At March 31, 2014, we had cash on hand of approximately $9.5 million.

We expect to incur substantial losses for the foreseeable future as a result of increases in our research and development costs, including costs associated with conducting preclinical testing, clinical trials and regulatory compliance activities. If we continue to incur losses and are not able to raise adequate funds to cover those losses, we may be required to curtail significantly our development and commercialization activities. This would have a material adverse effect on our business, financial condition and/or results of operations.

Our likelihood for achieving profitability will depend on numerous factors, including success in:

- obtaining and enforcing a ruling from the Delaware Court of Chancery that provides for a meaningful remedy in our on-going litigation with SIGA;
- the timing, amount and profitability of sales of Arestvyr™ (including the timing of SIGA's recognition of revenue related thereto) if any final ruling from the Delaware Court of Chancery provides as a remedy for a cash flow to us related to sales or profits of Arestvyr™;
- developing our existing products and developing and testing new product candidates;
- continuing to receive government funding and identifying new government funding opportunities despite the recent partial termination of our SparVax® contract with BARDA;
- receiving regulatory approvals;
- carrying out our intellectual property strategy;
- establishing our competitive position;
- pursuing third-party collaborations;
- acquiring or in-licensing products; and
- manufacturing and marketing products.

Many of these factors will depend on circumstances beyond our control. We cannot guarantee that we will achieve sufficient revenues for profitability. Even if we do achieve profitability, we cannot guarantee that we can sustain or increase profitability on a quarterly or annual basis in the future. If revenues grow more slowly than we anticipate, or if operating expenses exceed our expectations or cannot be adjusted accordingly, then our business, results of operations, financial condition and cash flows will be materially and adversely affected. Because our strategy includes potential acquisitions of other businesses, acquisition expenses and any cash used to make these acquisitions will reduce our available cash.

Under the terms of our agreements with Avecia, we are required to pay Avecia (now a subsidiary of Fujifilm) $5.0 million within 90 days of entering into a multi-year funded development contract that was to be issued by BARDA under solicitation number RFP-BARDA-08-15 (or any substitution or replacement thereof) for the further development of SparVax®. BARDA cancelled RFP-BARDA-08-15 in December 2009. We have received funds from BARDA and other U.S. government agencies under various development agreements. Any development contract deemed to be a substitute or replacement of RFP-BARDA-08-15 could trigger our obligation to make the $5.0 million payment.

Global economic uncertainty continues to make capital markets more volatile and is threatening to once again tighten the credit markets. As a result, there can be no assurances that we would be successful in obtaining sufficient financing on commercially reasonable terms or at all. Our requirements for additional capital may be substantial and will be dependent on many factors, including the success of our research and development efforts, our ability to commercialize and market products, our ability to successfully pursue our licensing and collaboration strategy, the receipt of continued government funding, competing technological and marketing developments, costs associated with the protection of our intellectual property and any future change in our business strategy.

To the extent that we raise additional capital through the sale of securities, the issuance of those securities or shares underlying such securities would result in dilution that could be substantial to our stockholders. In addition, if we incur additional debt financing, a substantial portion of our operating cash flow may be dedicated to the payment of principal and interest on such indebtedness, thus limiting funds available for our business activities.

If adequate funds are not available, we may be required to curtail significantly our development and commercialization activities. This would have a material adverse effect on our business, financial condition and/or results of operations.

As a result of the ruling of the Delaware Supreme Court, we no longer have a financial interest in Arestvyr™ and there can be no assurance that the Delaware Court of Chancery will issue a remedy that provides us with a financial interest in that product or another remedy.

In its May 2013 decision, the Delaware Supreme Court reversed the remedy ordered by the Delaware Court of Chancery and remanded the issue of a remedy back to the trial court for reconsideration in light of the Delaware Supreme Court's opinion. There can be no assurance that the Delaware Court of Chancery will issue a remedy that provides us with a financial interest in Arestvyr™ and related products, that SIGA will not appeal any subsequent decision by the Delaware Court of Chancery, or that SIGA will not be successful in any subsequent appeal. Even if the Delaware Court of Chancery does provide us a remedy with a financial interest in Arestvyr™, we may never receive any proceeds from SIGA's future sales of that product.

In addition to the risks that ordinarily accompany the development and commercialization of biodefense products, including with respect to government contracting activities (including protests filed by third parties), competition (which with respect to Arestvyr™ includes potential competing products being developed by Chimerix, Inc.), FDA and other regulatory approval and commercialization efforts, which are described elsewhere in our risk factors, any interest we may have in future sales of SIGA's product Arestvyr™ and related products is subject to additional risks.

In particular, SIGA's ability to deliver product to the strategic national stockpile ("SNS") (and potential foreign government purchasers), and the timing and profitability thereof (including the timing of SIGA's recognition of revenue related thereto), are subject to a number of significant risks and uncertainties (certain of which are outlined in SIGA's filings with the SEC) as to which we have limited knowledge and no ability to control, mitigate or fully evaluate. We have no first-hand knowledge of, and SIGA has not publicly disclosed, any information related to the potential margins or profitability of Arestvyr™ and related products.

Even if the Delaware Court of Chancery re-instates its prior remedy or another remedy granting us a financial interest in Arestvyr™, the potential value of any damages that may be awarded to us is subject to several variables, many of which are controlled by SIGA, and uncertainties, including the timing of any final decision by the courts, which preclude the current calculation of a predictable value of the SIGA litigation.

In its May 31, 2012 judgment, the Delaware Court of Chancery awarded us the right to receive 50% of certain profits related to the sale of Arestvyr™ and related products for a specified period of time once SIGA retained the first $40.0 million in profits. However, as noted in the prior risk factor, although the Delaware Supreme Court affirmed in May 2013 that SIGA breached contractual obligations to us, its remand of the issue of the remedy back to the Delaware Court of Chancery for reconsideration has effectively deprived us of any current financial interest on Arestvyr™ and related products. We cannot predict whether the Delaware Court of Chancery will re-instate its prior remedy or order another remedy.

We have taken the position in documents submitted to the courts, that our damages may be as high as $1.0 billion. SIGA has taken the position, in documents that it has submitted to the courts, that it owes us no or nominal damages. In addition, SIGA has taken post-judgment positions with respect to Arestvyr™ as to timing and costs (positions we dispute), which we expect SIGA may continue to take in the future, thus reducing or deferring SIGA's revenues from Arestvyr™ and related products and, correspondingly, potentially reducing or delaying any damages that would be owed to us. We intend to continue to vigorously pursue in court our position that, as a result of our successful breach of contract case against SIGA, we deserve significant damages in our award from the Delaware Court of Chancery. We can provide no assurance that we will succeed in our litigation strategy or, as stated above, that the Delaware Court of Chancery will re-instate its prior remedy or provide any remedy at all.

Even if we are awarded a remedy by the court, we are unable to control or predict the timing of sales of or whether or when SIGA will recognize any profits with respect to Arestvyr™ or related products. It is possible that SIGA could discontinue development, production or sales of Arestvyr™ and any related products at any time such that we would not collect any damages.

Our ability to use our net operating loss carryforwards (NOLs) may be limited.

We have incurred substantial losses during our history. If the Delaware Court of Chancery does not provide us with a remedy in our on-going litigation with SIGA that requires SIGA to make a significant lump sum payment to us or on-going payments related to sales or profits of Arestvyr™ and related products (and any such remedy is not affirmed on appeal), we are highly unlikely to be profitable for the foreseeable future and therefore, will not generate future taxable income that we can use our NOLs to offset. As of December 31, 2013, we had federal NOLs of $144.0 million. The $144.0 million in NOLs will begin to expire in various years between 2022 and 2033, if not limited by triggering events prior to such time. Under the provisions of the Internal Revenue Code changes in our ownership, in certain circumstances, will limit the amount of NOLs that can be utilized annually in the future to offset taxable income. In particular, Section 382 of the Internal Revenue Code imposes limitations on a company's ability to use NOLs upon certain changes in such ownership. If we are limited in our ability to use our NOLs in future years in which we have taxable income, we will pay more taxes than if we were able to utilize our NOLs fully. For example, as a result of a previous change in stock ownership, the annual utilization of the NOL carryforwards generated in tax years prior to 2007 may be subject to limitation. We have not completed an analysis under Section 382 to determine what, if any, impact any prior ownership change has had on our ability to utilize our NOLs. Until such analysis is completed, we cannot be sure that the full amount of the existing NOLs will be available to us, even if we do generate taxable income before their expiration. In addition, we may experience ownership changes in the future as a result of subsequent shifts in our stock ownership that could result in further limitations being placed on our ability to utilize our NOLs. Sales of shares by us pursuant to this prospectus could in fact result in ownership changes which could have the effect of creating additional limitations on our ability to utilize our NOLs. The Board of Directors may not undertake an analysis under Section 382 to determine the impact of any such sales on our ability to utilize our NOLs at the time it authorizes such sales.

Risks Related to Product Development and Commercialization

We have not commercialized any products or recognized any revenues from sales. SparVax® has been placed on clinical hold for a second time and our contract with BARDA has been partially terminated for convenience. All of our product candidates are still under development, and there can be no assurance of successful commercialization of any of our products.

We have not commercialized any product candidates or recognized any revenues from product sales. In general, our research and development programs are in development stages. There can be no assurances that one or more of our future product candidates will not fail to meet safety and efficacy standards in human testing, even if those product candidates are found to be effective in animal studies. To develop and commercialize biodefense treatment and prophylactic product candidates, we must provide the FDA and foreign regulatory authorities with human clinical and non-clinical animal data that demonstrate adequate safety and effectiveness. To generate these data, we will have to subject our product candidates to significant additional research and development efforts, including extensive non-clinical studies and clinical testing. We cannot be sure that our approach to drug discovery will be effective or will result in the development of any drug. Even if our product candidates are successful when tested in animals, such success would not be a guarantee of the safety or effectiveness of such product candidates in humans.

In August 2012, we received notification from the FDA that our SparVax® rPA anthrax vaccine program was placed on clinical hold prior to initiating any patient dosing in a planned Phase 2 clinical trial. The FDA requested additional stability data and information related to the stability indicating assays, which we supplied, and the FDA lifted the clinical hold in May 2013. In December 2013, we received notification from the FDA that our SparVax® rPA anthrax vaccine program was placed on clinical hold for a second time. Specifically the FDA observed a statistically significant downward trend in potency in the engineering lot of FDP manufactured in early 2012 and a similar but not statistically significant trend in the cGMP lot of SparVax® FDP produced four months later that we had intended to use in a planned Phase 2 clinical trial. PharmAthene recently completed the in-life portion of an ongoing non-clinical rabbit study which showed SparVax® to be beneficial in preventing anthrax infection in animals exposed to anthrax spores. This study was designed to evaluate the efficacy of SparVax® compared to BioThrax® in animals exposed to a lethal dose of anthrax. The study used the cGMP lot of SparVax® FDP that was 22 months old at the initial dose. The dose was repeated 28 days later using the same lot. Rabbits were vaccinated with an estimated human equivalent dose of each vaccine and the data showed 100% survival for both products. Additional data from future SparVax® clinical trials and non-clinical animal studies will be required to establish efficacy in humans. To move forward with clinical development of SparVax® and to be able to respond to the FDA's concerns, the FDA has requested that we produce a new cGMP lot of FDP, provide the lot release data to the FDA, and provide stability data to the FDA on the BDS we use to produce the final drug product lot. The FDA has also requested that we continue to collect stability data on the previously manufactured engineering and cGMP lots. We cannot be certain that we will be able to produce a cGMP lot of SparVax® FDP that the FDA will find acceptable and it is unclear at this point when or if we will be able to commence a Phase 2 human clinical trial of SparVax®. Consequently, SparVax® revenues will be substantially less overall than they otherwise would have been. The clinical hold will delay the commercialization, if any, of SparVax®, and we cannot offer any assurance that we will ever be able to continue or complete product development for SparVax®.

On April 4, 2014, we received notification from BARDA, advising us of its decision to de-scope the current SparVax® anthrax vaccine contract through a partial termination for convenience. BARDA has subsequently provided guidance authorizing PharmAthene to complete six activities under the contract. All other activities were de-scoped, including the proposed Phase 2 clinical trial. PharmAthene has proposed a timeline for completing these contract activities up to and including the submission of its settlement proposal. The company expects these events to occur in the third or fourth quarter of 2014. Reference is made to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2013, and the relevant exhibits thereto, for a description of the agreement. We do not expect that we will receive additional significant funding from BARDA for the further development of SparVax®.

If we cannot maintain successful licensing arrangements and collaborations, enter into new licensing arrangements and collaborations, or effectively accomplish strategic acquisitions, our ability to develop and commercialize a diverse product portfolio could be limited and our ability to compete may be harmed.

A key component of our business strategy is the in-licensing of compounds and products developed by other pharmaceutical and biotechnology companies or academic research laboratories. In addition, we have entered into licensing and research and development agreements with a number of other parties and collaborators. There can be no assurances that the research and development conducted pursuant to these agreements will result in revenue generating product candidates. If our suppliers, vendors, licensors, or other collaboration partners experience financial difficulties as a result of the weak economy, change in strategic direction (like the decision of our main CRO vendor on our rBChE program to cease its research and development operations, which caused us to locate a replacement vendor on an expedited basis), or if they are acquired as part of the current wave of consolidations in the pharmaceutical industry (such as, for example, with the acquisitions of Medarex by BMS and Diosynth Biotechnologies, Inc.'s parent company by Merck & Co., or Merck, Inc. in 2009 and of an Avecia subsidiary by Merck in 2010 and the subsequent acquisition of these two entities by Fujifilm in 2011), their priorities or our working relationship with them might change. As a result, they might shift resources away from the research, development and/or manufacturing efforts intended to benefit our products, which could lead to significant delays in our development programs and potential future sales. Our current licensing, research and development, and supply agreements may expire and may not be renewable or could be terminated if we do not meet our obligations. If we are not able to identify new licensing opportunities or enter into other licensing arrangements on acceptable terms, we may be unable to develop a diverse portfolio of products.

Necessary reliance on the Animal Rule in conducting trials is time-consuming and expensive.

To obtain FDA approval for our biological warfare defense products under current FDA regulations, we are required to utilize animal model studies for efficacy and provide animal and human safety data under the Animal Rule. For many of the biological and chemical threats, animal models are not yet available, and as such we are developing, or will have to develop, appropriate animal models, which is a time-consuming and expensive research effort. Further, we may not be able to sufficiently demonstrate the animal correlation to the satisfaction of the FDA, as these corollaries are difficult to establish and are often unclear. The FDA may decide that our data are insufficient for approval and require additional non-clinical, clinical or other studies, refuse to approve our products, or place restrictions on our ability to commercialize those products. Further, other countries have not, at this time, established criteria for review and approval of these types of products outside their normal review process, i.e., there is no Animal Rule equivalent, and consequently there can be no assurance that we will be able to make a submission for marketing approval in foreign countries based on such animal data.

Additionally, few facilities in the United States and internationally have the capability to test animals with anthrax, nerve agents, or other lethal biotoxins or chemical agents or otherwise assist us in qualifying the requisite animal models. We have to compete with other biodefense companies for access to this limited pool of highly specialized resources. We therefore may not be able to secure contracts to conduct the testing in a predictable timeframe or at all.

Even if we succeed in commercializing our product candidates, they may not become profitable and manufacturing problems or side effects discovered at later stages can further increase costs of commercialization.

We cannot assure you that any drugs resulting from our research and development efforts will become commercially available. Even if we succeed in developing and commercializing our product candidates, they may never generate sufficient or sustainable revenues to enable us to be profitable.

Even if effective, a product that reaches market may be subject to additional clinical trials, changes to or re-approvals of our manufacturing facilities or a change in labeling if we or others identify side effects or manufacturing problems after a product is on the market. This could harm sales of the affected products and could increase the cost and expenses of commercializing and marketing them. It could also lead to the suspension or revocation of regulatory approval for the products.

We and our CMOs will also be required to comply with the applicable FDA cGMP regulations. These regulations include requirements relating to quality control and quality assurance as well as the corresponding maintenance of records and documentation. Manufacturing facilities are subject to inspection by the FDA. These facilities must be approved to supply licensed products to the commercial marketplace. We and our contract manufacturers may not be able to comply with the applicable cGMP requirements and other FDA regulatory requirements. Should we or our contract manufacturers fail to comply, we could be subject to fines or other sanctions or could be precluded from marketing our products.

We may become subject to product liability claims, which could reduce demand for our product candidates or result in damages that exceed our insurance coverage.

We face an inherent risk of exposure to product liability suits in connection with our product candidates being tested in clinical trials or sold commercially. We may become subject to a product liability suit if any product we develop causes injury, or if treated individuals subsequently become infected or suffer adverse effects from our products. Regardless of merit or eventual outcome, product liability claims may result in decreased demand for a product, injury to our reputation, withdrawal of clinical trial volunteers, and loss of revenues.

In addition, if a product liability claim is brought against us, the cost of defending the claim could be significant and any adverse determination may result in liabilities in excess of our insurance coverage. Although our anthrax countermeasures are covered under the general immunity provisions of the U.S. Public Readiness and Emergency Preparedness Act (the "Public Readiness Act"), there can be no assurance that the U.S. Secretary of HHS will make other declarations in the future that cover any of our other product candidates or that the U.S. Congress will not act in the future to reduce coverage under the Public Readiness Act or to repeal it altogether. For further discussion of that act, see "—Legislation limiting or restricting liability for medical products used to fight bioterrorism is new, and it cannot be certain that any such protection will apply to our products or if applied what the scope of any such coverage will be." Additionally, we are considering applying for indemnification under the U.S. Support Anti-terrorism by Fostering Effective Technologies (SAFETY) Act of 2002 which preempts and modifies tort laws so as to limit the claims and damages potentially faced by companies who provide certain "qualified" anti-terrorism products. However, we cannot be certain that we will be able to obtain or maintain coverage under the SAFETY Act or adequate insurance coverage on acceptable terms, if at all.

If we cannot effectively accomplish strategic acquisitions or business combinations, generally, our ability to develop and commercialize a diverse product portfolio could be limited and our ability to compete may be harmed.

We may pursue strategic acquisitions and business combinations to further development and commercialization efforts, which could result in our incurring significant out of pocket costs as well as expending management time and those of other employees. To achieve the anticipated benefits of an acquisition, there must be an integration of the two companies' businesses, technologies and employees in an efficient and effective manner. The successful combination of companies in a rapidly changing life sciences industry may be more difficult to accomplish than in other industries. The combination of two companies requires, among other things, integration of the companies' respective technologies and research and development efforts. We cannot assure you that any integration will be accomplished smoothly or successfully. The difficulties of integration are increased by the need to coordinate geographically separated organizations and address possible differences in corporate cultures and management philosophies. The integration of certain operations will require the dedication of management resources that may temporarily distract attention from the day-to-day operations of the combined companies. The business of the combined companies may also be disrupted by employee retention uncertainty and lack of focus during integration. The inability of management to integrate successfully the operations of the two companies, in particular, to integrate and retain key scientific personnel, or the inability to integrate successfully two technology platforms, could have a material adverse effect on our business, results of operations and financial condition.

Risks Related to Our Dependence on U.S. Government Contracts

All of our immediately foreseeable future revenues are contingent upon grants and contracts from the U.S. government and we may not achieve sufficient revenues from these agreements to attain profitability.

For the foreseeable future, we believe our main customer will be the U.S. government. Substantially all of our revenues to date have been derived from grants and U.S. government contracts. There can be no assurances that we can enter into new contracts or receive new grants to supply the United States or other governments with our products. The process of obtaining government contracts is lengthy and uncertain.

On April 4, 2014, we received notification from BARDA, advising us of its decision to de-scope the current SparVax® anthrax vaccine contract through a partial termination for convenience. We do not expect that we will receive additional significant funding from BARDA for the further development of SparVax®. If the U.S. government makes significant contract awards for the supply to the SNS to our competitors, rather than to us, our business may be harmed and we may ultimately be unable to supply that particular treatment or product to foreign governments or other third parties. Further, changes in U.S. government budgets and agendas, funding strategies, cost overruns in our programs, or advances by our competitors, may result in changes in the timing of funding for, a decreased and de-prioritized emphasis on, or termination of, U.S. government contracts that support the development and/or procurement of the biodefense products we are developing. For example, while RFP-BARDA-08-15 for an rPA-based anthrax vaccine for the SNS initially indicated that the U.S. government would make an award by September 26, 2008, the award was delayed multiple times and ultimately canceled in December 2009.

Funding is subject to U.S. Congressional appropriations, which are generally made on an annual basis even for multi-year contracts. More generally, due to the ongoing economic uncertainty, the U.S. government may reduce or delay spending in the biodefense field or eliminate funding of certain programs altogether, which could decrease the likelihood of future government contract awards or that the government would procure products from us. Future funding levels for two of our key government customers, BARDA and the U.S. Department of Defense, for the advanced development and procurement of MCMs are uncertain, and may be subject to budget cuts as the U.S. Congress and the President look to reduce the nation's budget deficit. The Pandemic and All-Hazards Preparedness Reauthorization Act ("PAHPRA") signed into law in March 2013, authorized $2.8 billion in funding for the SRF for fiscal years 2014-2018. These funds are for the procurement of MCMs. PAHPRA also authorized $415.0 million in funding to BARDA for advanced development activities. However, actual funding for BARDA is dependent on annual congressional appropriations and congress is not obligated to appropriate the authorized amount. The fiscal year 2014 appropriation for BARDA advanced development is consistent with PAHPRA at $415.0 million. The fiscal year 2014 appropriation for the SRF is $255.0 million.

Our product development contract for Valortim® with NIAID expired January 31, 2012. In 2013 we entered into a contract for approximately $1.0 million to supply 35 vials of master cell bank for Valortim® to BARDA. There can be no assurance we will be successful in obtaining additional financial support to develop or procure Valortim®.

U.S. government agencies have special contracting authority that give them the ability to unilaterally terminate and/or modify our contracts.

U.S. government contracts typically contain unilateral changes and termination provisions for the government and are subject to audit by the government at its sole discretion, which will subject us to additional risks. These risks include the ability of the U.S. government unilaterally to:

- preclude us, either temporarily or for a set period of time, from receiving new contracts or extending existing contracts based on violations or suspected violations of laws or regulations;
- terminate our contracts, either for the convenience of the government (at the government's sole discretion, for example, if funds become unavailable or the government no longer wants the work) or for default (for failing to perform in accordance with the contract);
- revise the scope and value of our contracts and/or revise the timing for work to be performed;
- audit and object to our contract-related costs and fees, including allocated indirect costs;
- control and potentially prohibit the export of our products;
- claim rights to intellectual property, including products, developed under the contract;
- add, remove, or change the terms and conditions in our contracts; and
- cancel or amend planned procurements, including outstanding RFP solicitations (as was the case with RFP-BARDA-08-15) and BAAs.

The U.S. government will be able to terminate any of its contracts with us either for its convenience (at its sole discretion) or for default if we fail to perform in accordance with the contract. Termination-for-convenience provisions generally enable us to recover only our costs incurred or committed, settlement expenses, and profit on the work completed prior to termination. Termination-for-default provisions do not permit these recoveries and would make us liable for excess costs incurred by the U.S. government in procuring undelivered items from another source.

The U.S. government may reduce or delay spending in the biodefense field or eliminate funding of certain programs altogether, which could decrease the likelihood of future government contract awards, the likelihood that the government will exercise its right to extend any of its existing contracts with us and/or the likelihood that the government would procure products from us.

The U.S. government's determination to award any contracts may be challenged by an interested party, such as another bidder, at the relevant agency, U.S. Government Accountability Office ("GAO") or in federal court. If such a challenge is successful, a contract award may be re-evaluated and terminated.

The laws and regulations governing the procurement of goods and services by the U.S. government provide procedures by which other interested parties (typically, other bidders) may challenge the award of a government contract. If we are awarded a government contract, such challenges or protests could be filed, regardless of whether the award was actually improper. If a protest is filed, the government agency may decide, and in certain circumstances is required, either by statute or by court order, to suspend our performance under the contract while the protest is being considered by the GAO, or the applicable federal court, thus potentially delaying delivery of goods and services and payment. In addition, we might need to expend considerable funds to defend any potential award. If a protest is successful, the government may be ordered to re-evaluate bids and make an award based on the re-evaluation or amend the solicitation, invite new bids, and make an award based on an evaluation of such revised bids.

For example, in March 2010, a third-party filed a bid protest with the GAO challenging the February 2010 decision of the HHS to modify its existing research and development contract with us for the development of SparVax®. In March 2010 HHS suspended performance under the modification pursuant to the automatic stay provisions of the Competition in Contracting Act (31 U.S.C. § 3553(d)) and implementing provisions of the Federal Acquisition Regulation (FAR), pending a decision by the GAO on the protest. While the bid protest was ultimately denied, and the related HHS "stop work" order canceled in June 2010, the protest contributed to a reduction in revenues and cash and cash equivalents over the period that work could not be performed under the modification. In addition, we incurred unexpected general and administrative expenses to intervene in the protest and assist HHS in defending the contract modification. While we cannot be assured that the Delaware Court of Chancery will issue a remedy that provides us with a financial interest in Arestvyr™ and related products or any remedy, another example, of an award challenge occurred in October 2010 when a losing bidder filed a successful protest with the U.S. Small Business Administration claiming that SIGA did not qualify as a small business entitled to a contract award under RFP-BARDA-09-35 for a smallpox antiviral. When the government subsequently issued a contract to SIGA in May 2011 without the small business requirement, this same losing bidder filed a second protest, this time with the GAO. While this protest was withdrawn, in exchange for dropping the protest, the government agreed to remove an option from the contract permitting the government to purchase up to 12.0 million additional courses of therapy of Arestvyr™ beyond the base purchase of 1.7 million courses of therapy.

In addition, as a result of the partial U.S. government shutdown from October 1 through October 16, 2013, work was temporarily suspended under our development contract for SparVax®. Consequently, our revenues under this contract for the fourth quarter of 2013 were lower than they otherwise could have been.

Our business is subject to audit by the U.S. government, and a negative audit could adversely affect our business.

U.S. government agencies such as the Defense Contract Audit Agency ("DCAA") have the authority to audit government contractors. These agencies review a contractor's performance under its contracts, cost structure and compliance with applicable laws, regulations and standards.

The DCAA also reviews the adequacy of, and a contractor's compliance with, its internal control systems and policies, including the contractor's purchasing, property, estimating, compensation and management information systems. Any costs found to be improperly allocated to a specific contract will not be reimbursed, while such costs already reimbursed must be refunded. If an audit uncovers improper or illegal activities, we may be subject to civil and criminal penalties and administrative sanctions, including:

- termination of contracts;
- forfeiture of profits;
- suspension of payments;
- fines; and
- suspension or debarment from conducting business with the U.S. government for a designated period of time.

In addition, we could suffer serious reputational harm if allegations of impropriety were made against us.

Laws and regulations affecting government contracts make it more costly and difficult for us to successfully conduct our business.

We must comply with numerous laws and regulations relating to the formation, administration and performance of government contracts, which can make it more difficult for us to retain our rights under these contracts. These laws and regulations affect how we conduct business with government agencies. Among the most significant government contracting regulations that affect our business are:

- the FAR, and agency-specific regulations supplemental to the FAR, which comprehensively regulate the procurement, from formation to administration and performance;
- the business ethics and public integrity obligations, which, among other things, govern conflicts of interest and the hiring of former government employees, prohibit gratuities, restrict funding of lobbying activities and incorporate other requirements such as the Anti-Kickback Act, the Procurement Integrity Act, the False Claims Act and the Foreign Corrupt Practices Act;
- export and import control laws and regulations;
- laws, regulations and executive orders restricting the use and dissemination of information classified for national security purposes and the exportation of certain products and technical data; and
- laws, regulations, and executive orders that allow the government to claim certain rights to contractors' intellectual property such as the Bayh-Dole Act.

Foreign governments typically also have laws and regulations governing contracts with their respective agencies. These foreign laws and regulations affect how we and our customers conduct business and, in some instances, impose added costs on our business. Any changes in applicable laws and regulations could restrict our ability to maintain our existing contracts and obtain new contracts, which could limit our ability to conduct our business and materially adversely affect our revenues and results of operations.

Risks Related to Dependence on or Competition From Third Parties

Because we depend on contract research organizations and other contractors for clinical and non-clinical testing, including testing under the Animal Rule, and for certain research and development activities, the results of our clinical trial, non-clinical animal efficacy studies, and research and development activities are largely beyond our control.

The nature of clinical trials and our business strategy of outsourcing substantially all of our research and development and manufacturing work require that we rely on clinical research organizations and other contractors to assist us with research and development, clinical and non-clinical testing (including animal efficacy studies under the Animal Rule), patient enrollment, manufacturing and other activities. As a result, our success depends largely on the success of these third parties in performing their responsibilities. Although we prequalify our contractors and believe that they are fully capable of performing their contractual obligations, we cannot directly control the adequacy and timeliness of the resources and expertise that they apply to these activities. Furthermore, we have to compete with other biodefense and biopharmaceutical companies for access to this limited pool of highly specialized resources. If our contractors do not perform their obligations in an adequate and timely manner or we are unable to enter into contracts with them, the pace of clinical or non-clinical development, regulatory approval and commercialization of our product candidates could be significantly delayed and our prospects could be adversely affected.

We depend on third parties to manufacture, package and distribute compounds for our product candidates and key components for our product candidates. The failure of these third parties to provide their services or to perform them successfully could harm our business.

We do not have any of our own manufacturing facilities. We have therefore utilized, and intend to continue utilizing, third parties to manufacture, package and distribute our product candidates and key components of our product candidates. Any material disruption in manufacturing (i.e., due to third party capacity or availability limitations) could cause a delay in our development programs and potential future sales. Furthermore, certain compounds, media, or other raw materials used to manufacture our drug candidates are available from any one or a limited number of sources. Any delays or difficulties in obtaining key components for our product candidates or in manufacturing, packaging or distributing our product candidates could delay clinical trials and further development of these potential products. Additionally, the third parties we rely on for manufacturing and packaging are subject to regulatory review, and any regulatory compliance problems with these third parties could significantly delay or disrupt our commercialization activities.

Finally, third-party manufacturers, suppliers and distributors, like most companies, have been adversely affected by the credit crisis and weakening of the global economy and as such may be more susceptible to being acquired as part of the current wave of consolidations in the pharmaceutical industry. It has, for example, become challenging for companies to secure debt capital to fund their operations as financial institutions have significantly curtailed their lending activities. If our third-party suppliers continue to experience financial difficulties as a result of weak demand for their products or for other reasons and are unable to obtain the capital necessary to continue their present level of operations or are acquired by others, they may have to reduce their activities and/or their priorities or our working relationship with them might change. A material deterioration in their ability or willingness to meet their obligations to us could cause a delay in our development programs and potential future sales and jeopardize our ability to meet our obligations under our contracts with the government or other third parties.

We face, and likely will continue to face, competition from companies with greater financial, personnel and research and development resources. Our commercial opportunities will be reduced or eliminated if our competitors are more successful in the development and marketing of their products.

The biopharmaceutical industry is characterized by rapid and significant technological change. Our success will depend on our ability to develop and apply our technologies in the design and development of our product candidates and to establish and maintain a market for our product candidates. There are many organizations, both public and private, including major pharmaceutical and chemical companies, specialized biotechnology firms, universities and other research institutions engaged in developing pharmaceutical and biotechnology products. Many of these organizations have substantially greater financial, technical, intellectual property, research and development, and human resources than we have. Competitors may develop products or other technologies that are more effective than any that we are developing or may obtain FDA approval for products more rapidly. For example, the U.S. government selected a plague vaccine product candidate from a competitor for advanced development funding, causing us to wind down activities related to the development of our RypVax™ product candidate in 2010.

If we commence commercial sales of products, we still must compete in the manufacturing and marketing of such products, areas in which we have limited experience. Many of these organizations also have manufacturing facilities and established marketing capabilities that would enable such companies to market competing products through existing channels of distribution. Our commercial opportunities will be reduced or eliminated if our competitors develop and market products that:

- are more effective;
- have fewer or less severe adverse side effects;
- are more adaptable to various modes of dosing;
- obtain orphan drug exclusivity that blocks the approval of our application for seven years;
- are easier to administer; or
- are less expensive than the products or product candidates that we are, or in the future will be, developing.

The Biologics Price Competition and Innovator Act (BPCIA), part of the Patient Protection and Affordable Care Act (Affordable Care Act), signed into law by President Obama on March 23, 2010, amends the Public Health Service Act to create an abbreviated licensure pathway for biological products that are demonstrated to be "biosimilar" to or "interchangeable" with an FDA-licensed biological product. Under this new law, a biological product may be demonstrated to be "biosimilar" if data show that, among other things, the product is "highly similar" to an already-approved biological product. To date, the FDA has not approved a biological product as biosimilar or interchangeable. Since passage of the BPCIA, however, the FDA has published several guidance documents providing recommendations for the development of biosimilar products. Because biological products are complex products, the development and approval of biosimilars is a complicated and challenging process. It has been reported that several companies are developing biosimilar products and may submit applications for licensure under the new law. It is not yet known when the first biosimilar will be on the U.S. market.

If we are successful in developing licensed biological products and a competitor company/companies choose to develop biosimilar products and receives FDA licensure for such products, this competition may impact the revenue projections for our products.

Even if we are successful in developing effective products, and obtain FDA and other regulatory approvals necessary for commercializing them, our products may not compete effectively with other successful products. Our competitors may succeed in developing and marketing products either that are more effective than those that we may develop, alone or with our collaborators, making our products obsolete, or that are marketed before any products that we develop are marketed.

Risks Related to Political and Social Factors

Political or social factors may delay or impair our ability to market our products and our business may be materially adversely affected.

Products developed to treat diseases caused by, or to combat the threat of, bioterrorism will be subject to changing political and social environments. The political and social responses to bioterrorism have been unpredictable. Political or social pressures may delay or cause resistance to bringing our products to market or limit pricing of our products, which would harm our business.

Risks Related to Intellectual Property

Our commercial success will be affected significantly by our ability (i) to obtain and maintain protection for our proprietary technology and that of our licensors and collaborators and (ii) not to infringe on patents and proprietary rights of third parties.

Issues surrounding patents of biotechnology firms often involve complex legal and factual questions, and, therefore, validity and enforceability cannot be predicted with certainty. To date, no consistent policy has emerged regarding the breadth of claims allowed in biotechnology patents. We currently have one U.S. patent and three pending U.S. patent applications, and have a limited number of foreign patents and pending international patent applications. In addition, we have rights under numerous other patents and patent applications pursuant to exclusive and non-exclusive license arrangements with licensors and collaborators. However, there can be no assurance that patent applications owned or licensed by us will result in patents being issued or that the patents, whether existing or issued in the future, will afford protection against competitors with similar technology. Any conflicts resulting from third-party patent applications and patents could significantly reduce the coverage of the patents owned, optioned by or licensed to us or our collaborators and limit our ability or that of our collaborators to obtain meaningful patent protection. Further, our commercial success will depend significantly on our ability to operate without infringing the patents and proprietary rights of third parties. We are aware of one U.S. patent covering recombinant production of an antibody and a license may be required under such patent with respect to Valortim®, which is a monoclonal antibody and uses recombinant production technologies. Although the patent owner has granted licenses under such patent, we cannot provide any assurances that we will be able to obtain such a license or that the terms thereof will be reasonable. If we do not obtain such a license and if a legal action based on such patent was to be brought against us or our distributors, licensees or collaborators, we cannot provide any assurances that we or our distributors, licensees or collaborators would prevail or that we have sufficient funds or resources to defend such claims.

The costs associated with establishing the validity of patents, of defending against patent infringement claims of others and of asserting infringement claims against others is expensive and time consuming, even if the ultimate outcome is favorable. An outcome of any patent prosecution or litigation that is unfavorable to us or one of our licensors or collaborators may have a material adverse effect on us. The expense of a protracted infringement suit, even if ultimately favorable, would also have a material adverse effect on us.

We furthermore rely upon trade secrets protection for our confidential and proprietary information. We have taken measures to protect our proprietary information; however, these measures may not provide adequate protection to us. We have sought to protect our proprietary information by entering into confidentiality agreements with employees, collaborators and consultants. Nevertheless, employees, collaborators or consultants may still disclose our proprietary information, and we may not be able to meaningfully protect our trade secrets. In addition, others may independently develop substantially equivalent proprietary information or techniques or otherwise gain access to our trade secrets.

Risks Related to Regulatory Approvals and Legislation

Our use of hazardous materials and chemicals requires us to comply with regulatory requirements which may result in significant costs and expose us to potential liabilities.

Our research and development involves the controlled use of hazardous materials and chemicals. We are subject to federal, state, local and foreign laws governing the use, manufacture, storage, handling and disposal of such materials. We will not be able to eliminate the risk of accidental contamination or injury from these materials. In the event of such an accident, we could be forced to pay significant damages or fines, and these damages could exceed our resources and any applicable insurance coverage. In addition, we may be required to incur significant costs to comply with regulatory requirements in the future.

Legislation limiting or restricting liability for medical products used to fight bioterrorism is new, and it cannot be certain that any such protection will apply to our products or if applied what the scope of any such coverage will be.

The U.S. Public Readiness Act was signed into law in December 2005 and creates general immunity for manufacturers of countermeasures, including security countermeasures (as defined in Section 319F-2(c)(1)(B) of that act), when the U.S. Secretary of HHS issues a declaration for their manufacture, administration or use. The declaration is meant to provide general immunity from all claims under state or federal law for loss arising out of the administration or use of a covered countermeasure. Manufacturers are excluded from this protection in cases of willful misconduct. Although our anthrax countermeasures have been covered under the general immunity provisions of the Public Readiness Act since October 1, 2008, there can be no assurance that the Secretary of HHS will make other declarations in the future that would cover any of our other product candidates or that the U.S. Congress will not act in the future to reduce coverage under the Public Readiness Act or to repeal it altogether.

Upon a declaration by the Secretary of HHS, a compensation fund would be created to provide "timely, uniform, and adequate compensation to eligible individuals for covered injuries directly caused by the administration or use of a covered countermeasure." The "covered injuries" to which the program applies are defined as serious physical injuries or death. Individuals are permitted to bring a willful misconduct action against a manufacturer only after they have exhausted their remedies under the compensation program. A willful misconduct action could be brought against us if an individual(s) has exhausted their remedies under the compensation program which thereby could expose us to liability. Furthermore, there is no assurance that the Secretary of HHS will issue under this act a declaration to establish a compensation fund. We may also become subject to standard product liability suits and other third party claims if products we develop which fall outside of the Public Readiness Act cause injury or if treated individuals subsequently become infected or otherwise suffer adverse effects from such products.

We are required to comply with certain export control laws, which may limit our ability to sell our products to non-U.S. persons and may subject us to regulatory requirements that may delay or limit our ability to develop and commercialize our products.

Our product candidates are subject to the Export Administration Regulations ("EAR"), administered by the U.S. Department of Commerce and are, in certain instances (such as aspects of our nerve agent countermeasure product candidates) subject to the International Traffic in Arms Regulations ("ITAR"), administered by the U.S. Department of State. The EAR restricts the export of dual-use products and technical data to certain countries, while ITAR restricts the export of defense products, technical data and defense services. The U.S. government agencies responsible for administering EAR and ITAR have significant discretion in the interpretation and enforcement of these regulations. Failure to comply with these regulations can result in criminal and civil penalties and may harm our ability to enter into contracts with the U.S. government. It is also possible that these regulations could adversely affect our ability to sell our products to non-U.S. customers.

Risks Related to Personnel

We depend on our key technical and management personnel, and the loss of these personnel could impair the development of our products.

We rely, and will continue to rely, on our key management and scientific staff, all of whom are employed at-will. The loss of key personnel or the failure to recruit necessary additional qualified personnel could have a material adverse effect on our business and results of operations. There is intense competition from other companies, research and academic institutions and other organizations for qualified personnel. We may not be able to continue to attract and retain the qualified personnel necessary for the development of our business. If we do not succeed in retaining and recruiting necessary personnel or developing this expertise, our business could suffer significantly.

Biotechnology companies often become subject to claims that they or their employees wrongfully used or disclosed alleged trade secrets of the employees' former employers. Such litigation could result in substantial costs and be a distraction to our management.

As is commonplace in the biotechnology industry, we employ individuals who were previously employed at other biotechnology or pharmaceutical companies, including at competitors or potential competitors. Although no claims against us are currently pending, we may be subject to claims that we or our employees have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers. Litigation may be necessary to defend against these claims. Even if we are successful in defending against these claims, litigation could result in substantial costs and distract management.

Risks Related to our Common Stock and our GE Loan Agreement

If we do not meet the continued listing standards of the NYSE MKT our common stock could be delisted from trading, which could limit investors' ability to make transactions in our common stock and subject us to additional trading restrictions.

Our common stock is listed on the NYSE MKT, a national securities exchange, which imposes continued listing requirements with respect to listed shares. If, however, we fail to satisfy the continued listing standards, such as, for example, the requirement that our shares not trade "for a substantial period of time at a low price per share" or that we not dispose of our principal operating assets or discontinue a substantial portion of our operations, among other requirements, the NYSE MKT may issue another non-compliance letter or initiate delisting proceedings.

If our securities are delisted from trading on the NYSE MKT and we are not able to list our securities on another exchange or to have them quoted on NASDAQ, our securities could be quoted on the OTC Bulletin Board or on the "pink sheets." As a result, we could face significant adverse consequences including:

- a limited availability of market quotations for our securities;
- a determination that our common stock is a "penny stock" which will require brokers trading in our common stock to adhere to more stringent rules and possibly result in a reduced level of trading activity in the secondary trading market for our securities;
- a limited amount of news and analyst coverage for us; and
- a decreased ability to issue additional securities (including pursuant to short-form registration statements on Form S-3 or obtain additional financing in the future).

Our stock price is volatile.

The market price of our common stock has been, and is expected to continue to be, subject to significant volatility. The value of our common stock may decline regardless of our operating performance or prospects. Factors that may affect our market price include:

- our perceived prospects, including but not limited to any developments in the timing and outcome of the SIGA litigation and changes in U.S. government funding of projects in which we participate;
- variations in our operating results and whether we have achieved key business targets;
- changes in, or our failure to meet, revenue estimates;
- changes in securities analysts' buy/sell recommendations;
- differences between our reported results and those expected by investors and securities analysts;
- announcements of new contracts or other developments by us or our competitors;
- reaction to any acquisitions, joint ventures or strategic investments announced by us or our competitors; and
- general economic, political or stock market conditions.

Shares that we may issue in the future in connection with certain capital-raising transactions and shares available for future issuance upon exercise of warrants and options could dilute our stockholders and depress the market price of our common stock.

The issuance of our securities in the future may depress the market price of our stock, and any such financing(s) will dilute our existing stockholders.

In addition, as of March 31, 2014, we had outstanding options to purchase approximately 6.9 million shares of common stock (not including restricted shares). Additional shares are reserved for issuance under our 2007 Long-Term Incentive Compensation Plan. Our stock options are generally exercisable for ten years, with a significant portion exercisable either immediately or beginning one year after the date of the grant.

As of May 15, 2014, aggregate gross sales for additional common stock of approximately $4.6 million remained available under the March 25, 2013 controlled equity offering entered into with a sales agent pursuant to which we may offer and sell, from time to time, through the agent shares of our common stock having an aggregate offering price of up to $15,000,000.

We filed two registration statements on Form S-3 (File Nos. 333-161587 and 333-176607) covering the resale of shares issued upon conversion of our 10% convertible notes and issuable upon exercise of related warrants by certain of our affiliates, among other security holders. Both registration statements have been declared effective. Our obligation under the terms of the related registration rights agreement is to keep these registration statements effective. The sale by these security holders of their shares pursuant to the registration statement or otherwise could depress the market price of our common stock.

Finally, as of March 31, 2014, we had issued and outstanding additional warrants to purchase up to approximately 5.6 million shares of common stock.

The issuance or even the expected issuance of a large number of shares of our common stock upon purchase, conversion or exercise of the securities described above could depress the market price of our stock and the issuance of such shares will dilute the stock ownership of our existing stockholders. Shares that we may issue in the future in connection with certain capital-raising transactions and shares available for future issuance upon exercise of warrants and options could dilute our stockholders and depress the market price of our common stock.

We can give no assurances that we will ever pay dividends.

The GE Loan Agreement specifically restricts the declaration or payment of any dividends. We have never paid any dividends on our common stock, and we do not intend to declare any dividends in the foreseeable future. While subject to periodic review, our current policy is to retain all earnings, if any, primarily to finance our future growth. We make no assurances that we will ever pay dividends, cash or otherwise. Whether we pay any dividends in the future will depend on our financial condition, results of operations, and other factors that we will consider.

Our fully-secured GE Loan Agreement is subject to acceleration in specified circumstances, which may result in GE Capital terminating the commitment, accelerating repayment of obligations or taking possession and disposing of any collateral.

In the first quarter 2012, we closed on a senior fully-secured debt facility with GE Capital providing for a $2.5 million term loan and a revolving line of credit of up to $5.0 million based on a percentage of our outstanding qualified accounts receivable. Our obligations under the GE Loan Agreement are secured by a security interest in substantially all of our assets. While the security interest does not, except in limited circumstances, cover our intellectual property, it does cover any proceeds to us from the use of intellectual property. The GE Loan Agreement contains customary representations, warranties and covenants, including limitations on acquisitions, dispositions, incurrence of indebtedness and the granting of security interests. Upon the occurrence and during the continuance of any event of default, GE Capital may, and at the written request of the requisite lenders shall, terminate the commitments under the facilities and declare any or all of the obligations to be immediately due and payable, without demand or notice to us. Any event of default relating to timely payment of debts, insolvency, liquidation, bankruptcy or similar events will result in automatic acceleration. Among the remedies available to GE Capital in case of an event of default are terminating the commitment, accelerating repayment of obligations or taking possession and disposition of any collateral under the GE Loan Agreement.

We owe GE Capital, as of March 31, 2014, an aggregate of approximately $1.5 million under the GE Loan Agreement. As a result of the receipt of the notice that we received from BARDA on April 4, 2014 advising us of its decision to de-scope the current SparVax® anthrax vaccine contract through a partial termination for convenience, and its subsequent communication, and any further communications that we may receive from BARDA in the future, GE Capital could assert that there has occurred an event of default under the GE Loan Agreement, which would allow GE Capital to terminate the commitment and the loans under the GE Loan Agreement and declare any or all of the obligations thereunder to be immediately due and payable.

USE OF PROCEEDS

We will retain broad discretion over the use of net proceeds to us from the sale of our securities offered hereby. Except as may be otherwise described in a prospectus supplement, we currently anticipate using any net proceeds to us for general corporate purposes, which may include working capital, research and development expenses, general and administrative expenses, and capital expenditures. We may also use a portion of the net proceeds to acquire or invest in businesses, products and technologies that are complementary to our own, although we have no present definitive commitments or agreements for any such transactions on the date of this Registration Statement. The amounts and timing of our actual expenditures for each purpose may vary significantly depending upon numerous factors, including the actual amount of proceeds we receive, the status of our research and product development efforts, regulatory approvals, competition and economic or other conditions.

Pending the application of such proceeds, we may invest the proceeds in short-term, interest bearing, investment-grade marketable securities or money market obligations.

DESCRIPTION OF COMMON STOCK

Under our Amended and Restated Certificate of Incorporation, as amended, to which we refer as our "charter," we are currently authorized to issue 100,000,000 shares of common stock, par value $.0001 per share. As of May 15, 2014, we had 54,542,015 shares of common stock outstanding.

Holders of our common stock are entitled to one vote for each share of common stock held of record on all matters to be voted on by stockholders, except as otherwise provided by law or in any preferred stock designation. Our bylaws specify that, except as otherwise required by law or our charter, the presence in person or by proxy of holders of a majority of the shares entitled to vote at a meeting of stockholders will be necessary, and will constitute a quorum, for the transaction of business at such meeting. Our bylaws furthermore specify that all elections of directors will be determined by a plurality of the votes and that, except as otherwise provided by law or in the charter or bylaws, any other matter will be determined by the vote of a majority of the shares which are voted with regard to it. Holders of our common stock have no conversion, preemptive or other subscription rights and there are no sinking fund or redemption provisions applicable to the common stock.

There is no cumulative voting with respect to the election of directors, with the result that the holders of more than 50% of the shares voting for the election of directors can elect all of the directors then up for election. Holders of our common stock are entitled to receive dividends when, as and if declared by our Board of Directors out of funds legally available therefor. In the event of our liquidation, dissolution or winding up, the holders of common stock are entitled to share in all assets remaining which are available for distribution to them after payment of liabilities and after provision has been made for each class of stock, if any, having preference over the common stock.

Transfer Agent

The transfer agent and registrar for the common stock is Continental Stock Transfer & Trust Company, New York, New York.

DESCRIPTION OF PREFERRED STOCK

Under our charter, we are currently authorized to issue 1,000,000 shares of preferred stock, par value $.0001 per share. As of the date of this prospectus, we had no shares of preferred stock outstanding.

Under our charter, our Board of Directors is expressly granted authority to issue shares of preferred stock, in one or more series, and to fix for each series such voting powers, full or limited, and such designations, preferences and relative, participating, optional or other special rights and such qualifications, limitations or restrictions as it may determine in the resolution or resolutions providing for the issue of such series (to which we also refer as a "preferred stock designation") and as may be permitted by the Delaware General Corporation Law. The number of authorized shares of preferred stock may be increased or decreased (but not below the number of shares of preferred stock then outstanding) by the affirmative vote of the holders of a majority of the voting power of all of the then outstanding shares of our capital stock entitled to vote generally in the election of directors, voting together as a single class, without a separate vote of the holders of the preferred stock, or any series of preferred stock, unless a vote of any such holders is required pursuant to any preferred stock designation.

This section describes the general terms of our preferred stock to which any prospectus supplement may relate. A prospectus supplement will describe the terms relating to any preferred stock to be offered by us in greater detail, and may provide information that is different from the information described in this prospectus. If the information in the prospectus supplement with respect to the particular preferred stock being offered differs from the information in this prospectus, you should rely on the information in the prospectus supplement. A copy of our charter has been incorporated by reference from our filings with the SEC as an exhibit to the registration statement of which this prospectus is a part. A certificate of designations will specify the terms of the preferred stock being offered, and will be filed as an exhibit to the registration statement of which this prospectus is a part or incorporated by reference from a report that we file with the SEC.

The rights and terms relating to any new series of preferred stock could adversely affect the voting power or other rights of the holders of the common stock or could be utilized, under certain circumstances, as a method of discouraging, delaying or preventing a change in control of the Company.

The following description of our preferred stock, together with any description of our preferred stock in a related prospectus supplement, summarizes the material terms and provisions of the preferred stock that we may sell under this prospectus. We urge you to read the applicable prospectus supplement(s) related to the particular series of preferred stock that we sell under this prospectus and to the actual terms and provisions contained in our charter (certificate of designations) and bylaws, each as amended from time to time.

Terms

Our Board of Directors will fix the rights, preferences, privileges, qualifications and restrictions of the preferred stock of each series that we sell under this prospectus and applicable prospectus supplements in the certificate of designations relating to that series. We will file as an exhibit to the registration statement of which this prospectus is a part or incorporate by reference the form of any certificate of designations that describes the terms of the series of preferred stock we are offering in connection with the issuance of the related series of preferred stock. This description of the preferred stock in the certificate of designations and any applicable prospectus supplement may include:

- the number of shares of preferred stock to be issued and the offering price of the preferred stock;
- the title and stated value of the preferred stock;
- dividend rights, including dividend rates, periods, or payment dates, or methods of calculation of dividends applicable to the preferred stock;
- whether dividends will be cumulative or non-cumulative, and if cumulative the date from which distributions on the preferred stock shall accumulate;

- right to convert the preferred stock into a different type of security;
- voting rights, if any, attributable to the preferred stock;
- rights and preferences upon our liquidation or winding up of our affairs;
- terms of redemption;
- preemption rights, if any;
- the procedures for any auction and remarketing, if any, for the preferred stock;
- the provisions for a sinking fund, if any, for the preferred stock;
- any listing of the preferred stock on any securities exchange;
- the terms and conditions, if applicable, upon which the preferred stock will be convertible into our common stock, including the conversion price (or manner of calculation thereof);
- a discussion of federal income tax considerations applicable to the preferred stock, if material;
- the relative ranking and preferences of the preferred stock as to dividend or other distribution rights and rights if we liquidate, dissolve or wind up our affairs;
- any limitations on issuance of any series of preferred stock ranking senior to or on a parity with the series of preferred stock being offered as to distribution rights and rights upon the liquidation, dissolution or winding up or our affairs; and
- any other specific terms, preferences, rights, limitations or restrictions of the preferred stock.

Rank

As set forth in the applicable prospectus supplement, shares of our preferred stock may rank, with respect to payment of distributions and rights upon our liquidation, dissolution or winding up, and allocation of our earnings and losses:

- senior to all classes or series of our common stock, and to all of our equity securities ranking junior to the preferred stock;
- equally with all equity securities issued by us, the terms of which specifically provide that these equity securities rank on a parity, or equally, with the preferred stock; or
- junior to all equity securities issued by us, the terms of which specifically provide that these equity securities rank senior to the preferred stock.

Distributions

Subject to any preferential rights of any outstanding stock or series of stock, holders of our preferred stock may be entitled to receive distributions, when and as authorized by our Board of Directors, out of legally available funds, and share pro rata based on the number of shares of preferred stock, common stock and other equity securities outstanding.

Voting Rights

As indicated in the applicable prospectus supplement, and as otherwise required under Delaware law, holders of our preferred stock may or may not have voting rights.

Liquidation Preference

As indicated in the applicable prospectus supplement, upon the voluntary or involuntary liquidation, dissolution or winding up of our affairs, then, before any distribution or payment shall be made to the holders of any common stock or any other class or series of stock ranking junior to the preferred stock in our distribution of assets upon any liquidation, dissolution or winding up, the holders of each series of our preferred stock may be entitled to receive, after payment or provision for payment of our debts and other liabilities, out of our assets legally available for distribution to stockholders, liquidating distributions in the amount of the liquidation preference per share (set forth in the applicable prospectus supplement), plus an amount, if applicable, equal to all distributions accrued and unpaid thereon (which shall not include any accumulation in respect of unpaid distributions for prior distribution periods if the preferred stock does not have a cumulative distribution). After payment of the full amount of the liquidating distributions to which they may be entitled, the holders of preferred stock may have no right or claim to any of our remaining assets. In the event that, upon our voluntary or involuntary liquidation, dissolution or winding up, the legally available assets are insufficient to pay the amount of the liquidating distributions on all of our outstanding preferred stock and the corresponding amounts payable on all of our stock of other classes or series of equity security ranking on a parity with the preferred stock in the distribution of assets upon liquidation, dissolution or winding up, then the holders of our preferred stock and all other such classes or series of equity securities may share ratably in the distribution of assets in proportion to the full liquidating distributions to which they would otherwise be respectively entitled.

If the liquidating distributions are made in full to all holders of preferred stock, our remaining assets may be distributed among the holders of any other classes or series of equity security ranking junior to the preferred stock upon our liquidation, dissolution, or winding up, according to their respective rights and preferences and in each case according to their respective number of shares of stock.

Conversion Rights

The terms and conditions, if any, upon which shares of any series of preferred stock are convertible into, such as common stock, debt securities, warrants or units consisting of one or more of such securities will be set forth in the applicable prospectus supplement. These terms will include the amount and type of security into which the shares of preferred stock are convertible, the conversion price (or manner of calculation thereof), the conversion period, provisions as to whether conversion will be at the option of the holders of the preferred stock or us, the events, if any, requiring an adjustment of the conversion price and provisions, if any, affecting conversion in the event of the redemption of that preferred stock.

Redemption

If so provided in the applicable prospectus supplement to this prospectus, our preferred stock will be subject to mandatory redemption or redemption at our option, in whole or in part, in each case upon the terms, at the times and at the redemption prices set forth in such prospectus supplement.

DESCRIPTION OF WARRANTS

The following description, together with the additional information we may include in any applicable prospectus supplements, summarizes the material terms and provisions of the warrants that we may offer under this prospectus. While the terms we have summarized below will apply generally to any warrants that we may offer under this prospectus, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement. The terms of any warrants offered under a prospectus supplement may differ from the terms described below.

We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from another report that we file with the SEC, the form of warrant agreement, which may include a form of warrant certificate, that describes the terms of the particular series of warrants we are offering. The following summary of material provisions of the warrants and the warrant agreements are subject to all the provisions of the warrant agreement and warrant certificate applicable to a particular series of warrants. We urge you to read the applicable prospectus supplements related to the particular series of warrants that we sell under this prospectus, as well as the complete warrant agreements and/or warrant certificates that contain the terms of the warrants.

General

We will describe in the applicable prospectus supplement the terms relating to warrants being offered, which may include:

- the offering price and aggregate number of warrants offered;
- if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each such security or each principal amount of such security;
- if applicable, the date on and after which the warrants and the related securities will be separately transferable;
- in the case of warrants to purchase common stock or preferred stock, the number of shares of common stock or preferred stock, as the case may be, purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;
- the terms of any rights to redeem or call the warrants;
- any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;
- the dates on which the right to exercise the warrants will commence and expire;
- the manner in which the warrant agreements and warrants may be modified;
- federal income tax consequences of holding or exercising the warrants, if material;
- the terms of the securities issuable upon exercise of the warrants; and
- any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

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

Exercise of Warrants

Each warrant will entitle the holder to purchase the securities that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to the specified time on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

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

Upon receipt of the required payment and any warrant certificate or other form required for exercise properly completed and duly executed at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement, we will issue and deliver the securities purchasable upon such exercise. If fewer than all of the warrants represented by the warrant or warrant certificate are exercised, then we will issue a new warrant or warrant certificate for the remaining amount of warrants. If we so indicate in the applicable prospectus supplement, holders of the warrants may surrender securities as all or part of the exercise price for warrants.

Descriptions of certain outstanding warrants are incorporated herein by reference to the Current Reports on Form 8-K filed on each of March 23, 2009, April 7, 2010, July 20, 2010 and June 10, 2011.

PLAN OF DISTRIBUTION

We may sell the securities covered by this prospectus from time to time. Registration of our securities covered by this prospectus does not mean, however, that those securities will necessarily be offered or sold.

We may sell the securities covered by this prospectus:

- through agents;
- through one or more underwriters or dealers in a public offering and sale by them;
- through a block trade in which the broker or dealer engaged to handle the block trade will attempt to sell the securities as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- directly to one or more purchasers (through a specific bidding or auction process or otherwise);
- in "at the market offerings," within the meaning of Rule 415(a)(4) of the Securities Act, to or through a market maker or into an existing trading market, on an exchange or otherwise;
- through a combination of any of these methods of sale; or
- at a fixed exchange ratio in return for other of our securities.

We may sell the securities from time to time in one or more transactions at a fixed price or prices, which may be changed from time to time, at market prices prevailing at the times of sale, at prices related to such prevailing market prices, or at negotiated prices. For each offering of securities hereunder, we will describe the method of distribution of such securities in a prospectus supplement. The prospectus supplements will describe the terms of the offerings of the securities, including:

- the name or names of any underwriters, if any;
- the purchase price of our securities and the proceeds we will receive from the sale;
- any overallotment options under which underwriters may purchase additional securities from us;
- any agency fees or underwriting discounts and other items constituting agents' or underwriters' compensation;
- any public offering price;
- any discounts or concessions allowed or reallowed or paid to dealers; and
- any securities exchange or market on which our common stock or other securities may be listed.

Only underwriters named in the prospectus supplement are underwriters of the securities offered by that prospectus supplement.

If underwriters are used in the sale, they will acquire the securities for their own account and may resell the securities from time to time in one or more transactions at a fixed public offering price. Unless otherwise specified in the prospectus supplement, the obligations of the underwriters to purchase the securities will be subject to the conditions listed in the sales agreement, as amended, and, subject to certain conditions, the underwriters may be obligated to purchase all the securities offered by the prospectus supplement. We may offer the securities to the public through underwriting syndicates represented by managing underwriters or by underwriters without a syndicate. Any public offering price and any discounts or concessions allowed or reallowed or paid to dealers may change from time to time.

In connection with any particular offering pursuant to this prospectus, an underwriter may engage in stabilizing transactions, over-allotment transactions, syndicate covering transactions and penalty bids in accordance with Regulation M under the Exchange Act.

Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specified maximum price.

Over-allotment involves sales by an underwriter of shares in excess of the number of shares an underwriter is obligated to purchase, which creates a syndicate short position. The short position may be either a covered short position or a naked short position. In a covered short position, the number of shares over-allotted by an underwriter is not greater than the number of shares that it may purchase in the over-allotment option. In a naked short position, the number of shares involved is greater than the number of shares in the over-allotment option. An underwriter may close out any short position by either exercising its over-allotment option and/or purchasing shares in the open market.

Syndicate covering transactions involve purchases of common stock in the open market after the distribution has been completed in order to cover syndicate short positions. In determining the source of shares to close out the short position, an underwriter will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the over-allotment option. If an underwriter sells more shares than could be covered by the over-allotment option, a naked short position, the position can only be closed out by buying shares in the open market. A naked short position is more likely to be created if an underwriter is concerned that there could be downward pressure on the price of the shares in the open market after pricing that could adversely affect investors who purchase in the offering.

Penalty bids permit representatives to reclaim a selling concession from a syndicate member when the common shares originally sold by the syndicate member is purchased in a stabilizing or syndicate covering transaction to cover syndicate short positions.

These stabilizing transactions, syndicate covering transactions and penalty bids may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of the common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. These transactions may be effected on the NYSE MKT or otherwise and, if commenced, may be discontinued at any time. We make no representation or prediction as to the direction or magnitude of any effect that any of these activities may have on the price of our common stock or, if applicable, the price for any of our other securities. For a description of these activities, see the information under the heading “Underwriting” or “Plan of Distribution” in the applicable prospectus supplement.

If we use dealers in the sale of securities, we will sell the securities to the dealers as principals. They may then resell those securities to the public at varying prices determined by the dealers at the time of resale. We will include in the prospectus supplement the names of the dealers and the terms of the transaction.

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

We may authorize agents or underwriters to solicit offers by certain types of institutional investors to purchase securities from us at the public offering price set forth in the prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on a specified date in the future. We will describe the conditions to these contracts and the commissions we must pay for solicitation of these contracts in the prospectus supplement.

We may provide underwriters and agents with indemnification against civil liabilities related to this offering, including liabilities under the Securities Act, or contribution with respect to payments that the underwriters or agents may make with respect to such liabilities.

Any preferred stock we offer will represent a new issue of securities with no established trading market. Any underwriters may make a market in these securities, but will not be obligated to do so and may discontinue any market making at any time without notice. We cannot guarantee the liquidity of the trading markets for these securities.

Underwriters, broker-dealers or agents who may become involved in the sale of our securities may engage in transactions with and perform other services for us in the ordinary course of their business for which they receive compensation.

LEGAL MATTERS

The validity of the securities offered hereby has been passed upon for us by Dentons US LLP, New York, New York.

EXPERTS

The consolidated financial statements of PharmAthene, Inc. appearing in PharmAthene, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2013, and the effectiveness of PharmAthene, Inc.'s internal control over financial reporting as of December 31, 2013, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the informational reporting requirements of the Exchange Act and file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy any materials we file with the SEC at the SEC's Public Reference Room located at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the Public Reference Room. You may also access filed documents at the SEC's website at www.sec.gov.

INCORPORATION BY REFERENCE

The SEC allows us to "incorporate by reference" in this prospectus the information in other documents that we file with the SEC, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus and may subsequently be updated and superseded as described below. We incorporate by reference in this prospectus the documents listed below and any future filings that we may make with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act prior to the termination of the offering under this prospectus.

We incorporate by reference the following documents we have filed, or may file, with the SEC:

- our Annual Report on Form 10-K for the year ended December 31, 2013 (File No. 001-32587);
- our Annual Report on Form 10-K/A for the year ended December 31, 2013 (File No. 001-32587);
- our Quarterly Report on Form 10-Q for the quarter ended March 31, 2014 (File No. 001-32587);
- our Current Reports on Form 8-K filed with the SEC on January 14, 2014, February 5, 2014, April 7, 2014 and May 23, 2014;
- our Definitive Proxy Statement filed with the SEC on May 8, 2014, including any amendments or supplements filed for the purpose of updating same;
- all documents filed by us with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus and before termination of this offering; and
- the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on July 27, 2005, including any amendments or reports filed for the purpose of updating such description, including the description of the Company's securities set forth in the Definitive Proxy Statement filed with the SEC on July 16, 2007, on page 159 under the caption "Description of Securities" and in the Current Report on Form 8-K filed with the SEC on March 25, 2013.

To the extent that any information contained in any Current Report on Form 8-K, or any exhibit thereto, is furnished to, rather than filed with, the SEC, such information or exhibit is specifically not incorporated by reference in this prospectus.

We make available free of charge through our website at www.pharmathene.com our press releases and all of the documents that we are required to file electronically with the SEC, including all amendments thereto, as soon as reasonably practical after they are electronically filed with, or furnished to, the SEC. Our website also contains our Code of Ethics. The information on our website is not part of nor incorporated by reference into this prospectus.

You may also read and copy any materials we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. You may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC also maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers, like PharmAthene, that file electronically with the SEC at www.sec.gov.

In addition, we will provide, without charge to each person, including any beneficial owner, to whom this prospectus is delivered, upon written or oral request of such person, a copy of any or all of the documents incorporated by reference in this prospectus other than exhibits, unless such exhibits specifically are incorporated by reference into such documents or this prospectus. Requests for such documents should be addressed in writing or by telephone to: PharmAthene, Inc., One Park Place, Suite 450, Annapolis, Maryland 21401, (410) 269-2600, Attention: Corporate Secretary.

$100,000,000

Common Stock
Preferred Stock
Warrants

PROSPECTUS

The information in this prospectus is not complete and may be changed. We may not sell these securities until the Registration Statement filed with the U.S. Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state or jurisdiction where the offer or sale is not permitted.

Subject to Completion, Dated May 23, 2014

PROSPECTUS

PharmAthene

Up to $15,000,000 of Shares
Common Stock

We have entered into a Controlled Equity Offering[SM] sales agreement, and an amendment thereto, with Cantor Fitzgerald & Co. (“Cantor”) relating to shares of our common stock offered by this prospectus. In accordance with the terms of the sales agreement, as amended, we may offer and sell shares of our common stock pursuant to this prospectus having an aggregate offering price of up to an additional $15,000,000 from time to time through Cantor, acting as agent. In addition, the prospectus supplement, dated March 25, 2013, relating to the first $15,000,000 of shares of common stock pursuant to the sales agreement, as amended, will remain available for the sale of common stock by us until the earlier of the sale of all shares of common stock thereunder or July 26, 2014.

Our common stock is listed on the NYSE MKT under the symbol “PIP.” On May 15, 2014, the last reported sale price of our common stock on the NYSE MKT was $1.48 per share.

Sales of our common stock, if any, under this prospectus may be made in sales deemed to be “at-the-market” equity offerings as defined in Rule 415 promulgated under the Securities Act of 1933, as amended (the "Securities Act"), including sales made directly on or through the NYSE MKT, the existing trading market for our common stock, sales made to or through a market maker other than on an exchange or otherwise, in negotiated transactions at market prices prevailing at the time of sale or at prices related to such prevailing market prices, and/or any other method permitted by law, including in privately negotiated transactions. Cantor will act as sales agent on a best efforts basis and use commercially reasonable efforts to sell on our behalf all of the shares of common stock requested to be sold by us, consistent with its normal trading and sales practices, on mutually agreed terms between Cantor and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

Cantor will be entitled to compensation at a fixed commission rate of 3.0% of the gross sales price per share sold. In connection with the sale of our common stock on our behalf, Cantor will be deemed to be an “underwriter” within the meaning of the Securities Act and the compensation of Cantor will be deemed to be underwriting commissions or discounts.

Investing in our securities involves a high degree of risk. Before making an investment decision, please read “Risk Factors” beginning on page S-4 of this prospectus and in the documents incorporated by reference into this prospectus.

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

CANTOR Fitzgerald

The date of this prospectus is , 2014.

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ABOUT THIS PROSPECTUS

This prospectus is part of a “shelf” registration statement on Form S-3 that we filed with the U.S. Securities and Exchange Commission (SEC) on May 23, 2014.

This prospectus describes the specific terms of the common stock we are offering and also adds to, and updates information contained in the documents incorporated by reference into this prospectus. To the extent there is a conflict between the information contained in this prospectus, on the one hand, and the information contained in any document incorporated by reference herein or therein, on the other hand, you should rely on the information in this prospectus.

You should read this prospectus, the documents incorporated by reference in this prospectus and any free writing prospectus that we have authorized for use in connection with this offering before making an investment decision. You should also read and consider the information in the documents referred to in the sections of this prospectus entitled “Where You Can Find More Information” and “Incorporation of Certain Information by Reference.”

You should rely only on the information contained or incorporated by reference in this prospectus and any free writing prospectus that we have authorized for use in connection with this offering. We have not authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it.

We are not making an offer to sell the securities covered by this prospectus in any jurisdiction where the offer or sale is not permitted.

The information appearing in this prospectus, the documents incorporated by reference in this prospectus and any free writing prospectus that we have authorized for use in connection with this offering is accurate only as of its respective date, regardless of the time of delivery of the respective document or of any sale of securities covered by this prospectus. You should not assume that the information contained in or incorporated by reference in this prospectus, or in any free writing prospectus that we have authorized for use in connection with this offering, is accurate as of any date other than the respective dates thereof.

Unless otherwise mentioned or unless the context requires otherwise, all references to “PharmAthene,” the "Company," “we,” “us,” “our,” and similar terms refer to PharmAthene, Inc. and its subsidiaries on a consolidated basis. The phrase “this prospectus” refers to this prospectus, unless the context otherwise requires. Whenever we refer to “you” or “yours,” we mean the persons to whom offers are made under this prospectus.

SPECIAL NOTE REGARDING FORWARD-LOOKING INFORMATION

This prospectus and any related prospectus and the information incorporated by reference herein and therein contain forward-looking statements within the meaning of Section 27A of the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended. This information may involve known and unknown risks, uncertainties and other factors that are difficult to predict and may cause our actual results, performance or achievements to be materially different from future results, performance or achievements expressed or implied by any forward-looking statements. These risks, uncertainties and other factors include, but are not limited to, risks associated with the following:

- the reliability of the results of the studies relating to human safety and possible adverse effects resulting from the administration of our product candidates,
- funding delays, reductions in or elimination of U.S. government funding and/or non-renewal of expiring funding for one or more of our development programs,
- our common stock,
- our Loan and Security Agreement, dated as of March 30, 2012, among General Electric Capital Corporation, in its capacity as agent for the lenders, and the Company (the "GE Loan Agreement"),
- our net operating loss carryforwards,
- the award of government contracts to our competitors or delays caused by third parties challenging government contract awards to us,
- unforeseen safety and efficacy issues related to our product candidates,
- challenges related to the development, commercialization, technology transfer, scale-up, and/or process validation of manufacturing processes for our product candidates,
- unexpected determinations that these product candidates prove not to be effective and/or capable of being marketed as products,
- accomplishing future strategic acquisitions or business combinations,

as well as risks detailed under the caption “Risk Factors” in our Annual Report on Form 10-K for the fiscal year ended December 31, 2013, Quarterly Report on Form 10-Q for the quarter ended March 31, 2014 and in our other reports filed with the SEC from time to time thereafter. In particular, in its May 2013 decision, the Delaware Supreme Court reversed the remedy ordered by the Delaware Court of Chancery which awarded PharmAthene 50% of all net profits (as defined in the court's final judgment) related to the sale of Arestvyr™ (formerly called ST 246®) and related products for 10 years following the initial commercial sale of the drug once SIGA earns $40.0 million in net profits from the sale of Arestvyr™ and related products and remanded the issue of a remedy back to the trial court for reconsideration. As a result, there can be no assurance that the Delaware Court of Chancery will issue a remedy that provides us with a financial interest in Arestvyr™ and related products or any remedy. Furthermore, there is significant uncertainty regarding the level and timing of sales of Arestvyr™ and when and whether it will be approved by the U.S. Food and Drug Administration and corresponding health agencies around the world. Therefore, even if the Delaware Court of Chancery does award us a remedy that provides us monies related to sales or profit of Arestvyr™, we cannot predict with certainty if or when SIGA will begin recognizing profit on the sale thereof and there can be no assurance that any profits, if recognized, received by SIGA and paid to us will be significant. Significant additional non-clinical animal studies, human clinical trials, and manufacturing development work remain to be completed for all our products candidates, including Valortim, rBChE and SparVax®. At this point, future government funding to support the development of Valortim®, rBChE and SparVax® is unlikely and remains uncertain. It is also uncertain whether any of our product candidates will be shown to be safe and effective and approved by regulatory authorities for use in humans. Forward-looking statements describe management’s current expectations regarding our future plans, strategies and objectives and are generally identifiable by use of the words “may,” “will,” “should,” “expect,” “anticipate,” “estimate,” “believe,” “intend,” “project,” “potential” or “plan” or the negative of these words or other variations on these words or comparable terminology. Such statements include, but are not limited to:

- statements about potential future government contract or grant awards,
- potential payments under government contracts or grants,
- potential regulatory approvals,
- future product advancements, and
- anticipated financial or operational results.

Forward-looking statements are based on assumptions that may be incorrect, and we cannot assure you that the projections included in the forward-looking statements will come to pass.

We have based the forward-looking statements included in this prospectus on information available to us on the date of this prospectus, and we assume no obligation to update any such forward-looking statements, other than as required by law. Although we undertake no obligation to revise or update any forward-looking statements, whether as a result of new information, future events or otherwise, you are advised to consult any additional disclosures that we may make directly to you or through reports that we, in the future, may file with the SEC, including Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K.

All forward-looking statements included herein are expressly qualified in their entirety by the cautionary statements contained or referred to above.

PROSPECTUS SUMMARY

This summary highlights certain information about us, this offering and selected information contained elsewhere in or incorporated by reference into this prospectus. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in the securities covered by this prospectus. For a more complete understanding of PharmAthene and this offering, we encourage you to read and consider carefully the more detailed information in this prospectus, including the information incorporated by reference in this prospectus and the information included in any free writing prospectus that we have authorized for use in connection with this offering, including the information referred to under the heading "Risk Factors" in this prospectus beginning on page S-4.

Our Company

We are a biodefense company engaged in the development and commercialization of next generation medical countermeasures against biological and chemical threats. Our current biodefense portfolio includes the following product candidates:

- SparVax®, a next generation recombinant protective antigen anthrax vaccine;
- rBChE (recombinant butyrylcholinesterase) bioscavenger, a medical countermeasure for nerve agent poisoning by organophosphorous compounds, including nerve gases and pesticides; and
- Valortim®, a fully human monoclonal antibody for the prevention and treatment of anthrax infection.

In May 2013, the Delaware Supreme Court affirmed a September 2011 ruling of the Delaware Court of Chancery that SIGA Technologies, Inc. ("SIGA") had breached certain contractual obligations to us. The matter is on remand to the Delaware Court of Chancery to determine a remedy in light of the Delaware Supreme Court's decision. Previously the Delaware Court of Chancery had awarded us the right to receive 50% of all net profits (as defined in the court's final judgment) related to the sale of SIGA, Arestvyr™ (formerly known as ST-246®) and related products for 10 years following initial commercial sale of the drug once SIGA earns $40.0 million in net profits from the sales of Arestvyr™ and related products and a portion of our attorney's fees and expert witness and other costs. While we believe there may be significant revenue potential under a potential damages award, there can be no assurance that the Delaware Court of Chancery will re-instate its prior remedy or order another remedy for us, that SIGA will not appeal any subsequent decision by the Delaware Court of Chancery, or that SIGA will not be successful in any subsequent appeal. Currently, because the Delaware Supreme Court remanded the issue of a remedy back to the Delaware Court of Chancery, we no longer have a financial interest in Arestvyr™ and may never receive any proceeds from the product.

On April 4, 2014, we received notification from the U.S. Department of Health and Human Services (HHS), Biomedical Advanced Research and Development Authority (BARDA), advising us of its decision to de-scope the current SparVax® anthrax vaccine contract through a partial termination for convenience. BARDA has subsequently provided guidance authorizing PharmAthene to complete six activities under the contract. All other activities were de-scoped, including the proposed Phase 2 clinical trial. PharmAthene has proposed a timeline for completing these contract activities up to and including the submission of its settlement proposal. The company expects these events to occur in the third or fourth quarter of 2014. We do not expect that we will receive additional significant funding from BARDA for the further development of SparVax®. Therefore, unless we are able to secure additional funding for our SparVax® development program, we anticipate that revenues for this program will be less in future periods than in prior years. We are continuing to explore different options for the future of the SparVax® program.

Corporate Information

Our executive offices are located at One Park Place, Suite 450, Annapolis, Maryland 21401 and our telephone number is (410) 269-2600. Our stock trades on the NYSE MKT under the symbol "PIP."

We maintain a website at www.pharmathene.com. Our website and the information contained therein or connected thereto are not part of, or incorporated by reference into, this prospectus.

THE OFFERING

Common stock offered by us	Shares of our common stock having an additional aggregate offering price of up to $15,000,000.
Common stock to be outstanding after this offering	Up to 63,908,840 shares (as more fully described in the notes following this table), assuming sales of 10,135,135 shares of our common stock in this offering at an offering price of $1.48 per share, which was the last reported sale price of our common stock on the NYSE MKT on May 15, 2014. The actual number of shares issued will vary depending on the sales price in this offering.
Manner of offering	"At-the-market" offering that may be made from time to time through our sales agent, Cantor. See "Plan of Distribution" on page S-9 of this prospectus.
Use of Proceeds	We currently intend to use the net proceeds from this offering, if any, for general corporate purposes, which may include working capital, research and development expenses, general and administrative expenses, and capital expenditures. We may also use a portion of the net proceeds to acquire or invest in businesses, products and technologies, although we have no present definitive commitments or agreements for any such transactions. See "Use of Proceeds" on page S-5 of this prospectus.
NYSE MKT symbol	"PIP"
Risk Factors	Investing in our securities involves a high degree of risk. See "Risk Factors" beginning on page S-4 of this prospectus.

The number of shares of our common stock shown above to be outstanding immediately after this offering is based on 53,773,705 shares outstanding as of March 31, 2014 (excluding unvested restricted shares) and excludes:

- 6,946,707 shares of our common stock subject to outstanding options granted under our 2007 Long-Term Incentive Compensation Plan, as amended (2007 Plan), having a weighted average exercise price of $2.45 per share, of which 7,755 were exercised in April 2014;
- 6,667 restricted stock awards outstanding under the 2007 Plan;
- 2,505,493 shares of our common stock available for future awards under the 2007 Plan;
- 5,620,128 shares of our common stock reserved for issuance upon exercise of outstanding warrants, having a weighted average exercise price of $2.39 per share; and

- 753,888 shares of our common stock sold under the prospectus supplement, dated March 25, 2013, between April 1, 2014 and May 15, 2014 and 137,209 shares issuable as of May 15, 2014 under the prospectus supplement, dated March 25, 2013. As of May 15, 2013, aggregate gross sales for additional common stock of approximately $4.8 million remained available under the prospectus supplement, dated March 25, 2013. At the offering price of $1.48 per share, which was the last reported sale price of our common stock on the NYSE MKT on May 15, 2014, this represents a potential dilution of 3,229,447 shares including the above issuable shares.

RISK FACTORS

An investment in our securities involves a high degree of risk. Before deciding whether to invest in our securities, you should consider carefully the risks discussed below, together with the risks under the heading "Risk Factors" under Part I, Item 1A of our Annual Report on Form 10-K for the fiscal year ended December 31, 2013, filed with the SEC on March 11, 2014, and any subsequent Annual Report on Form 10-K or Quarterly Report on Form 10-Q, which are incorporated by reference into this prospectus, as well as the other information in this prospectus, the information and documents incorporated by reference herein and in any free writing prospectus that we have authorized for use in connection with this offering. If any of the identified risks actually occur, they could materially adversely affect our business, financial condition, operating results or prospects and the trading price of our securities, which could result in a loss of all or part of your investment. Additional risks and uncertainties that we do not presently know or that we currently deem immaterial may also impair our business, financial condition, operating results and prospects and the trading price of our securities.

Additional Risks Related to This Offering

Our management team will have broad discretion over the use of the net proceeds from this offering.

Our management will have broad discretion to direct the net proceeds from this offering for general corporate purposes. General corporate purposes may include working capital, research and development expenses, general and administrative expenses, capital expenditures and future acquisitions. See "Use of Proceeds." Our management's judgments may not result in positive returns on your investment and you will not have an opportunity, as part of your investment decision, to evaluate the economic, financial or other information upon which our management bases its decisions.

As an investor in this offering, you will experience immediate and substantial dilution and you may not be able to resell your shares at or above the offering price.

Since the price per share of our common stock being offered hereby is higher than the net tangible book value per share of our common stock, you will incur substantial dilution in the net tangible book value of the common stock you purchase in this offering. Furthermore, if the holders of outstanding options or warrants exercise those options or warrants at prices below the public offering price, you will incur further dilution. See "Dilution" for a more detailed discussion of the dilution you will incur if you purchase common stock in this offering, assuming you purchase the shares at $1.48, the last reported sale price of our common stock on NYSE MKT on May 15, 2014. The actual dilution you will incur may be higher or lower than the amount shown.

USE OF PROCEEDS

We currently intend to use the net proceeds, if any, from this offering for general corporate purposes, which may include working capital, research and development expenses, general and administrative expenses, and capital expenditures. We may also use a portion of the net proceeds to acquire or invest in businesses, products and technologies that are complementary to our own, although we have no present definitive commitments or agreements for any such transactions on the date of this prospectus. The amounts and timing of our actual expenditures for each purpose may vary significantly depending upon numerous factors, including the actual amount of proceeds we receive from this offering, the status of our research and product development efforts, regulatory approvals, competition and economic or other conditions. As of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to us from this offering. Accordingly, our management will have broad discretion in the application of these proceeds. Pending application of such proceeds, we intend to temporarily invest the proceeds in short-term interest bearing, investment-grade marketable securities or money market obligations. We have a history of losses, which will continue for the foreseeable future. We do not expect that the proceeds from this offering, when added to our available cash, will be sufficient to last us through such time, if any, that we achieve positive cash flow. Accordingly, we anticipate that we will be required to raise additional funds through the sale of debt or equity securities or otherwise.

DILUTION

If you purchase our common stock in this offering, your interest will be diluted to the extent of the difference between the offering price per share and our pro forma net tangible book value per share of our common stock after this offering. Our net tangible book value as of March 31, 2014 was approximately $6.0 million, or $0.11 per share. Net tangible book value per share is determined by dividing our total tangible assets, less total liabilities, by the number of shares of our common stock outstanding as of March 31, 2014. Dilution in net tangible book value per share represents the difference between the amount per share paid by purchasers of shares in this offering and the net tangible book value per share of our common stock immediately after this offering.

After giving effect to the sale of our common stock in the aggregate amount of $15,000,000 in this offering at an assumed public offering price of $1.48 per share, the last reported sale price of our common stock on the NYSE MKT on May 15, 2014, and after deducting estimated offering commissions and expenses payable by us, our pro forma net tangible book value as of March 31, 2014 would have been approximately $20.4 million, or $0.32 per share. This represents an immediate increase in net tangible book value of $0.21 per share to existing stockholders and immediate dilution in net tangible book value of $1.16 per share to investors participating in this offering. The following table illustrates this dilution on a per share basis:

Assumed public offering price per share	$	1.48
Net tangible book value per share as of March 31, 2014	$	0.11
Increase in net tangible book value per share attributable to this offering	$	0.21
Pro Forma net tangible book value per share as of March 31, 2014 after giving effect to this offering	$	0.32
Dilution in net tangible book value per share to new investors in this offering	$	1.16

The above illustration of dilution per share to investors participating in this offering assumes for illustrative purposes that an aggregate of 10,135,135 shares of our common stock are sold at a price of $1.48 per share, the last reported sale price of our common stock on the NYSE MKT on May 15, 2014, for aggregate gross proceeds of $15,000,000. The shares sold in this offering, if any, will be sold from time to time at various prices. An increase of $0.50 per share in the price at which the shares are sold from the assumed offering price of $1.48 per share shown in the table above, assuming all of our common stock in the aggregate amount of $15,000,000 is sold at that price, would increase our pro forma net tangible book value per share after the offering to $1.98 per share and would increase the dilution in net tangible book value per share to new investors in this offering to $1.65 per share, after deducting commissions and estimated aggregate offering expenses payable by us. A decrease of $0.50 per share in the price at which the shares are sold from the assumed offering price of $1.48 per share shown in the table above, assuming all of our common stock in the aggregate amount of $15,000,000 is sold at that price, would decrease our pro forma net tangible book value per share after the offering to $0.98 per share and would decrease the dilution in net tangible book value per share to new investors in this offering to $0.68 per share, after deducting commissions and estimated aggregate offering expenses payable by us. This information is supplied for illustrative purposes only.

The number of shares of our common stock shown above to be outstanding immediately after this offering is based on 53,773,705 shares outstanding as of March 31, 2014 (excluding unvested restricted shares) and excludes:

- 6,946,707 shares of our common stock subject to outstanding options granted under our 2007 Long-Term Incentive Compensation Plan, as amended (2007 Plan), having a weighted average exercise price of $2.45 per share, of which 7,755 were exercised in April 2014;
- 6,667 restricted stock awards outstanding under the 2007 Plan;
- 2,505,493 shares of our common stock available for future awards under the 2007 Plan;
- 5,620,128 shares of our common stock reserved for issuance upon exercise of outstanding warrants, having a weighted average exercise price of $2.39 per share; and
- 753,888 shares of our common stock sold under the prospectus supplement, dated March 25, 2013, between April 1, 2014 and May 15, 2014 and 137,209 shares issuable as of May 15, 2014 under the prospectus supplement, dated March 25, 2013. As of May 15, 2013, aggregate gross sales for additional common stock of approximately $4.8 million remained available under the prospectus supplement, dated March 25, 2013. At the offering price of $1.48 per share, which was the last reported sale price of our common stock on the NYSE MKT on May 15, 2014, this represents a potential dilution of 3,229,447 shares including the above issuable shares.

The above illustration of dilution per share to investors participating in this offering assumes no exercise of options to purchase our common stock or warrants to purchase our common stock, that were outstanding as of March 31, 2014. The exercise of such options and warrants having an exercise price per share that is less than the offering price per share in this offering will increase dilution to investors in this offering. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

Our 2007 Plan provides for an annual automatic increase as of the first day of each fiscal year beginning in 2009 and continuing until 2015 equal to the lesser of (i) 1,100,000 shares, (ii) 2.5% of the outstanding shares of our common stock as of the end of our immediately preceding fiscal year, and (iii) any lesser number of shares determined by our Board of Directors; provided, however, that the aggregate number of shares available for issuance pursuant to such increases shall not exceed a total of 5,700,000 shares. The limit of 5,700,000 shares under the 2007 Plan was reached on January 1, 2014.

PRICE RANGE OF OUR COMMON STOCK

Our common stock trades on the NYSE MKT under the symbol “PIP.” The following table sets forth the range of high and low sales prices per share of our common stock on the NYSE MKT for each quarter during the past two fiscal years and the current quarter.

Period	High	Low
Year Ended December 31, 2014		
First Quarter	$ 2.12	$ 1.76
Second Quarter (through May 15, 2014)	$ 1.89	$ 1.33
Year Ended December 31, 2013		
First Quarter	$ 2.05	$ 1.02
Second Quarter	$ 2.20	$ 1.47
Third Quarter	$ 2.42	$ 1.53
Fourth Quarter	$ 2.22	$ 1.66
Year Ended December 31, 2012		
First Quarter	$ 2.10	$ 1.20
Second Quarter	$ 1.89	$ 1.18
Third Quarter	$ 1.70	$ 1.13
Fourth Quarter	$ 1.47	$ .98

On May 15, 2014, the last reported sale price of our common stock on the NYSE MKT was $1.48 per share.

PLAN OF DISTRIBUTION

We have entered into a Controlled Equity Offering[SM] sales agreement, as amended, with Cantor under which we may issue and sell shares of our common stock pursuant to this prospectus having an aggregate gross sales price of up to an additional $15,000,000 from time to time through Cantor, acting as agent. Amendment No. 1 to the sales agreement is filed as an exhibit to the Registration Statement on Form S-3 to which this prospectus relates and is incorporated by reference in this prospectus. In addition, the prospectus supplement, dated March 25, 2013, relating to the first $15,000,000 of shares of common stock pursuant to the sales agreement, as amended, will remain available for the sale of common stock by us until the earlier of the sale of all shares of common stock thereunder or July 26, 2014.

Upon delivery of a placement notice and subject to the terms and conditions of the sales agreement, as amended, Cantor may sell our common stock by any method permitted by law and deemed to be an "at-the-market" offering as defined in Rule 415 promulgated under the Securities Act, including sales made directly on the NYSE MKT, on any other existing trading market for our common stock or to or through a market maker. In addition, pursuant to the terms and conditions of the sales agreement, as amended, and subject to our instructions, Cantor may also sell our common stock by any other method permitted by law, including in privately negotiated transactions. We may instruct Cantor not to sell common stock if the sales cannot be effected at or above the price designated by us from time to time. We or Cantor may suspend the offering of common stock upon notice and subject to other conditions.

We will pay Cantor commissions, in cash, for its services in acting as agent in the sale of our common stock. Cantor will be entitled to compensation at a fixed commission rate of 3.0% of the gross sales price per share sold. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. We estimate that the total expenses for the offering, excluding compensation and reimbursements payable to Cantor under the terms of the sales agreement, as amended, will be approximately $109,750.

Settlement for sales of common stock will occur on the third business day following the date on which any sales are made, or on some other date that is agreed upon by us and Cantor in connection with a particular transaction, in return for payment of the net proceeds to us. Sales of our common stock as contemplated in this prospectus will be settled through the facilities of The Depository Trust Company or by such other means as we and Cantor may agree upon. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

Cantor will use its commercially reasonable efforts, consistent with its sales and trading practices, to solicit offers to purchase the common stock shares under the terms and subject to the conditions set forth in the sales agreement, as amended. In connection with the sale of the common stock on our behalf, Cantor will be deemed to be an "underwriter" within the meaning of the Securities Act and the compensation of Cantor will be deemed to be underwriting commissions or discounts. We have agreed to provide indemnification and contribution to Cantor against certain civil liabilities, including liabilities under the Securities Act.

The offering of our common stock pursuant to the sales agreement, as amended, will terminate upon the earlier of (1) the sale of all shares of our common stock subject to the sales agreement, as amended, or (2) termination of the sales agreement, as amended, as permitted therein. We and Cantor may each terminate the sales agreement, as amended, at any time upon ten days' prior notice, and Cantor may terminate the agreement in certain other circumstances as described in the agreement.

Cantor and its affiliates may in the future provide various investment banking, commercial banking and other financial services for us and our affiliates, for which services they may in the future receive customary fees. To the extent required by Regulation M, Cantor will not engage in any market making activities involving our common stock while the offering is ongoing under this prospectus.

This prospectus in electronic format may be made available on a website maintained by Cantor and Cantor may distribute this prospectus electronically.

LEGAL MATTERS

Certain legal matters in connection with the securities offered hereby will be passed upon for us by Dentons US LLP of New York, New York. Cantor is being represented in connection with this offering by Reed Smith LLP, New York, New York.

EXPERTS

The consolidated financial statements of PharmAthene, Inc. appearing in PharmAthene, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2013, and the effectiveness of PharmAthene, Inc.'s internal control over financial reporting as of December 31, 2013, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-3, of which this prospectus is a part, under the Securities Act, to register the shares of common stock offered by this prospectus. However, this prospectus does not contain all of the information contained in the registration statement and the exhibits and schedules to the registration statement. Statements in this prospectus concerning any document we filed as an exhibit to the registration statement or that we otherwise filed with the SEC are not intended to be comprehensive and are qualified in their entirety by reference to those filings. We encourage you to carefully read the registration statement and the exhibits and schedules to the registration statement.

As a public company, we are required to file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy any of our materials on file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Our filings are available to the public over the Internet at the SEC's website at www.sec.gov. Please call the SEC at 1-800-SEC-0330 for further information on the Public Reference Room.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" in this prospectus the information in other documents that we file with the SEC, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus and may subsequently be updated and superseded as described below. We incorporate by reference in this prospectus the documents listed below and any future filings that we may make with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act prior to the termination of the offering under this prospectus.

We incorporate by reference the following documents we have filed, or may file, with the SEC:

- our Annual Report on Form 10-K for the year ended December 31, 2013 (File No. 001-32587);
- our Annual Report on Form 10-K/A for the year ended December 31, 2013 (File No. 001-32587);
- our Quarterly Report on Form 10-Q for the quarter ended March 31, 2014 (File No. 001-32587);
- our Current Reports on Form 8-K filed with the SEC on January 14, 2014, February 5, 2014, April 7, 2014 and May 23, 2014;
- our Definitive Proxy Statement filed with the SEC on May 8, 2014, including any amendments or supplements filed for the purpose of updating same;

- all documents filed by us with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus and before termination of this offering; and

- the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on July 27, 2005, including any amendments or reports filed for the purpose of updating such description, including the description of the Company's securities set forth in the Definitive Proxy Statement filed with the SEC on July 16, 2007, on page 159 under the caption "Description of Securities" and in the Current Report on Form 8-K filed with the SEC on March 25, 2013.

To the extent that any information contained in any Current Report on Form 8-K, or any exhibit thereto, is furnished to, rather than filed with, the SEC, such information or exhibit is specifically not incorporated by reference in this prospectus.

We make available free of charge through our website at www.pharmathene.com our press releases and all of the documents that we are required to file electronically with the SEC, including all amendments thereto, as soon as reasonably practical after they are electronically filed with, or furnished to, the SEC. Our website also contains our Code of Ethics. The information on our website is not part of nor incorporated by reference into this prospectus.

In addition, we will provide, without charge to each person, including any beneficial owner, to whom this prospectus is delivered, upon written or oral request of such person, a copy of any or all of the documents incorporated by reference in this prospectus other than exhibits, unless such exhibits specifically are incorporated by reference into such documents or this prospectus. Requests for such documents should be addressed in writing or by telephone to: PharmAthene, Inc., One Park Place, Suite 450, Annapolis, Maryland 21401, (410) 269-2600, Attention: Corporate Secretary.

Any statement contained in this prospectus or in any document incorporated or deemed to be incorporated by reference in this prospectus will be deemed to have been modified or superseded to the extent that a statement contained in this prospectus or in any other document we subsequently file with the SEC that also is incorporated or deemed to be incorporated by reference in this prospectus modifies or supersedes the original statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to be a part of this prospectus.

You should rely only on the information provided in and incorporated by reference into this prospectus. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus is accurate as of any date other than the date on the front cover of these documents.

PharmAthene

Up to $15,000,000 of Shares
Common Stock

PROSPECTUS

, 2014

PART II.
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following is a statement of the estimated costs and expenses, other than underwriting compensation, incurred or expected to be incurred by us in connection with the issuance and distribution of the securities being registered pursuant to this registration statement. All of the amounts shown are estimates except for the SEC registration fee and FINRA filing fee. The amounts do not include the costs of preparing any prospectus supplements, NYSE MKT listing fees, transfer agent fees or other expenses relating to the sale and distribution of particular securities registered pursuant to this registration statement, as those costs and expenses cannot be estimated at this time.

SEC Registration Fee	$	12,880
FINRA Filing Fee	$	15,500
Accounting Fees and Expenses		*
Legal Fees and Expenses		*
Miscellaneous Fees and Expenses		*
Total:		*

* The amount of securities and number of offerings are indeterminable and the expenses cannot be estimated at this time.

Item 15. Indemnification of Officers and Directors.

Our Amended and Restated Certificate of Incorporation, as amended, provides that the Company, to the full extent permitted by Section 145 of the Delaware General Corporation Law, as amended from time to time, shall indemnify all persons whom it may indemnify pursuant such law. It further provides that expenses (including attorneys' fees) incurred by an officer or director in defending any civil, criminal, administrative, or investigative action, suit or proceeding for which such officer or director may be entitled to indemnification under our Amended and Restated Certificate of Incorporation, as amended, shall be paid by the Company in advance of the final disposition of such action, suit or proceeding upon receipt of an undertaking by or on behalf of such director or officer to repay such amount if it shall ultimately be determined that he is not entitled to be indemnified by the Company as authorized thereby.

Our Bylaws, as amended, provide the Company with the power to indemnify its officers, directors, employees and agents or any person serving at the Company's request as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise to the fullest extent permitted by Delaware law.

All of our directors and officers are covered by insurance policies maintained by the Company against certain liabilities for actions taken in their capacities as such, including liabilities under the Securities Act.

On January 21, 2009, the Company's Board of Directors approved a form of indemnification agreement (the "Indemnification Agreement") and authorized the Company to enter into such Indemnification Agreement with each of the Company's current directors and executive officers, as well as other key employees to be identified by the chief executive officer from time to time.

Pursuant to the Indemnification Agreements, the Company generally agreed, in exchange for each person's continued service as a director, officer or other employee, as applicable, to indemnify and hold harmless each such person to the fullest extent permitted by law against certain expenses, judgments, penalties, fines and settlement payments incurred in connection with any proceeding other than a derivative suit (and against certain expenses in connection with a derivative suit) and resulting from his or her service to the Company.

The foregoing description of the Indemnification Agreements does not purport to be complete and is qualified in its entirety by reference to the actual agreement, a form of which is attached as an exhibit to the Company's Current Report on Form 8-K, filed on January 27, 2009, and which is incorporated herein by reference.

Item 16. Exhibits.

See the index to exhibits, which is incorporated herein by reference.

Item 17. Undertakings.

(a) The undersigned registrant hereby undertakes:

(1) to file, during the 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, as amended (the "Securities Act");

(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 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement;

(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 (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic 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, as amended that are incorporated by reference in the registration statement or is contained in a form of prospectus 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, each such post-effective amendment 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; and

(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.

(5) that, for the purpose of determining liability under the Securities Act to any purchaser:

(i) (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 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 the 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 part of the registration statement or made in a document incorporated or deemed incorporated by reference into 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 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.

(6) that, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424 (§230.424 of this chapter);

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) 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.

(h) Insofar as indemnification for liabilities arising under the Securities Act 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 U.S. Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities 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 Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, 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 Annapolis, State of Maryland on May 23, 2014.

PHARMATHENE, INC.
(Registrant)

By: /s/ Eric I. Richman
Eric I. Richman
President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, each of the undersigned constitutes and appoints Eric I. Richman and Linda L. Chang, and each of them, as attorneys-in-fact and agents, with full power of substitution and resubstitution, for and in the name, place and stead of the undersigned, in any and all capacities, to sign any and all amendments (including post- effective amendments) to this Registration Statement or any Registration Statement for this offering that is to be effective upon the filing pursuant to Rule 462(b) under the Securities Act, as amended, and all post-effective amendments thereto, and to file the same, with all exhibits thereto and all other documents in connection therewith, with the U.S. Securities and Exchange Commission, granting unto said attorneys-in-fact and agents full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as the undersigned might or could do in person, hereby ratifying and confirming all that each of said attorney-in-fact or substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement has been signed by the following persons in the capacities indicated, on May 23, 2014.

Signature	Title
/s/ Eric I. Richman Eric I. Richman	Director, President and Chief Executive Officer (Principal Executive Officer)
/s/ Linda L. Chang Linda L. Chang	Senior Vice President, Chief Financial Officer and Corporate Secretary (Principal Financial Officer and Principal Accounting Officer)
/s/ Mitchel B. Sayare, Ph.D. Mitchel B. Sayare, Ph.D.	Chairman of the Board of Directors
/s/ Derace L. Schaffer, M.D. Derace L. Schaffer, M.D.	Director
/s/ John M. Gill John M. Gill	Director
/s/ Steven St. Peter, M.D. Steven St. Peter, M.D.	Director
/s/ Joel W. McCleary Joel W. McCleary	Director
/s/ Jeffrey W. Runge, M.D. Jeffrey W. Runge, M.D.	Director
/s/ Brian A. Markison Brian A. Markison	Director

Index to Exhibits

Exhibit No.	Description
1.1	Controlled Equity Offering[SM] Sales Agreement, dated March 25, 2013, between the Registrant and Cantor Fitzgerald & Co. Incorporated by reference to the Company's Current Report on Form 8-K filed on March 25, 2013.
1.2	Amendment No. 1 to Controlled Equity Offering[SM] Sales Agreement, dated May 23, 2014, between the Registrant and Cantor Fitzgerald & Co.*
1.3	Form of Underwriting Agreement.**
3.1	Amended and Restated Certificate of Incorporation, as amended. Incorporated by reference to the Registrant's current report on Form 8-K filed on November 4, 2009.
3.2	Bylaws. Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on January 14, 2014.
3.3	Certificate of Designations with respect to Preferred Stock.**
4.1	Specimen Common Stock Certificate. Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on September 24, 2007.
4.2	Form of Warrant and/or Form of Warrant Agreement.**
5.1	Opinion of Dentons US LLP.*
23.1	Consent of Dentons US LLP (included in Exhibit 5.1).*
23.2	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm.*
24.1	Powers of Attorney (included on the signature page of this Registration Statement).*

* Filed herewith.

** If applicable, to be subsequently filed by amendment or as an exhibit to a current report on Form 8-K or other applicable report filed with the U.S. Securities and Exchange Commission and incorporated herein by reference.

Exhibit 1.2

PHARMATHENE, INC.
CONTROLLED EQUITY OFFERING[SM]

AMENDMENT NO. 1 TO
SALES AGREEMENT

May 23, 2014

Cantor Fitzgerald & Co.
499 Park Avenue
New York, New York 10022

Ladies and Gentlemen:

Reference is made to the Sales Agreement, dated March 25, 2013, including the schedules thereto (the "Sales Agreement"), between Cantor Fitzgerald & Co. ("CF&Co") and PharmAthene, Inc., a Delaware corporation (the "Company"), pursuant to which the Company may issue and sell through CF&Co, as sales agent, up to $15,000,000 of shares of common stock, par value $0.0001 per share, of the Company. All capitalized terms used in this Amendment No. 1 to Sales Agreement between CF&Co and the Company (this "Amendment"), and not otherwise defined herein, shall have the respective meanings assigned to such terms in the Sales Agreement. CF&Co and the Company agree as follows:

A. Amendments to Sales Agreement. The Sales Agreement is amended as follows, effective as of the date hereof:

1. The first sentence of Section 1 of the Sales Agreement is hereby deleted and replaced in its entirety with the following:

"The Company agrees that, from time to time after May 23, 2014 and during the term of this Agreement, on the terms and subject to the conditions set forth herein, it may issue and sell through the Agent, shares (the "**Placement Shares**") of common stock of the Company, par value $0.0001 per share (the "Common Stock"), having an aggregate offering price of up to $15,000,000, and such amount of Placement Shares available for offer and sale are in addition to any offer and sales of shares remaining unsold under this Agreement pursuant to the Prospectus Supplement dated March 25, 2013, subject to any limitations set forth in Section 5(e) hereof (the "**Maximum Amount**")."

2. Sections 7(m) and 13 are amended by replacing "SNR Denton US LLP" with "Dentons US LLP."

3. Schedule 1 is amended by adding the words "as amended on May 23, 2014" immediately after "March 25, 2013."

4. Schedule 3 shall be amended by deleting "Jordan Karp (jordan.karp@pharmathene.com)" under "The Company" and adding "With copies to: CFControlledEquityOffering@cantor.com" under "The Agent" at the bottom.

5. The first sentence of the Form of Representation Date Certificate attached as Exhibit 7(l) is amended to add "as amended on May 23, 2014" after "March 25, 2013."

B. Prospectus Supplement. The Company shall file a Prospectus Supplement and/or Prospectus reflecting this Amendment within two (2) Business Days of the date hereof.

C. No Other Amendments. Except as set forth in Part A above, all the terms and provisions of the Sales Agreement shall continue in full force and effect.

D. Counterparts. This Amendment may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Delivery of an executed Amendment by one party to the other may be made by facsimile or email transmission.

E. Governing Law. This Amendment shall be governed by, and construed in accordance with, the internal laws of the State of New York without regard to the principles of conflicts of laws.

[Remainder of page intentionally left blank.]

If the foregoing correctly sets forth the understanding between us, please so indicate in the space provided below for that purpose.

Very truly yours,

PHARMATHENE, INC.

By: /s/ Eric I. Richman
Name: Eric I. Richman
Title: President and Chief Executive Officer

ACCEPTED as of the date first above written:

CANTOR FITZGERALD & CO.

By: /s/ Jeffrey Lumby
Name: Jeffrey Lumby
Title: Senior Managing Director

Exhibit 5.1

DENTONS

Dentons US LLP
1221 Avenue of the Americas
New York, New York 10020

T+1 212 768 6700
F+1 212 768 6800

Salans FMC SNR Denton
dentons.com

May 23, 2014

PharmAthene, Inc.
One Park Place, Suite 450
Annapolis, Maryland 21401

Re: Registration Statement on Form S-3

Ladies and Gentlemen:

We have acted as counsel to PharmAthene, Inc., a corporation organized under the laws of the State of Delaware (the "Company"), in connection with the registration under the Securities Act of 1933, as amended (the "Securities Act"), of the issuance and sale from time to time pursuant to Rule 415(a)(1)(x), promulgated under the Securities Act, of securities with an aggregate public offering price of $100,000,000 on a Registration Statement on Form S-3 (the "Registration Statement") being filed on the date hereof with the U.S. Securities and Exchange Commission (the "Commission"), with such Securities consisting of: (i) shares of common stock, par value $0.0001 per share, of the Company (the "Common Stock"); (ii) shares of preferred stock, par value $0.0001 per share, of the Company (the "Preferred Stock"); and (iii) warrants to purchase shares of Common Stock or Preferred Stock (collectively, the "Warrants," and with the Common Stock and the Preferred Stock, collectively the "Shelf Securities").

We also have acted as special counsel to the Company in connection with the sale through Cantor Fitzgerald & Co. as the sales agent (the "Sales Agent") from time to time by the Company of shares of Common Stock having an aggregate offering price of up to $15,000,000 (the "Sales Agreement Shares") pursuant to the Registration Statement, including a base prospectus and the related prospectus for the sale of the Sales Agreement Shares included in the Registration Statement (the Base Prospectus and such prospectus, collectively, the "Sales Agreement Prospectus"), and that certain Sales Agreement, dated as of March 25, 2013, between the Sales Agent and the Company, as amended on May 23, 2014. The Sales Agreement Shares, together with the Shelf Securities, shall be collectively referred to herein as the "Securities."

We are delivering this opinion to you in accordance with the requirements of Item 16 of Form S-3 and Item 601(b)(5)(i) of Regulation S-K promulgated by the Commission.

In connection with rendering this opinion, we have examined originals, certified copies or copies otherwise identified as being true copies of the following:

(a) the Registration Statement;

(b) the Amended and Restated Certificate of Incorporation of the Company, as amended (as so amended, the "Certificate of Incorporation");

(c) the By-Laws of the Company, as amended (as so amended, the "By-Laws");

(d) corporate proceedings of the Company relating to its proposed issuance of the Securities; and

(e) such other instruments and documents as we have deemed relevant or necessary in connection with our opinions set forth herein.

In making the aforesaid examinations, we have assumed the genuineness and authenticity of all documents examined by us and all signatures therein and the conformity to originals of all copies of all documents examined by us. We have also assumed that the corporate records furnished to us by the Company include all corporate proceedings taken by it to date.

Based on and subject to the assumptions, qualifications and limitations set forth herein, we are of the opinion that:

(1) When (i) the Registration Statement has become effective under the Securities Act and (ii) an issuance of the Common Stock has been duly authorized by the Company and, upon issuance and delivery of certificates for the Common Stock against payment therefor in accordance with the terms of such corporate proceeding taken by the Company and any applicable underwriting agreement or purchase agreement, and as contemplated by the Registration Statement and/or the applicable prospectus supplement, or upon the exercise of any Warrants to purchase Common Stock in accordance with the terms thereof, or conversion or exchange of Preferred Stock that, by its terms, is convertible into or exchangeable for Common Stock, and receipt by the Company of any additional consideration payable upon such conversion, exchange or exercise, as applicable, the shares of Common Stock represented by such certificates will be validly issued, fully paid and nonassessable.

(2) When (i) the Registration Statement has become effective under the Securities Act, (ii) a series of Preferred Stock has been duly authorized and established by the Company in accordance with the terms of the Certificate of Incorporation, the By-Laws and applicable law, (iii) one or more appropriate Certificate or Certificates of Designation has or have been filed with the Secretary of State of the State of Delaware and (iv) the issuance of such series of Preferred Stock has been appropriately authorized by the Company and, upon issuance and delivery of certificates for such series of Preferred Stock against payment therefor in accordance with the terms of such corporate proceeding taken by the Company and any applicable underwriting agreement or purchase agreement, and as contemplated by the Registration Statement and/or the applicable prospectus supplement, or upon the exercise of any Warrants to purchase such series of Preferred Stock in accordance with the terms thereof, and receipt by the Company of any additional consideration payable upon such exercise, such series of Preferred Stock represented by such certificates will be validly issued, fully paid and nonassessable.

(3) When (i) the Registration Statement has become effective under the Securities Act, (ii) the Warrants and, if applicable, a warrant agreement conforming to the description thereof in the Registration Statement and/or the applicable prospectus supplement have been duly authorized by the Company and any such warrant agreement has been duly executed and delivered by the Company and the warrant agent named therein and (iii) Warrants conforming to the requirements of any related warrant agreement have been duly authenticated by the applicable warrant agent and duly executed and delivered on behalf of the Company against payment therefor in accordance with the terms of such corporate proceeding taken by the Company, any applicable underwriting agreement or purchase agreement and any applicable warrant agreement, and as contemplated by the Registration Statement and/or the applicable prospectus supplement, the Warrants will constitute binding obligations of the Company.

(4) The Sales Agreement Shares, upon due execution and delivery on behalf of the Company of certificates therefor, including global certificates, or the entry of the issuance thereof in the books and records of the Company, as the case may be, will be validly issued, fully paid and non assessable.

Our opinions are subject to the effect of federal and state bankruptcy, insolvency, reorganization, arrangement, moratorium, fraudulent conveyance and other laws relating to or affecting the rights of secured or unsecured creditors generally (or affecting the rights of only creditors of specific types of debtors), with respect to which we express no opinion.

Our opinions are subject to the effect of general principals of equity, whether applied by a court of law or equity, including, without limitation, concepts of materiality, good faith and fair dealing and upon the availability of injunctive relief or other equitable remedies, and the application of principles of equity (regardless of whether enforcement is considered in proceedings at law or in equity).

The Company has informed us that it intends to issue Securities from time to time on a delayed or continuous basis. The opinions set forth above are limited to applicable laws as in effect on the date hereof. Prior to issuing any Securities pursuant to the Registration Statement (i) the Company will advise us in writing of the terms thereof, and (ii) the Company will afford us an opportunity to review the documents pursuant to which such Securities are to be issued or sold (including the applicable offering documents) and the Company will file such supplement or amendment to this opinion (if any) as we may reasonably consider necessary or appropriate.

We express no opinion as to the laws of any jurisdiction other than the corporate laws of the State of Delaware (including the Delaware General Corporation Law and applicable provisions of the Delaware constitution, as well as reported judicial decisions interpreting the same, but excluding local laws) and the federal laws of the United States of America.

We hereby consent to the use of our opinion as herein set forth as an exhibit to the Registration Statement and to the use of our name under the caption “Legal Matters” in the prospectus forming a part of the Registration Statement. We do not, by giving such consent, admit that we are within the category of persons whose consent is required under Section 7 of the Act.

Very truly yours,

/s/ Dentons US LLP

Exhibit 23.2

Consent of Independent Registered Public Accounting Firm

We consent to the reference to our firm under the caption “Experts” in the Registration Statement (Form S-3) and related Prospectus of PharmAthene, Inc. for the registration of shares of its Common Stock, Preferred Stock, and Warrants and to the incorporation by reference therein of our report dated March 11, 2014, with respect to the consolidated financial statements of PharmAthene, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2013, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Baltimore, Maryland

May 22, 2014