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PROSPECTUS

4,582,659 Shares of Common Stock Underlying 10% Convertible Notes

This prospectus relates to the resale from time to time by the selling stockholders (described in the section entitled "Selling Stockholders" on page 18 of this prospectus) of 4,582,659 shares of our common stock, par value $0.0001 per share, representing a portion of the up to 9,131,235 shares of common stock issuable upon conversion of the 10% Convertible Notes issued to investors pursuant to the Note and Warrant Purchase Agreement, dated as of July 24, 2009, as amended, between PharmAthene, Inc. and the investors named in that agreement. We refer to that agreement as the "Note and Warrant Purchase Agreement" and to the notes as the "10% Convertible Notes" or the "Notes". Up to 2,572,775 additional shares of our common stock are issuable upon exercise of warrants with a fixed exercise price of $2.50 per share that were also issued pursuant to the Note and Warrant Purchase Agreement (which we refer to as the "warrants"). The shares underlying the warrants are not being registered for resale pursuant to this prospectus.

The selling stockholders may offer and sell, from time to time, in the open market or in privately negotiated transactions and at market prices, fixed prices or negotiated prices, all or any portion of the shares registered for resale hereby in amounts and on terms to be determined at the time of sale. For additional information on the possible methods of sale that may be used by the selling stockholders, you should refer to the section entitled "Plan of Distribution" on page 31 of this prospectus. We will not receive any of the proceeds from the resale of shares of our common stock by the selling stockholders.

Our common stock is listed on NYSE Amex under the symbol "PIP." On November 24, 2009, the last reported sale price per share of common stock on that exchange was $3.49.

Investing in our common stock involves certain risks. You should read the entire prospectus and any accompanying prospectus supplement carefully before you make your investment decision. See "Risk Factors" beginning on page 3.

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

The date of this prospectus is November 25, 2009.

ABOUT THIS PROSPECTUS

You should rely only on the information contained or incorporated by reference in this prospectus and any applicable prospectus supplements. Neither PharmAthene, Inc. nor the selling stockholders have 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. The Company is not making any offer to sell these securities and the selling stockholders 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 appearing in this prospectus is accurate only as of the date on the cover page and that information contained in any document incorporated by reference in this prospectus is only accurate as of the date of the document incorporated by reference. Our business, financial condition, results of operations and prospects may have subsequently changed.

On August 3, 2007, Healthcare Acquisition Corp. ("HAQ") consummated a merger (the "Merger") with a Delaware corporation which at the time was known as "PharmAthene, Inc." ("Former PharmAthene"), whereby Former PharmAthene became a wholly-owned subsidiary of HAQ, HAQ changed its name to "PharmAthene, Inc." and Former PharmAthene changed its name to "PharmAthene US Corporation." Effective February 27, 2009 PharmAthene US Corporation was merged with and into PharmAthene, Inc., with PharmAthene, Inc. being the surviving corporation. Unless specifically noted otherwise, as used throughout this prospectus, "the Company", "PharmAthene", "we", "us" or "our" refers to the business of the combined company after the Merger and to the business of Former PharmAthene prior to the Merger. 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.

SUMMARY

We are a biodefense company engaged in the development and commercialization of medical countermeasures against biological and chemical weapons. We currently have five product candidates in various stages of development:

- SparVax™ - a second generation recombinant protective antigen ("rPA") anthrax vaccine,
- Valortim®, a fully human monoclonal antibody (an identical population of highly specific antibodies produced from a single clone) for the prevention and treatment of anthrax infection,
- Protexia®, which mimics a natural bioscavenger for the treatment or prevention of nerve agent poisoning by organophosphate compounds, including nerve gases and pesticides,
- a third generation rPA anthrax vaccine, and

- RypVax™ - a recombinant dual antigen vaccine for pneumonic and bubonic plague ("rYP").

In August 2009 we began a Phase I clinical trial of our Valortim® anthrax anti-toxin fully human monoclonal antibody in combination with the antibiotic ciprofloxacin. During the course of the study, there were two adverse reactions in the four subjects dosed, one of which was characterized by the clinical investigators as a serious adverse event. While both adverse reactions resolved after cessation of the administration of Valortim® and appropriate medical treatment, and neither of the subjects appears to have experienced any further or lasting adverse consequences, we temporarily halted the trial per the requirements of the clinical trial protocol and informed the U.S Food and Drug Administration ("FDA") and the National Institute of Allergy and Infectious Diseases (NIAID) of these developments. The FDA has placed the Valortim®/ciprofloxacin study on partial clinical hold pending the outcome of an investigation. This clinical hold does not pertain to other Valortim® related development efforts under the existing investigational new drug (IND) application, and adverse reactions like those seen in this trial have been observed before with the administration of other marketed monoclonal antibodies.

The Biomedical Advanced Research and Development Authority ("BARDA") has also informed us that they will not make an award with respect to our submission for additional advanced development funding for Valortim® under BAA-BARDA-09-34 until satisfactory resolution of this issue and the clinical hold is lifted, at which point we expect they will promptly re-commence the negotiation process. The antibiotic interaction study is not on the critical development path for FDA licensure for the product, and at this point the Company does not believe the delay to this trial will impact the overall Valortim® development timeline. However, it is unclear at this time how long it will take us to complete our investigation, if and when we will be in a position to recommence negotiations with BARDA with respect to a potential award under the BAA, and how any delay in potential future funding of the program could affect the overall Valortim® development timeline.

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 you should carefully consider the risks described below relating to investment in our common stock. 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, financial condition and/or results of operations could be materially adversely affected, the trading price of our common stock could decline and you could lose all of your investment.

Risk Related to Request for Proposal RFP-BARDA-08-15

If we do not receive the award by the U.S. Department of Health and Human Services (the "DHHS") for an rPA anthrax vaccine, we likely will need to curtail our operations significantly and we may be placed at a competitive disadvantage in the biodefense industry.

On February 29, 2008, the DHHS issued a formal Request for Proposal (RFP-BARDA-08-15) for an "Anthrax Recombinant Protective Antigen (rPA) Vaccine for the Strategic National Stockpile," which includes a requisition for 25 million doses of an rPA anthrax vaccine. We submitted a response to this solicitation on July 31, 2008. While the original solicitation indicated that an award would be made by September 26, 2008, which was later extended to December 31, 2008, DHHS subsequently delayed the award date further because, among other things, of a protest filed by a bidder that had been eliminated from further consideration under the solicitation. The U.S. General Accounting Office (the "GAO") subsequently denied that protest. On April 15, 2009, DHHS issued an amendment to the RFP requiring that each bidder submit by April 30, 2009 a comprehensive plan to the FDA outlining the bidder's regulatory strategy for the rPA anthrax vaccine to be developed under a contract should one be awarded under the solicitation. Pursuant to an amendment dated April 22, 2009, DHHS further extended the submission deadline to June 15, 2009. On July 9, 2009, the Company announced that the FDA completed its review of the Company's proposed development plan for SparVax™, and the Company has shared the FDA's feedback with BARDA as required by these two amendments. Timing for an award under this solicitation remains uncertain. There can be no assurance that DHHS will not again extend the timeline for issuing an award, add other requirements, or that the Company will be awarded a contract under that solicitation.

We are currently aware of at least one other bidder for the award with substantially greater financial and other resources, manufacturing capabilities and commercialization capabilities than we have. Because the U.S. government is currently the only customer for our product candidates, if we fail to receive the award for the rPA anthrax vaccine, we could be forced to abandon or severely curtail our efforts with respect to our lead product candidate, SparVax™, which, in turn, could place us at a competitive disadvantage. We have been engaged in discussions with DHHS with respect to our ability to satisfy the requirements of the RFP. DHHS has requested additional information that, if not determined by them to be satisfactory, could result in our elimination from consideration for procurement. No assurances can be given that DHHS will make an award to us or that if made, it will not include substantial conditions, that we can satisfy all of these conditions or that we can begin to receive any proceeds from any such award within any specific period of time. In any event, we still have not completed development of SparVax™ and our ability to recognize any meaningful proceeds from the sale of SparVax™ will still depend upon our completing the development and testing of such product.

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. For the three and nine months ended September 30, 2009, we incurred operating losses of approximately $14.0 million and $26.6 million respectively and had an accumulated deficit of approximately $150.6 million at September 30, 2009. Our losses to date have resulted principally from research and development costs related to the development of our product candidates, general and administrative costs related to operations, and costs related to the Avecia Acquisition.

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

- developing our existing products and developing and testing new product candidates;
- receiving regulatory approvals;
- carrying out our intellectual property strategy;
- establishing our competitive position;
- pursuing third-party collaborations;
- acquiring or in-licensing products;
- manufacturing and marketing products; and
- continuing to receive government funding and identifying new government funding opportunities.

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 might include acquisitions of other businesses, acquisition expenses and any cash used to make these acquisitions will reduce our available cash. While we believe that our existing cash resources, along with cash receipts from contract receivables (some of which were unbilled at September 30, 2009) generated under our contracts, will be sufficient to enable us to fund our existing research and development programs and support our currently anticipated general and administrative activities at least through the end of 2010, there can be no assurance that unexpected financial obligations or other activities that increase our use of cash will not result in our depleting our cash resources quicker than presently anticipated. Furthermore, if we receive the award from DHHS for advanced development and procurement of SparVax™, we would be obligated to make $10 million in milestone payments to Avecia within 90 days of the receipt of such award.

The continuing turmoil affecting the banking system and financial markets and the possibility that financial institutions may consolidate or cease operations has resulted in a tightening in the credit markets, a low level of liquidity in many financial markets and extreme volatility in fixed income, credit, currency and equity markets. As a result, there can be no assurances that we will 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, as we did recently with the sale of the 10% Convertible Notes and related warrants, 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.

Risks Related to Product Development and Commercialization

We have not commercialized any products or recognized any revenues from sales. 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 products or recognized any revenues from product sales. In general, our research and development programs are at early stages. There can be no assurances that one or more of our future product candidates will not fail to meet safety 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 U.S. Food and Drug Administration (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.

Research and development efforts in the biodefense industry are time-consuming and subject to delays. Even if we initially receive positive early-stage pre-clinical or clinical results, such results may not be indicative of results that could be anticipated in the later stages of drug development. Delays in obtaining results in our non-clinical studies and clinical testing can occur for a variety of reasons, such as slower than anticipated enrollment by volunteers in the trials, adverse events related to the products, failure to comply with Good Clinical Practices, unforeseen safety issues, unsatisfactory results in trials, perceived defects in the design of clinical trials, changes in regulatory policy as well as for reasons detailed in "*Risk Factors—Necessary Reliance on the Animal Rule in Conducting Trials is Time-Consuming and Expensive*."

Any delay or adverse clinical event arising during any of our clinical trials could force us to conduct additional clinical trials in order to obtain approval from the FDA and other regulatory bodies. Our development costs will increase substantially if we experience material delays in any clinical trials or if we need to conduct more or larger trials than planned.

If delays are significant, or if any of our products do not prove to be safe, pure, and potent (including efficacy) or do not receive required regulatory approvals, we may have to abandon the product altogether and will be unable to recognize revenues from the sale of that product. In addition, our collaborative partners may not be able to conduct clinical testing or obtain necessary approvals from the FDA or other regulatory authorities for any product candidates jointly developed by us and our partners. If we fail to obtain required governmental approvals, we and our collaborative partners will experience delays in, or be precluded from, marketing products developed through them or, as applicable, their research.

Necessary Reliance on the Animal Rule in Conducting Trials is Time-Consuming and Expensive.

As described in our annual report on Form 10-K for the year ended December 31, 2008 under "*Business—U.S. Government Regulatory Pathway—General*", 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 preclinical, clinical or other studies, refuse to approve our products, or place restrictions on our ability to commercialize those products. Further, other countries do not, at this time, have 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 U.S. and internationally have the capability to test animals with anthrax, plague, 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, we 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 contract manufacturers ("CMOs") will also be required to comply with the applicable FDA current Good Manufacturing Practice ("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.

In particular, as part of the transfer of our existing contract with NIAID for the development of SparVax™ to BARDA on April 1, 2009, the terms of that contract were modified to provide for the transfer of the manufacturing process for the bulk drug substance for SparVax™ from Avecia Biologics in the U.K. to a U.S.-based contract manufacturing organization. We believe that if we are awarded a contract under RFP-BARDA-08-15 for the advanced development and procurement of 25 million doses of SparVax™, the U.S. government will require that such new CMO manufacture the bulk drug substance for SparVax™. This contract manufacturer has not manufactured that bulk drug substance before, and there can be no assurance we will be successful in our technology transfer efforts or that this new contract manufacturer will ever be able to manufacture sufficient amounts of cGMP quality bulk drug substance necessary for us to meet our obligations under any such advanced development and procurement contract.

We may fail to fully realize the potential of Valortim® and of our co-development arrangement with Medarex, our partner in the development of Valortim®, which would have an adverse effect upon our business. We have completed only one Phase I clinical trial for Valortim® with our development partner, Medarex, at this point. As discussed in "*—Risks Related to Our Dependence on U.S. Government Contracts—Most 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*", in the fourth quarter of 2009, the FDA placed our Phase I clinical trial of Valortim® and ciprofloxacin on clinical hold, pending the results of our investigation of the potential causes for adverse reactions observed in two subjects dosed in the trial. BARDA has advised us that until satisfactory resolution of this issue and the clinical hold is lifted it will not act on our request for additional advanced development funding for Valortim® under BAA-BARDA-09-34.

Before we may begin selling any doses of Valortim®, we will need to conduct more comprehensive safety trials in a significantly larger group of human subjects. We will be required to expend a significant amount to finalize manufacturing capability through a contract manufacturer to provide material to conduct the pivotal safety and efficacy trials. If our contract manufacturer is unable to produce sufficient quantities at a reasonable cost, or has any other obstacles to production, such as volatile manufacturing, then we will be unable to commence these required clinical trials and studies. Even after we expend sufficient funds to complete the development of Valortim® and if and when we enter into an

agreement to supply Valortim® to the U.S. government, we will be required to share any and all profits from the sale of products with our partner in accordance with a pre-determined formula.

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.

For example, we have an agreement with Medarex to develop Valortim®, a fully human monoclonal antibody product designed to protect against and treat inhalation anthrax. Under the agreement with Medarex, we will be entitled to a variable percentage of profits derived from sales of Valortim®, if any,

depending, in part, on the amount of our investment. 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 continuing credit crisis and further weakening of the global economy, or if they are acquired as part of the current wave of consolidations in the pharmaceutical industry (such as, for example, with the recent acquisition of Medarex by Bristol Myers Squibb), 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. Finally, 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. For example, our license agreement from DSTL for certain technology related to RypVax™ requires that we diligently pursue development of this product candidate to maintain exclusive rights to the technology. Upon termination of our existing contract with the U.S. government for the development of RypVax™, which is on an accelerated wind-down schedule, we may decide not to continue with development efforts at a level necessary to meet this requirement.

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. For our future collaboration efforts to be successful, we must first identify partners whose capabilities complement and integrate well with ours. We face, and will continue to face, significant competition in seeking appropriate collaborators. Collaboration arrangements are complex and time consuming to negotiate, document and implement. We may not be successful in our efforts to establish and implement collaborations or other similar arrangements. The terms of any collaboration or other arrangements that we establish may not be favorable to us. Furthermore, technologies to which we gain access may prove ineffective or unsafe or our partners may prove difficult to work with or less skilled than we originally expected. In addition, any past collaborative successes are no indication of potential future success.

We may also pursue strategic acquisitions to further our development and commercialization efforts. To achieve the anticipated benefits of an acquisition, we must integrate the acquired company's business, technology and employees in an efficient and effective manner. The successful combination of companies in a rapidly changing biodefense 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.

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 human 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 Health and Human Services 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 we cannot be certain that any such protection will apply to our products or if applied what the scope of any such coverage will be*" below. 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.

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

Most 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 national governments, primarily 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 existing government contracts will be renewed or that we can enter into new contracts or receive new grants. The process of obtaining government contracts is lengthy and uncertain and we will have to compete with other companies for each contract. For example, while RFP-BARDA-08-15 for an rPA vaccine for the SNS initially indicated that the government would make an award by September 26, 2008 (later extended multiple times), as of the date this prospectus is filed, the government has still not issued an award under that solicitation. There can be no assurances that we will be awarded any contracts to supply the U.S. or other governments with our products as such awards may be made, in whole or in part, to our competitors. If the U.S. government makes significant future contract awards for the supply to the U.S. emergency stockpile of a competing product, our business will be harmed and it is unlikely that we will ultimately be able to supply that particular treatment or product to foreign governments or other third parties. Further, changes in government budgets and agendas, cost overruns in our programs, or advances by our competitors, may result in a decreased and de-prioritized emphasis on, or termination of, government contracts that support the development and/or procurement of the biodefense products we are developing For example, the U.S. government has selected a plague vaccine product candidate from a competitor for advanced development funding, and we do not anticipate that the U.S. government will provide additional funding in the future for or procure RypVax™. Furthermore, given the limited future prospects for RypVax™ at this time, we and the U.S. government have agreed to a reduction to the scope of work that will result in early wind down of all activities under that contract, likely no later than the end of the first half of 2010. Previously, the contract was expected to expire in the second half of 2011.

Under the terms of our 2006 contract with the U.S. Department of Defense regarding Protexia®, the Department of Defense may elect not to continue development assistance of this nerve agent countermeasure after the final payment under the initial funding of $41 million has been received (which decision we anticipate may occur in the first quarter of 2010), or, if the Department of Defense does so elect to continue funding and we meet all development milestones, it may nevertheless choose not to procure any doses of Protexia®.

In the fourth quarter of 2009, the FDA placed our phase I clinical trial of Valortim® and ciprofloxacin on clinical hold, pending the results of our investigation of the potential causes for adverse reactions observed in two subjects dosed in the trial. BARDA has advised us that until satisfactory resolution of this issue and the clinical hold is lifted it will not act on our request for additional advanced development funding for Valortim® under BAA-BARDA-09-34. It is unclear at this time how long it will take us to complete our investigation, if and when we will be in a position to recommence negotiations with BARDA with respect to a potential award under the BAA, and how any delay in potential future funding of the program could affect the overall Valortim® development timeline.

Due to the current economic downturn, the accompanying fall in tax revenues and the U.S. government's efforts to stabilize the economy, the U.S. government may be forced or choose to reduce or delay spending in the biodefense field, which could decrease the likelihood of future government contract awards or that the government would procure products from us.

U.S. government agencies have special contracting requirements that give them the ability to unilaterally control our contracts.

U.S. government contracts typically contain unfavorable termination provisions and are subject to audit and modification 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:

- suspend or prevent us 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, including if funds become unavailable to the applicable governmental agency;
- reduce the scope and value of our contracts;
- audit and object to our contract-related costs and fees, including allocated indirect costs;
- control and potentially prohibit the export of our products; and
- change certain terms and conditions in our contracts.

The U.S. government will be able to terminate any of its contracts with us either for its convenience or if we default by failing to perform in accordance with the contract schedule and terms. 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.

Due to the current economic downturn, the accompanying fall in tax revenues, and the U.S. government's efforts to stabilize the economy, the U.S. government may be forced or choose to reduce or delay spending in the biodefense field, 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 GAO or in federal court. If such a challenge is successful, a contract may be terminated.

The laws and regulations governing the procurement of goods and services by the U.S. government provide procedures by which other bidders and other interested parties may challenge the award of a government

contract. If we are awarded a government contract, such challenges or protests could be filed even if there are not any valid legal grounds on which to base the protest. If any such protests are filed, the government agency may decide to suspend our performance under the contract while such protests are being considered by the GAO or the applicable federal court, thus potentially delaying delivery of goods and services and payment. In addition, we could be forced to expend considerable funds to defend any potential award. If a protest is successful, the government may be ordered to terminate our contract and reselect bids. The government could even be directed to award a potential contract to one of the other bidders. An example is the protest filed by a third-party bidder with the GAO challenging the decision of the DHHS to eliminate that bidder from further consideration under the solicitation for an rPA vaccine for the Strategic National Stockpile (RFP-BARDA-08-15), a result of which was a delay to the contract award date under this solicitation.

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, or the DCAA, routinely audit and investigate 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 prohibition from conducting business with the U.S. government.

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 Federal Acquisition Regulations, or FAR, and agency-specific regulations supplemental to the Federal Acquisition Regulations, which comprehensively regulate the procurement, formation, administration and performance of government contracts;
- the business ethics and public integrity obligations, which govern conflicts of interest and the hiring of former government employees, restrict the granting of gratuities and funding of lobbying activities and incorporate other requirements such as the Anti-Kickback Act and Foreign Corrupt Practices Act;
- export and import control laws and regulations; and
- 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.

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 clinical research centers 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 centers 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 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 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 because of prior commitments to our competitors, 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 perform 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 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.

We were notified by the contract manufacturer who supplies the pegylation reagent for our Protexia® product candidate that it intends to cease its contract manufacturing operations to focus exclusively on developing its own proprietary product candidates. We are now in the process of searching for an alternative supplier. As part of this process, we will need to negotiate and execute a license to certain intellectual property from our current supplier related to the pegylation process and to engage in a technology transfer process to a new supplier. If we are not successful in these endeavors, our Protexia® development program will be adversely affected.

Finally, third-party manufacturers, suppliers and distributors, like most companies, have been adversely affected by the current 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 increasingly 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 weakening 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. As noted above in "- *Most 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,*" the U.S. government has selected a plague vaccine product candidate from a competitor for advanced development funding. We and the U.S. government have agreed to a reduction to the scope of work that will result in early wind down of all activities under that contract, likely no later than the end of the first half of 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.

While the regulatory climate for generic versions of biological products approved under a Biologics License Application (or a BLA) in the United States remains uncertain, and currently there is no formalized mechanism by which the FDA can approve a generic version of an approved biological product, Federal legislation has been introduced to establish a legal pathway for the approval of generic versions of approved biological products. If enacted, the legislation will 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.

The patent position of biotechnology firms generally is highly uncertain and involves 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 hold two U.S. patents, have five pending U.S. patent applications, and have a limited number of foreign patents and pending international and foreign patents 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 reproduction of antibodies. 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.

We are also aware of pending applications directed to pegylated butyrylcholinesterase. Protexia® incorporates butyrylcholinesterase. If patents are issued to third parties that cover Protexia® or other products, we may be required to obtain a license under such patents or obtain alternative technology. We cannot provide any assurances that such licenses will be available or that the terms thereof will be reasonable or that we will be able to develop alternative technologies. 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 licensees 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 we 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 Health and Human Services 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 Health and Human Services 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 Health and Human Services, 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 Health and Human Services 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 regarding aspects of our Protexia® product candidate) subject to the International Traffic in Arms Regulations (“ITAR”) administered by the U.S. Department of State. 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.

In particular, as noted above in "*—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 are transferring the manufacturing process for the bulk rPA drug substance from Avecia in the United Kingdom to a U.S.-based contract manufacturer. In connection with that transfer, we also anticipate moving our U.K.-based operations to the United States by June 30, 2010. There can be no assurance that we will be able to recruit and hire the necessary staff in the U.S. to complete the transfer of activities in a timely and cost effective manner.

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

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

We will likely seek to raise additional capital and may do so at any time through various financing alternatives, including potentially selling shares of common or preferred stock, notes and/or warrants convertible into, or exercisable for, shares of common or preferred stock. We could again rely upon the shelf registration statement on Form S-3, which was declared effective on February 12, 2009, in connection with a sale from time to time of common stock, preferred stock or warrants or any combination of those securities, either individually or in units, in one or more offerings for up to $50,000,000 (inclusive of the gross proceeds from our recent public offering of $5.5 million and the $2.1 million we would receive if all of the warrants issued in that offering were exercised). Raising capital in this manner or any other manner may depress the market price of our stock, and any such financing(s) will dilute our existing shareholders.

In addition, as of September 30, 2009, we had outstanding options to purchase approximately 5.2 million shares of common stock. 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. Furthermore, the 10% Convertible Notes in the aggregate principal amount of $19.3 million issued in July 2009 are convertible at approximately $2.54 per share into approximately 7.6 million shares of our common stock (not including interest), and the accompanying warrants are exercisable beginning on January 28, 2010 for up to approximately 2.6 million shares of common stock at $2.50 per share. Finally, as of November 6, 2009, the Company had issued and outstanding additional warrants to purchase up to an additional approximately 3.5 million shares of common stock. The issuance or even the expected issuance of a large number of shares of our common stock upon 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 shareholders.

If we are unable to continue to satisfy the listing requirements of NYSE Amex, our securities could be delisted from trading which could limit investors' ability to make transactions in our securities and subject us to additional trading restrictions.

Our common stock and certain warrants are listed on the NYSE Amex (formerly the NYSE Alternext US or American Stock Exchange), a national securities exchange, which imposes continued listing requirements with respect to listed shares. If we fail to satisfy one or more of the requirements, such as the policy that issuers that have had losses in their five most recent fiscal years have stockholders' equity of at least $6,000,000, that issuers have more than 300 public shareholders, or that the aggregate market value of shares publicly held be more than $1,000,000, the NYSE Amex may decide to delist our common stock. If the NYSE Amex delists our securities from trading on its exchange 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 or obtain additional financing in the future.

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

We have not paid any dividends on our common stock in 2007, 2008, and the first nine months of 2009 and 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.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. 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, risk associated with the

reliability of the results of the studies relating to human safety and possible adverse effects resulting from the administration of the Company's product candidates, unexpected funding delays and/or reductions or elimination of U.S. government funding for one or more of the Company's development programs, including without limitation our bid related to SparVax™ under the DHHS Request for Proposals for an Anthrax Recombinant Protective Antigen (rPA) Vaccine for the Strategic National Stockpile, the award of government contracts to our competitors, unforeseen safety issues, challenges related to the development, 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, as well as risks detailed from time to time in PharmAthene's Forms 10-K and 10-Q under the caption "Risk Factors" and in its other reports filed with the U.S. Securities and Exchange Commission (the "SEC"). 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, anticipated financial or operational results and expected benefits from our acquisition of the biodefense vaccines business ("Avecia Acquisition") from Avecia Biologics Limited and certain of its affiliates ("Avecia"). 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. 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.

USE OF PROCEEDS

We have received proceeds of approximately $10.5 million in connection with the issuance of the 10% Convertible Notes and warrants and we will receive the exercise price of $2.50 per share upon exercise of any warrants. We will use any proceeds from the exercise of the warrants for the satisfaction of existing obligations and for general working capital. We will not receive any of the proceeds from the sale of our common stock offered by the selling stockholders named in this prospectus.

SELLING STOCKHOLDERS

An aggregate of 4,582,659 shares of our common stock will be registered for resale by the selling stockholders under this prospectus, representing a portion of the up to 9,131,235 shares of common stock issuable upon conversion of the 10% Convertible Notes issued to investors pursuant to the Note and Warrant Purchase Agreement. Up to 2,572,775 additional shares of our common stock are issuable upon exercise of the warrants issued pursuant to that agreement, but are not being registered for resale under this prospectus. Of the 9,131,235 shares of common stock issuable upon conversion of the 10% Convertible Notes, up to 7,591,790 shares are issuable in respect of the aggregate principal amount of the notes and up to 1,539,445 shares are issuable in respect of interest that accrues on the notes, assuming conversion of all of the notes on the date of maturity. The number of shares so issuable has been calculated by dividing the sum of the aggregate principal amount and the maximum interest amount, assuming conversion of all of the notes on the date of maturity, by the conversion price of $2.541667 per share. All of the shares referred to above were issued or will be issued by us, if at all, pursuant to exemptions from registration under Section 4(2) of the Securities Act. The description of the 10% Convertible Notes is set forth in our Current Reports on Form 8-K and Form 8-K/A filed with the SEC on July 30, 2009 and August 3, 2009, respectively, and is incorporated herein by reference.

The closing price per share of our common stock on the NYSE Amex on July 24, 2009, i.e., the trading day immediately preceding the time that we entered into the binding agreement to issue the 10% Convertible Notes and related warrants, was $2.50. Based on this closing price, the aggregate dollar value of the 4,582,659 shares being registered for resale under this prospectus is $11,456,648.

To the extent permitted by law, the selling stockholders listed below may resell shares pursuant to this prospectus. We have registered the sale of the shares to permit the selling stockholders and their respective permitted transferees or other successors in interest that receive their shares from the selling stockholders after the date of this prospectus to resell the shares.

The following table sets forth the name of the selling stockholders, the number and percentage of shares of our common stock beneficially owned by each of the selling stockholders as of November 11, 2009 and immediately after the offering (assuming that all shares offered in this prospectus are sold and the selling stockholders' beneficial ownership does not otherwise change) and the number of shares of our common stock being offered by the selling stockholders. The selling stockholders may sell all, some or none of the shares being offered. Accordingly, no estimate can be given as to the number of shares that will be held by the selling stockholders upon consummation of any sales. In addition, the selling stockholders listed in the table below may have acquired, sold or transferred, in transactions exempt from registration, some or all of their shares since the date as of which the information in the table is presented.

All information with respect to share ownership has been furnished by the selling stockholders, obtained from our transfer agent and/or obtained from certain beneficial ownership filings made by the selling stockholders with the SEC. Each selling stockholder that is an affiliate of a broker-dealer has informed us that it purchased the shares being registered for resale in the ordinary course of business and at the time of such purchase, it had no agreements or understandings, directly or indirectly, with any person to distribute the shares. From time to time, additional information concerning ownership of the shares of common stock may rest with holders of the shares not named in the table below and of whom we are unaware.

	Number of Shares Beneficially Owned Prior to the Offering(1)		Number of Shares Being Offered	Shares Beneficially Owned After the Offering(1)	
Name of Selling Stockholder	Number(2)	Percentage	Underlying Notes(3)	Number(2)	Percentage
Healthcare Ventures VII, L.P.(4)	4,237,133	14.43%	500,517	3,736,616	12.73%
MPM Asset Management Investors 2004 BVIII LLC, MPM Bioventures III, L.P., MPM Bioventures III GmbH & Co. Beteiligungs KG, MPM Bioventures	5,740,117	18.71%	1,298,698	4,441,419	14.47%

III Parallel Fund, L.P. and MPM Bioventures III-QP, L.P. (collectively, "MPM")(5)					
David Wright(6)	919,181	3.17%	14,672	904,509	3.12%
Ronald W. Kaiser(7)	8,923	0.03%	2,264	6,659	0.02%
Ontario Teachers' Pension Plan Board(8)	1,186,652	4.11%	241,823	944,829	3.27%
Jerome Parks	25,426	0.09%	14,672	10,754	0.04%
Joel McCleary(9)	196,279	0.69%	10,032	186,247	0.65%
Eric Richman(10)	288,818	1.01%	3,908	284,910	0.99%
Baker Bros. Investments II, L.P., Baker Brothers Life Sciences, L.P. and 14159, L.P.(11)	3,719,267	9.99%(11)	1,662,466	2,056,801	6.57%

	Number of Shares Beneficially Owned Prior to the Offering(1)		Number of Shares Being Offered	Shares Beneficially Owned After the Offering(1)	
Name of Selling Stockholder	Number(2)	Percentage	Underlying Notes(3)	Number(2)	Percentage
Derace Schaffer(12)	1,152,748	3.99%	237,495	915,253	3.17%
James H. Desnick	255,792	0.89%	118,747	137,045	0.48%
Edward F. Heil	205,792	0.72%	118,747	87,045	0.30%
Argyris (RJ) Vassiliou(13)	317,316	1.11%	47,499	269,817	0.95%
Ann Vassiliou Children's Trust(14)	173,475	0.61%	71,249	102,226	0.36%
Mary L. Pappajohn(15)	411,584	1.43%	237,495	174,089	0.60%
Christopher Camut(16)	226,302	0.79%	2,375	223,927	0.78%
TOTAL	**19,064,805**		4,582,659	**14,482,146**	

* Less than 1%

(1) Based on 28,435,598 shares of our common stock outstanding as of November 11, 2009. Beneficial ownership is determined in accordance with the rules and regulations of the SEC. In computing the number of shares beneficially owned by a person and the percentage ownership of that person, shares of our common stock underlying warrants, options and convertible notes held by that person that are currently exercisable/convertible or exercisable/convertible within 60 days of November 11, 2009, are deemed outstanding. Such shares, however, are not deemed outstanding for the purposes of computing the percentage ownership of any other person. Except as indicated pursuant to applicable community property laws, each stockholder named in the table has sole voting and investment power with respect to the shares set forth opposite such stockholder's name.

(2) In accordance with the definition of beneficial ownership, this number (i) includes the shares issuable in respect of the principal amount of the 10% Convertible Notes and the shares issuable in respect of interest on such notes that will accrue within 60 days of November 11, 2009 and (ii) does not include shares of common stock issuable upon exercise of the related warrants. The warrants are not exercisable until January 28, 2010.

(3) The number of shares underlying the 10% Convertible Notes in this column represents only a portion of the shares issuable in respect of the notes held by an investor.

(4) The number of shares beneficially owned prior to the offering includes 867,407 shares issuable upon conversion of the 10% Convertible Notes (including shares underlying interest that will accrue within 60 days of November 11, 2009) and the shares underlying the options mentioned below. Dr. James Cavanaugh, a member of our Board of Directors, is a general partner of HealthCare Partners VII, L.P., which is the general partner of HealthCare Ventures VII, L.P. In such capacity he may be deemed to share voting and investment power with respect to these shares. Dr. Cavanaugh disclaims beneficial ownership of these shares except to the extent of his proportionate pecuniary interest therein. Dr. Cavanaugh owns options to purchase 52,483 shares of common stock which were exercisable as of November 11, 2009 or will be exercisable within 60 days thereof and are therefore included in this number (out of a total of 52,759 options held by Dr. Cavanaugh). The remaining general partners of HealthCare Partners VII, L.P. are Dr. Christopher Mirabelli, Mr. Harold Werner, Mr. Augustine Lawlor and Mr. John Littlechild. Pursuant to the Note and Warrant Purchase Agreement and our Amended and Restated Certificate of Incorporation, the holders of a majority of the then - outstanding aggregate principal amount of the 10% Convertible Notes have the right to elect two members of our Board of Directors. Dr. Cavanaugh has been re-elected by such holders at our annual meeting on October 29, 2009, to serve as a member of our Board.

(5) The number of shares beneficially owned prior to the offering includes 2,250,674 shares issuable upon conversion of the 10% Convertible Notes (including shares underlying interest that will accrue within 60 days of November 11, 2009). MPM BioVentures III GP, L.P. and MPM BioVentures III LLC are the direct and indirect general partners of MPM BioVentures III-QP, L.P., MPM BioVentures III GmbH & Co. Beteiligungs KG, MPM BioVentures III, L.P. and MPM BioVentures III Parallel Fund, L.P. The Series A members of MPM BioVentures III LLC and managers of MPM Asset Management Investors 2004 BVIII LLC are Luke Evnin, Ansbert Gadicke, Nicholas Galakatos, Dennis

Henner, Nicholas Simon III, Michael Steinmetz and Kurt Wheeler, who disclaim beneficial ownership of these shares except to the extent of their proportionate pecuniary interest therein. Pursuant to the Note and Warrant Purchase Agreement and our Amended and Restated Certificate of Incorporation, the holders of a majority of the then - outstanding aggregate principal amount of the 10% Convertible Notes have the right to elect two members of our Board of Directors. Dr. Steven St. Peter has been re-elected by such holders at our annual meeting on October 29, 2009, to serve as a member of our Board. Dr. St. Peter is affiliated with the MPM Funds, but is not a member of the general partners and thus is not deemed to have beneficial ownership of the shares owned by the MPM Funds.

(6) The number of shares beneficially owned prior to the offering includes 137,185 restricted shares (included herein irrespective of the vesting date), options to purchase 519,255 shares of common stock (representing the portion of options to purchase a total of 999,388 shares of common stock that was exercisable as of November 11, 2009 or will become exercisable within 60 days thereof) and 25,426 shares issuable upon conversion of the 10% Convertible Notes (including shares underlying interest that will accrue within 60 days of November 11, 2009). Mr. Wright is our President and Chief Executive Officer and a member of our Board of Directors.

(7) The number of shares beneficially owned prior to the offering includes 3,923 shares issuable upon conversion of the 10% Convertible Notes (including shares underlying interest that will accrue within 60 days of November 11, 2009).

(8) The number of shares beneficially owned prior to the offering includes 767,568 shares of our common stock held by a wholly-owned subsidiary of the selling stockholder and 419,084 shares issuable upon conversion of the 10% Convertible Notes (including shares underlying interest that will accrue within 60 days of November 11, 2009). We have been advised by the selling stockholder that the voting and dispositive power with respect to the shares being registered is exercised jointly by Terry Woodward and Imtiaz Khan.

(9) The number of shares beneficially owned prior to the offering includes options to purchase 77,483 shares of common stock (representing the portion of options to purchase a total of 102,759 shares of common stock that was exercisable as of November 11, 2009 or will become exercisable within 60 days thereof) and 17,386 shares issuable upon conversion of the 10% Convertible Notes (including shares underlying interest that will accrue within 60 days of November 11, 2009). Mr. McCleary is a member of our Board of Directors.

(10) The number of shares beneficially owned prior to the offering includes 60,573 restricted shares (included herein irrespective of vesting date), options to purchase a total of 221,473 shares of common stock (representing the portion of options to purchase a total of 343,046 shares of common stock that was exercisable as of November 11, 2009 or will become exercisable within 60 days thereof) and 6,772 shares issuable upon conversion of the 10% Convertible Notes (including shares underlying interest that will accrue within 60 days of November 11, 2009).

(11) The number of shares beneficially owned prior to the offering includes 2,881,092 shares issuable upon conversion of the 10% Convertible Notes (including shares underlying interest that will accrue within 60 days of November 11, 2009). The Notes and warrants are only convertible to the extent that the holders thereof and their affiliates would beneficially own, for purposes of Section 13(d) of the Securities Exchange Act of 1934, as amended, no more than 9.999% of the outstanding shares of common stock of PharmAthene, Inc. after conversion. As a result of this restriction, the number of shares that may be issued on conversion of the notes by the above holders may change depending upon changes in the outstanding shares. The number of shares issuable upon conversion of the Notes and warrants held by any particular Baker Bros. affiliate will also depend upon the extent to which the Notes and warrants held by other Baker Bros. affiliates have theretofore been converted. By virtue of their ownership of entities that have the power to control the investment decisions of Baker Bros. Investments II, L.P., Baker Brothers Life Sciences, L.P. and 14159, L.P., Felix J. Baker and Julian C. Baker may each be deemed to be beneficial owners of shares owned by such entities and may be deemed to have shared power to vote or direct the vote of and shared power to dispose or direct the disposition of such securities.

(12) The number of shares beneficially owned prior to the offering includes options to purchase 50,000 shares of common stock and 411,584 shares issuable upon conversion of the 10% Convertible Notes (including shares underlying interest that will accrue within 60 days of November 11, 2009). Of the 411,584 shares issuable upon conversion of the 10% Convertible Notes, 164,634 are issuable upon conversion of notes owned directly by Dr. Schaffer and 246,950 are issuable upon conversion of notes owned indirectly by Dr. Schaffer in his IRA account. Dr. Schaffer is a member of our Board of Directors.

(13) The number of shares beneficially owned prior to the offering includes 235,000 shares of our common stock, jointly held by the selling stockholder and his spouse and 82,316 shares issuable upon conversion of the 10% Convertible Notes (including shares underlying interest that will accrue within 60 days of November 11, 2009). See also footnote 14.

(14) The number of shares beneficially owned prior to the offering includes 123,475 shares issuable upon conversion of the 10% Convertible Notes (including shares underlying interest that will accrue within 60 days of November 11, 2009). Mr. Argyris (RJ) Vassiliou is the trustee for the Ann Vassiliou Children's Trust. See also footnote 13.

(15) Mary L. Pappajohn is the spouse of John Pappajohn, who is the Chairman of our Board of Directors. Ms. Pappajohn does not have beneficial ownership of the PharmAthene securities owned by her spouse, which have therefore not been included in this table.

(16) The number of shares beneficially owned prior to the offering includes 49,308 restricted shares (included herein irrespective of vesting date), options to purchase a total of 172,879 shares of common stock (representing the portion of options to purchase a total of 284,480 shares of common stock that was exercisable as of November 11, 2009 or will become exercisable within 60 days thereof) and 4,115 shares issuable upon conversion of the 10% Convertible Notes (including shares underlying interest that will accrue within 60 days of November 11, 2009).

Possible Payments to Selling Stockholders and Affiliates

The table below summarizes the maximum dollar amount of interest payments and initial registration default payments, as well as the monthly dollar amount of registration default payments, that we may be required to make to selling stockholders, affiliates of selling stockholders or any person with whom any selling stockholder has a contractual relationship regarding the sale of the Notes and related warrants or the resale of the underlying shares. In addition to the payments disclosed in the table, we are obligated to reimburse MPM and Healthcare Ventures VII, L.P. for certain reasonable legal costs and expenses incurred by them and payable directly to their counsel in connection with the sale of the Notes and related warrants.

Selling Stockholders	Interest Payments(1)*	Potential Registration Default Payments(2)*	Potential On-Going Registration Default Payments(2)*
Mary Pappajohn	$ 202,777.78	$ 10,000.00	$10,000/month

Derace Schaffer	$	202,777.78	$	10,000.00	$10,000/month
Joel McCleary	$	8,565.74	$	422.42	$422.42/month
David Wright	$	12,526.95	$	617.77	$617.77/month
Christopher Camut	$	2,027.78	$	100.00	$100.00/month
Eric Richman	$	3,336.48	$	164.54	$164.54/month
Healthcare Ventures VII, L.P.	$	427,350.67	$	21,074.83	$21,074.83/month
MPM	$	1,108,852.77	$	54,683.15	$54,683.15/month
Jerome Parks	$	12,526.95	$	617.77	$617.77/month
Ronald Kaiser	$	1,932.80	$	95.32	$95.32/month
Ontario Teachers' Pension Plan Board	$	206,473.00	$	10,182.23	$10,182.23/month
James H. Desnick	$	101,388.89	$	5,000.00	$5,000.00/month

Edward F. Heil	$	101,388.89	$	5,000.00	$5,000.00/month
Argyis (R.J.) Vassiliou	$	40,555.56	$	2,000.00	$2,000.00/month
Ann Vassiliou Children's Trust	$	60,833.33	$	3,000.00	$3,000.00/month
Baker Bros. Investments II, L.P., Baker Brothers Life Sciences, L.P. and 14159, L.P.	$	1,419,444.45	$	70,000.00	$70,000.00/month
TOTAL	**$**	**3,912,759.82**	**$**	**192,958.02**	**$192,958.02/month**

* Amounts are rounded up to the nearest cent.

(1) Represents total interest accruing on the Notes at a rate of 10% per annum through the maturity date on July 28, 2011. Interest on the Notes will accrue at a rate of 14% per annum upon an event of default, as defined in the Notes.

(2) Under the terms of the Notes, if (i) the registration statement is (A) not filed within 30 days of the closing, ("Filing Failure"), or (B) not declared effective as specified in the Notes ("Effectiveness Failure"), or (ii) after the effective date of the registration statement, after the 2nd consecutive business day (other than during an allowable blackout period under the Notes) on which sales of all of the securities required to be included on the registration statement cannot be made pursuant to the registration statement (a "Maintenance Failure"), we will be required to pay to each selling stockholder a one-time payment of 1.0% of the aggregate principal amount of the Notes relating to the affected shares on each of the following dates: (i) the day of a Filing Failure, (ii) the day of an Effectiveness Failure and (iii) the initial day of a Maintenance Failure.

Following a Filing Failure, Effectiveness Failure or Maintenance Failure, we will also be required to make to each selling stockholder monthly payments of 1.0% of the aggregate principal amount of the Notes relating to the affected shares on each of the following dates: (i) on every 30th day after the initial day of a Filing Failure, (ii) on every 30th day after the initial day of an Effectiveness Failure and (iii) on every 30th day after the initial day of a Maintenance Failure, in each case prorated for shorter periods and until the failure is cured.

If the Company fails to make any of these payments in a timely manner, the amount due will bear interest at 1.5% per month (prorated for partial months) until paid in full.

The amounts included in the column "Registration Default Payments" represent only a one-time payment of 1.0% of the aggregate principal amount of the Notes, and do not reflect the additional monthly payments described above.

Based on the above, in the first year following the sale of the Notes and related warrants, we could be required to pay to the selling stockholders and any of their affiliates an aggregate of $3,693,002, assuming the registration statement is not declared effective by November 25, 2009, 120 days following the closing date, in accordance with the terms of the Notes, all required payments have been made on time and no late fees or interest on these payments has been incurred, and no Event of Default, as defined in Section 4 of the Notes, has occurred. This amount also reflects interest incurred during this period, at a rate of 10% per annum, as provided in the Notes.

The Note and Warrant Purchase Agreement also provides that we are obligated to pay, and save the selling stockholders harmless from, any and all liabilities with respect to any stamp or similar taxes which may be determined to be payable in connection with the execution and performance of the Note

and Warrant Purchase Agreement, and the other documents executed in connection therewith (the "Transaction Documents") or any modification, amendment or alteration of the terms or provisions of the Transaction Documents (excluding taxes on the income or gain of any selling stockholder).

We may also be obligated to make following potential payments to selling stockholders and their affiliates upon the events described below. We do not anticipate having to pay any of these amounts, but we are unable to estimate at this time if any such payments will be payable, or, if payable, the amount of such payments.

- *Late Charge.* The terms of the Notes provide that any amount due by us pursuant to the sale of the Notes and related warrants, other than interest, which is not paid when due shall result in a late charge being incurred and payable by us in an amount equal to interest on such amount at the rate of 5.0% per annum from the date such amount was due until the same is paid in full ("Late Charge").

- *Event of Default Under the Notes*. Upon an event of default (as defined in the Notes), we are required to deliver notice of such event to the holder of the Note.

  Upon the occurrence and continuation of certain events of default (as defined in the Notes) under subsections 4(a)(iv), 4(a)(v) and 4(a)(viii), which include the bankruptcy or insolvency of the Company, or related events, or the Company's failure to appoint a "Noteholder Director," as such term is defined in the Notes, all the Notes outstanding at that time will automatically become due and payable.

  Upon the occurrence and continuation of any other event of default identified in the Notes, the holders of not less than a majority of the aggregate principal amount of the Notes then outstanding may at any time in their option, by notice or notices to us, declare all of the Notes then outstanding to be immediately due and payable.

  Upon any Notes becoming due and payable due to an event of default described above, whether automatically or by declaration, such Notes will mature and the entire unpaid principal, plus all accrued and unpaid interest and Late Charges, shall become immediately due and payable.

- *Change of Control Redemption.* Upon a change of control (as defined in the Notes), a selling stockholder may elect to redeem all of his or her Notes at a price equal to the "Conversion Amount," which is defined as the sum of (A) the portion of the principal to be converted, redeemed or otherwise with respect to which this determination is

being made, (B) accrued and unpaid interest with respect to the principal and (C) accrued and unpaid Late Charges with respect to the principal and interest.

- *Company's Right to Redemption.* After July 28, 2010, we have the right to redeem all or any portion of the Conversion Amount, as defined above, then remaining under the Note to be redeemed as of that date. The portion of the Note to be redeemed subject to such redemption shall be redeemed at a price equal to the Conversion Amount being redeemed.

- *Failure to Convert.* If we fail to timely issue a certificate of common stock to a selling stockholder upon conversion of any amount of the Notes, on or prior to seven business days following the conversion date, we must pay damages to the selling stockholder for each day of such failure in an amount equal to 1.5% of the product of (i) the sum of the number of shares not issued on or prior to the third business day following the delivery of the conversion notice and (ii) the closing sale price of our common stock on the share delivery date.

- *Indemnification Obligations.* Under the Registration Rights Agreement, we have agreed to indemnify each selling stockholder for any losses arising out of or based upon any untrue statement or alleged untrue statement of any material fact contained in this prospectus, prospectus supplement or registration statement of which this prospectus is a part, or any amendment or supplement thereof, or arising out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading. We will reimburse the selling stockholder for any reasonable legal or other expenses incurred in connection with investigating or defending any such losses, subject to certain exceptions set forth in the Registration Rights Agreement.

Possible Profit/(Loss) to Selling Stockholders with Respect to Conversion or Exercise of Company Securities

The tables below summarize the total possible profit/(loss) that the selling stockholders or their affiliates could have realized as a result of (a) the conversion of the 10% Convertible Notes, (b) the exercise of the related warrants and (c) the exercise of any options to purchase our common stock, assuming conversion or exercise on the date of sale or date of grant, as applicable:

Security	Market price per share on date of sale(1)	Conversion price per share(2)	Total number of underlying shares(3)	Combined market price of total number of underlying shares	Combined conversion price of total number of underlying shares	Total possible profit/(loss) realizable by selling stockholders
10% Convertible Notes	$ 2.50	$ 2.541667	9,131,235	$ 22,828,087.50	$ 23,208,558.67	$ (380,471.17)

(1) Represents the closing price per share of our common stock on the NYSE Amex on July 24, 2009, the trading day immediately preceding the time that we entered into the binding agreement to issue the 10% Convertible Notes and related warrants.

(2) The conversion price is subject to customary antidilution adjustments, including in the event of a stock dividend, stock split or stock combination, recapitalization or reorganization, merger or consolidation, sale of all or substantially all of our assets, distribution of debt or assets to our stockholders and in connection with certain other dilutive equity issuances.

(3) This amount includes (a) up to 7,591,790 shares issuable upon conversion of the aggregate principal amount of the 10% Convertible Notes, and (b) up to 1,539,445 shares issuable in respect of interest that has begun accruing and will continue to accrue throughout the term of the notes.

Security	Market price per share on date of sale(1)	Exercise price per share (2)	Total number of underlying shares	Combined market price of total number of underlying shares	Combined exercise price of total number of underlying shares	Total possible profit/(loss) realizable by selling stockholders
Warrants related to 10% Convertible Notes	$ 2.50	$ 2.50	2,572,775	$ 6,431,937.50	$ 6,431,937.50	$ 0.00

(1) Represents the closing price per share of our common stock on the NYSE Amex on July 24, 2009, the trading day immediately preceding the time that we entered into the binding agreement to issue the 10% Convertible Notes and related warrants.

(2) The exercise price is subject to customary antidilution adjustments, including in the event of a stock dividend, stock split or stock combination, recapitalization or reorganization, merger or consolidation, sale of all or substantially all of our assets, distribution of debt or assets to our stockholders and in connection with certain other dilutive equity issuances.

Selling Stockholder	Option Grant Date	Market price per share on grant date	Exercise price per share on grant date	Total number of underlying shares	Combined market price of total number of underlying shares	Combined exercise price of total number of underlying shares	Total possible profit/(loss) realizable by selling stockholder/ affiliate
Chris Camut	1/4/2007	$ 3.80	$ 3.80	44,172	$ 167,854	$ 167,854	$ 0
	10/2/2007	$ 5.20	$ 5.20	215,000	$ 1,118,000	$ 1,118,000	$ 0
	1/21/2009	$ 2.46	$ 2.46	25,308	$ 62,258	$ 62,258	$ 0
Healthcare Ventures VII, L.P. (1)	9/11/2003	$ 2.96	$ 2.96	1,655	$ 4,899	$ 4,899	$ 0
	1/18/2006	$ 3.80	$ 3.80	1,104	$ 4,195	$ 4,195	$ 0
	10/9/2007	$ 5.25	$ 5.25	20,000	$ 105,000	$ 105,000	$ 0
	3/9/2009	$ 2.53	$ 2.59	10,000	$ 25,300	$ 25,900	$ (600)
	8/5/2009	$ 2.47	$ 2.47	20,000	$ 49,400	$ 49,400	$ 0
Joel McCleary	9/11/2003	$ 2.96	$ 2.96	1,655	$ 4,899	$ 4,899	$ 0
	1/18/2006	$ 3.80	$ 3.80	1,104	$ 4,195	$ 4,195	$ 0
	10/9/2007	$ 5.25	$ 5.25	20,000	$ 105,000	$ 105,000	$ 0
	4/28/2008	$ 2.97	$ 2.97	50,000	$ 148,500	$ 148,500	$ 0
	3/9/2009	$ 2.53	$ 2.59	10,000	$ 25,300	$ 25,900	$ (600)
	8/5/2009	$ 2.47	$ 2.47	20,000	$ 49,400	$ 49,400	$ 0
MPM(2)	1/18/2006	$ 3.80	$ 3.80	1,104	$ 4,195	$ 4,195	$ 0
	10/9/2007	$ 5.25	$ 5.25	20,000	$ 105,000	$ 105,000	$ 0
	3/9/2009	$ 2.53	$ 2.59	10,000	$ 25,300	$ 25,900	$ (600)
	8/5/2009	$ 2.47	$ 2.47	20,000	$ 49,400	$ 49,400	$ 0
Mary Pappajohn(3)	10/9/2007	$ 5.25	$ 5.25	20,000	$ 105,000	$ 105,000	$ 0
	3/9/2009	$ 2.53	$ 2.59	10,000	$ 25,300	$ 25,900	$ (600)
	8/5/2009	$ 2.47	$ 2.47	20,000	$ 49,400	$ 49,400	$ 0
Eric Richman	11/15/2003	$ 2.96	$ 2.96	28,638	$ 84,768	$ 84,768	$ 0
	1/18/2005	$ 3.80	$ 3.80	11,043	$ 41,963	$ 41,963	$ 0
	2/22/2006	$ 3.80	$ 3.80	4,510	$ 17,138	$ 17,138	$ 0
	1/4/2007	$ 3.80	$ 3.80	8,282	$ 31,472	$ 31,472	$ 0
	10/2/2007	$ 5.20	$ 5.20	260,000	$ 1,352,000	$ 1,352,000	$ 0
	1/21/2009	$ 2.46	$ 2.46	30,573	$ 75,210	$ 75,210	$ 0
Derace Schaffer	10/9/2007	$ 5.25	$ 5.25	20,000	$ 105,000	$ 105,000	$ 0
	3/9/2009	$ 2.53	$ 2.59	10,000	$ 25,300	$ 25,900	$ (600)
	8/5/2009	$ 2.47	$ 2.47	20,000	$ 49,400	$ 49,400	$ 0

Selling Stockholder	Option Grant Date	Market price per share on grant date	Exercise price per share on grant date	Total number of underlying shares	Combined market price of total number of underlying shares	Combined exercise price of total number of underlying shares	Total possible profit/(loss) realizable by selling stockholder/ affiliate

David Wright	7/15/2003	$ 2.96	$ 2.96	82,714	$ 244,833	$ 244,833	$	0
	1/18/2005	$ 3.80	$ 3.80	69,130	$ 262,694	$ 262,694	$	0
	2/22/2006	$ 3.80	$ 3.80	13,803	$ 52,451	$ 52,451	$	0
	1/4/2007	$ 3.80	$ 3.80	16,556	$ 62,913	$ 62,913	$	0
	8/30/2007	$ 5.36	$ 5.36	780,000	$ 4,180,800	$ 4,180,800	$	0
	1/21/2009	$ 2.46	$ 2.46	37,185	$ 91,475	$ 91,475	$	0

(1) Dr. James Cavanaugh is a general partner of the entity that serves as general partner of Healthcare Ventures VII, L.P.

(2) Dr. Steven St. Peter is an affiliate of MPM.

(3) Mary Pappajohn is the wife of John Pappajohn, the chairman of our Board of Directors..

Comparison of Proceeds

The following table shows the payments made, required to be made or that may be required to be made to selling stockholders under the assumptions disclosed in the footnotes to the table, in relation to the gross proceeds to us from the sale of the 10% Convertible Notes and related warrants.

Gross Proceeds from the Sale of the 10% Convertible Notes and Warrants(1)	$ 19,295,802
Less Payments Made or Required to be Made to Selling Stockholders and Affiliates(2)	$ 4,105,718
Less Estimated Payments Made or Required to be Made to Counsel to MPM and Healthcare Ventures VII, L.P. for certain reasonable legal costs and expenses	$ 75,000
Resulting Net Proceeds from Sale of the 10% Convertible Notes and Warrants(1)	$ 15,115,084
Total Possible Discount to Market Price of Stock Registered Hereunder	$ 0

(1) Represents a combination of canceled debt (8% convertible notes) and new cash. Does not include $6,431,938 receivable by us upon the full exercise of all warrants.

(2) This amount reflects interest payments we would owe the selling stockholders assuming they hold their 10% Convertible Notes through the maturity date, including a one-time payment of $192,958.02, payable in the event the Company fails to meet its registration obligations described above, but excluding monthly payments of $192,958.02, payable each month during which the Company has not cured any failure to meet its registration obligations. We are unable, at this time, to estimate the amount of any other payments that may be required to be made to the selling stockholders in the future.

The total amount of all possible payments payable to the selling stockholders in connection with the sale of the 10% Convertible Notes and warrants reflected in the table above, represents approximately 27.1% of the resulting net proceeds to us from such sale, which is approximately 13.6% per annum averaged over the two-year term of such notes.

Prior Securities Transactions

The following table and accompanying footnotes show information with respect to the prior securities transactions effected between Healthcare Acquisition Corp. (“HAQ”) and the selling stockholders named in this prospectus (or their affiliates) since HAQ’s initial public offering in August 2005, and do not include any grants of stock options or restricted stock made under our 2007 Long-Term Incentive Compensation Plan, which we refer to as the “2007 Plan.” Except for grants under the 2007 Plan and the sale of the 10% Convertible Notes and warrants in July 2009, we have not effected any securities transactions with the selling stockholders identified in this prospectus (or their affiliates) since merging with HAQ’s wholly-owned subsidiary in August 2007.

Selling Stockholder	Common stock outstanding prior to transaction	Common stock outstanding prior to transaction held by persons other than selling stockholders, their affiliates or our current affiliates	Common stock issued or issuable in transaction	Percentage of common stock issued in the transaction (based on non-affiliate holdings)(1)	Closing market price per share of common stock immediately prior to transaction (2)	Closing market price per share of common stock on 11/11/09
August 3, 2007 Merger of the Company into wholly-owned subsidiary of HAQ (the “2007 Merger”)						
Joel McCleary(3)	11,650,000	8,595,000	104,083	1.21%	$ 6.89	$ 3.71
Eric Richman(4)	11,650,000	8,595,000	814	0.01%	$ 6.89	$ 3.71
Jerome Parks(5)	11,650,000	8,595,000	5,320	0.06%	$ 6.89	$ 3.71
Ronald Kaiser(6)	11,650,000	8,595,000	820	0.01%	$ 6.89	$ 3.71
Ontario Teachers’ Pension Plan Board(7)	11,650,000	8,595,000	855,261	9.95%	$ 6.89	$ 3.71
David Wright(8)	11,650,000	8,595,000	107,135	1.25%	$ 6.89	$ 3.71
Healthcare Ventures VII, L.P.(9)	11,650,000	8,595,000	3,498,748	40.71%	$ 6.89	$ 3.71

MPM(10)	11,650,000	8,595,000	3,960,396	46.08%	$ 6.89	$ 3.71

(1) Ratio shown is of (i) common stock issued or issuable in connection with transaction to (ii) undiluted common stock outstanding prior to transaction held by persons other than selling stockholders or their affiliates or our current affiliates.

(2) Reflects the closing price of common stock on the American Stock Exchange on August 2, 2007.

(3) Contains 2,673 shares issuable upon conversion of principal amount of formerly outstanding 8% Notes, which were exchanged for 10% Convertible Notes.

(4) Consists of 814 shares issuable upon conversion of principal amount of formerly outstanding 8% Notes, which were exchanged for 10% Convertible Notes.

(5) Consists of 5,320 shares issuable upon conversion of principal amount of formerly outstanding 8% Notes, which were exchanged for 10% Convertible Notes.

(6) Consists of 820 shares issuable upon conversion of principal amount of formerly outstanding 8% Notes, which were exchanged for 10% Convertible Notes.

(7) Contains 87,693 shares issuable upon conversion of principal amount of formerly outstanding 8% Notes, which were exchanged for 10% Convertible Notes.

(8) Contains 2,673 shares issuable upon conversion of principal amount of formerly outstanding 8% Notes, which were exchanged for 10% Convertible Notes.

(9) Contains 181,505 shares issuable upon conversion of principal amount of formerly outstanding 8% Notes, which were exchanged for 10% Convertible Notes.

(10) Contains 470,953 shares issuable upon conversion of formerly outstanding 8% Notes, which were exchanged for 10% Convertible Notes.

Shares Registered for Resale Pursuant to Prior Registration Statements

Prior to the issuance of the Notes and the warrants, 11,802,235 shares of our common stock were held by persons other than the selling stockholders, our affiliates or affiliates of the selling stockholders. The following table shows the number of shares that have been registered for resale by the selling stockholders or their affiliates pursuant to prior registration statements, the number of shares so registered that continue to be held by the selling stockholders or their affiliates, and the number of shares registered for resale pursuant to this registration statement.

Selling stockholder	Number of shares previously registered for resale by the selling stockholders or their affiliates	Number of shares previously registered for resale by the selling stockholders or their affiliates held as of November 11, 2009	Number of shares that have been sold in registered resale transactions by the selling stockholders or their affiliates	Number of shares registered for resale on behalf of the selling stockholders or their affiliates
Mary Pappajohn	894,653(1)	451,164	230,549(2)	606,557
Derace Schaffer	823,673(3)	451,164	230,549(2)	606,557
Joel McCleary	104,083(4)	101,410	0	25,623
David Wright	107,135(4)	101,815	0	37,471
Christopher Camut	0	0	0	6,065
Eric Richman	814(4)	0	0	9,980
Healthcare Ventures VII, L.P.	3,498,748(4)	3,317,243	0	1,278,309
MPM(5)	3,960,396(4)	3,489,443	0	3,316,846
Jerome Parks	5,320(4)	0	0	37,471
Ronald Kaiser	820(4)	0	0	5,782
Ontario Teachers' Pension Plan Board	855,261(4)	767,568	0	617,611
James H. Desnick	0	0	0	303,279
Edward F. Heil	0	0	0	303,279
Argyis (R.J.) Vassiliou	0	0	0	121,312
Ann Vassiliou Children's Trust	0	0	0	181,967
Baker Bros. Investments II, L.P., Baker Brothers Life Sciences, L.P. and 14159, L.P.	0	0	0	4,245,901
TOTAL	**10,180,513**	**8,679,807**	**461,098(2)**	**11,704,010**

(1) Consists of 681,713 shares registered for resale by the selling stockholder's spouse, John Pappajohn, pursuant to Registration Statement on Form S-3, as amended, File No. 333-155692, declared effective February 12, 2009, and 141,960 and 70,980 shares registered for resale by John Pappajohn and Matthew Kinley (an employee of a company controlled by Mr. Pappajohn), respectively, pursuant to Registration Statement on Form S-3, as amended, File No. 333-146463, declared effective January 29, 2008. The 141,960 and 70,980 shares were issuable upon exercise of our warrants that expired unexercised in July 2009.

(2) These shares were sold pursuant to Registration Statement on Form S-3, as amended, File No. 333-155692, declared effective February 12, 2009, for $0.0001 per share upon the exercise by certain third parties of stock purchase options granted to them by John Pappajohn and Derace Schaffer,

respectively.

(3) Consists of 681,713 shares registered for resale pursuant to Registration Statement on Form S-3, as amended, File No. 333-155692, effective February 12, 2009, and 141,960 shares registered for resale pursuant to Registration Statement on Form S-3, as amended, File No. 333-146463, effective January 29, 2008. The 141,960 shares were issuable upon exercise of our warrants that expired unexercised in July 2009.

(4) Shares registered pursuant to Registration Statement on Form S-3, as amended, File No. 333-146463, declared effective January 29, 2008. The following shares registered on such registration statement were issuable upon conversion of our 8% convertible notes, which are no longer outstanding: (a) 470,953 shares registered by MPM; (b) 87,693 shares registered by Ontario Teachers' Pension Plan Board; (c) 181,505 shares registered by HCV; (d) 2,673 shares registered by Joel McCleary; (e) 5,320 shares registered by David Wright; (f) 814 shares registered by Eric Richman; (g) 820 shares registered by Ronald Kaiser; and (h) 5,320 shares registered by Jerome Parks.

(5) Shares registered for resale pursuant to the prior registration statement are held by MPM BioVentures III-QP, L.P., MPM BioVentures III GmbH & Co. Beteiligungs KG, MPM BioVentrues III, L.P., MPM BioVentures III Parallel Fund, L.P., and MPM Asset Management Investors 2004 BVIII LLC. Shares registered for resale pursuant to the current registration statement are held by MPM Asset Management, MPM Bioventures III, MPM Bioventures III GmbH, MPM Bioventures III Parallel and MPM Bioventures III-QP.

Repayment of Notes; No Short Position by Selling Stockholders

We have the intention, and a reasonable basis to believe that we will have the financial ability to, repay the Notes on the maturity date as provided in the Notes.

Based upon information provided by the selling stockholders, we have a reasonable basis to believe that no selling stockholder currently has a short position in our common stock.

PLAN OF DISTRIBUTION

The shares covered by this prospectus may be offered and sold from time to time by the selling stockholders. The term "selling stockholder" includes pledgees, donees, transferees or other successors in interest selling shares received after the date of this prospectus from each selling stockholder as a pledge, gift, partnership distribution or other non-sale related transfer. The number of shares beneficially owned by a selling stockholder will decrease as and when it effects any such transfers. The plan of distribution for the selling stockholders' shares sold hereunder will otherwise remain unchanged, except that the transferees, pledgees, donees or other successors will be selling stockholders hereunder. To the extent required, we may amend and supplement this prospectus from time to time to describe a specific plan of distribution.

The selling stockholders will act independently of us in making decisions with respect to the timing, manner and size of each sale. The selling stockholders may make these sales at prices and under terms then prevailing or at prices related to the then current market price. The selling stockholders may also make sales in negotiated transactions. The selling stockholders may offer their shares from time to time pursuant to one or more of the following methods:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- one or more block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- publicly or privately negotiated transactions;
- on the NYSE Amex (or through the facilities of any national securities exchange or U.S. inter-dealer quotation system of a registered national securities association, on which the shares are then listed, admitted to unlisted trading privileges or included for quotation);
- through underwriters, brokers or dealers (who may act as agents or principals) or directly to one or more purchasers;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

In connection with distributions of the shares or otherwise, the selling stockholders may:

- enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the shares in the course of hedging the positions they assume;
- sell the shares short and redeliver the shares to close out such short positions;
- enter into option or other transactions with broker-dealers or other financial institutions which require the delivery to them of shares offered by this prospectus, which they may in turn resell; and
- pledge shares to a broker-dealer or other financial institution, which, upon a default, they may in turn resell.

In addition to the foregoing methods, the selling stockholders may offer their shares from time to time in transactions involving principals or brokers not otherwise contemplated above, in a combination of such methods or described above or any other lawful methods. The selling stockholders may also transfer, donate or assign their shares to lenders, family members and others and each of such persons will be deemed to be a selling stockholder for purposes of this prospectus. The selling stockholders or their successors in interest may from time to time pledge or grant a security interest in some or all of the shares

of common stock, and if the selling stockholders default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of common stock from to time under this prospectus; provided however in the event of a pledge or then default on a secured obligation by the selling stockholder, in order for the shares to be sold under this

registration statement, unless permitted by law, we must distribute a prospectus supplement and/or amendment to this registration statement amending the list of selling stockholders to include the pledgee, secured party or other successors in interest of the selling stockholder under this prospectus.

The selling stockholders may also sell their shares pursuant to Rule 144 under the Securities Act, which permits limited resale of shares purchased in a private placement subject to the satisfaction of certain conditions.

Sales through brokers may be made by any method of trading authorized by any stock exchange or market on which the shares may be listed or quoted, including block trading in negotiated transactions. Without limiting the foregoing, such brokers may act as dealers by purchasing any or all of the shares covered by this prospectus, either as agents for others or as principals for their own accounts, and reselling such shares pursuant to this prospectus. The selling stockholders may effect such transactions directly, or indirectly through underwriters, broker-dealers or agents acting on their behalf. In effecting sales, broker-dealers or agents engaged by the selling stockholders may arrange for other broker-dealers to participate. Broker-dealers or agents may receive commissions, discounts or concessions from the selling stockholders, in amounts to be negotiated immediately prior to the sale (which compensation as to a particular broker-dealer might be in excess of customary commissions for routine market transactions).

In offering the shares covered by this prospectus, the selling stockholders, and any broker-dealers and any other participating broker-dealers who execute sales for the selling stockholders, may be deemed to be “underwriters” within the meaning of the Securities Act in connection with these sales. Any profits realized by the selling stockholders and the compensation of such broker-dealers may be deemed to be underwriting discounts and commissions.

The Company is required to pay all fees and expenses incident to the registration of the shares.

The Company has agreed to indemnify the selling stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

LEGAL MATTERS

Sonnenschein Nath & Rosenthal, LLP, New York, New York, has passed upon the validity of the common stock offered pursuant to this prospectus.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2008, as set forth in their report, which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP’s report, given on their authority 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 special 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

We are incorporating by reference important business and financial information about us that we file with the SEC. Any information that we incorporate by reference is considered part of this prospectus. Information that we file with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the initial registration statement and prior to effectiveness of such registration statement as well as after the date of this prospectus and prior to the termination of the offering shall be deemed incorporated by reference in this prospectus and shall be deemed to be a part of this prospectus from the date of filing of such documents and reports.

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, 2008 (File No. 001-32587);
- Amendment No. 1 to our Annual Report on Form 10-K/A for the year ended December 31, 2008 (File No. 001-32587);
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2009, June 30, 2009 and September 30, 2009 (File No. 001-32587);
- our Current Reports on Form 8-K and/or 8-K/A filed with the SEC on January 27, 2009, March 27, 2009, June 23, 2009, July 16, 2009, July 30, 2009, August 3, 2009, August 6, 2009, August 17, 2009 and November 4, 2009;
- our Definitive Proxy Statement filed with the SEC on September 29, 2009, including any amendments or supplements filed for the purpose of updating same; and

- 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 the termination of this offering.

- 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."

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 http://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, MD 21401, (410) 269-2600.