Building Defenses

PharmAthene, Inc.

2008 Annual Report

dear stockholders

The past year has been a tremendously productive time for our Company. Most importantly, it marked the first full calendar year we have operated as a public company, following our merger with Healthcare Acquisition Corp.

Since that time, we have remained focused and driven in our mission to become the premier company worldwide specializing in the development and commercialization of best-in-class biodefense medical countermeasures. To fulfill this mission, we have focused on expanding our biodefense portfolio by selectively acquiring promising product candidates that meet strict selection criteria providing us significant opportunities to get additional government contracts for advanced development and/or procurement. Our acquisition of Avecia's biodefense vaccines portfolio, completed in April 2008, is a prime example of this strategy.

The combination of Avecia's three vaccine programs, including SparVax™, a second generation recombinant protective (rPA) anthrax vaccine, RypVax™, a dual antigen plague vaccine, and a third generation rPA anthrax vaccine, with PharmAthene's existing product candidates, Valortim® and Protexia®, has resulted in an expanded product portfolio with five potential best-in-class, next generation product opportunities; important critical mass—particularly with respect to our anthrax franchise, and the potential for us to recognize, for the first time, procurement-related revenues, as I'll describe in more detail shortly.

SparVax™—A Novel Second Generation rPA Anthrax Vaccine

Our most advanced product candidate, SparVax™ is a highly purified recombinant protective antigen vaccine that we are developing for pre- and post-exposure protection against anthrax infection.

There has been widespread acknowledgement among various government agencies of the need to stockpile a next-generation anthrax vaccine employing modern vaccine technology which offers the potential for improved safety, convenience and enhanced cost effectiveness. To address this need, in 2008 the Department of Health and Human Services through the Biomedical Advanced Research and Development Authority, issued a Request for Proposals, to which PharmAthene responded, for 25 million doses of a rPA vaccine to be deployed in the Strategic National Stockpile for civilian defense against anthrax infection. We anticipate that HHS will award contracts for the rPA vaccine program imminently, and are cautiously optimistic regarding our prospects.

2008 Highlights

We also achieved notable milestones in each of our Valortim®, Protexia® and third generation rPA programs in 2008.

- In September, the National Institutes of Health awarded us a significant contract to support ongoing development of our third generation rPA vaccine product candidate. If all program milestones are met, and NIH elects to extend its options, then the contract provides for total potential funding of up to $83.9 million for the third generation rPA vaccine program—over the 9-year term of the contract.
- New therapeutic data for Valortim® were presented at the ICAAC/IDSA 2008 Annual Meeting, showing that the compound enhanced survival compared to control animals exposed to lethal anthrax challenge.
- We commenced Phase I clinical testing of Protexia® to evaluate the safety, tolerability, pharmacokinetics and immunogenicity in healthy human volunteers.
- Finally, in October, we completed a strategic equity financing with Panacea Biotec, raising gross proceeds of approximately $13.1 million, providing additional capital with which to advance our programs.

A Look Ahead

We're very enthusiastic about the future of this company—for good reason. Over the past year we have made substantial progress executing against our strategy and have established a solid foundation from which to continue to advance our business objectives and build value for our shareholders. During 2009 we expect to:

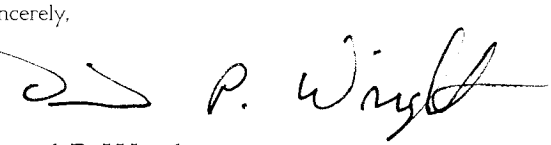
- Complete the Phase I clinical trial of Protexia®. Importantly, if this trial is successful, then the Department of Defense, at its discretion, may elect to fund the next phase of development under our contract, which could provide additional funding of up to $65 million for Protexia®.
- Continue to evaluate Protexia® as a therapeutic for nerve agent exposure building on the promising new data obtained last year.
- Begin a Phase I clinical trial of Valortim® in combination with antibiotics to determine safety in humans.
- Commence activities to begin additional Phase II clinical trials of SparVax™.

Building Defenses

All of us at PharmAthene are deeply committed to providing improved medical countermeasures solutions that will further enhance our Nation's biosecurity and preserve the well-being and security of our military and citizens. Since our inception in 2001 we have remained focused on achieving a bold vision of becoming the premier provider of medical countermeasures for the U.S. government and its allies. In realizing this vision, we have assembled a diversified portfolio of biodefense product candidates addressing high-priority U.S. government requirements with the potential for significant procurement revenues and substantial long-term value creation for our shareholders. To help achieve this objective, we've assembled a team of outstanding, highly qualified industry professionals that have been instrumental in our success to date.

I anticipate the years ahead will be both exciting and rewarding and I very much look forward to reporting our ongoing progress. On behalf of our management team and board of directors, I thank each of you for your continued support and faith in our mission. To our employees, I extend my sincerest appreciation for their tireless effort and dedication.

Sincerely,



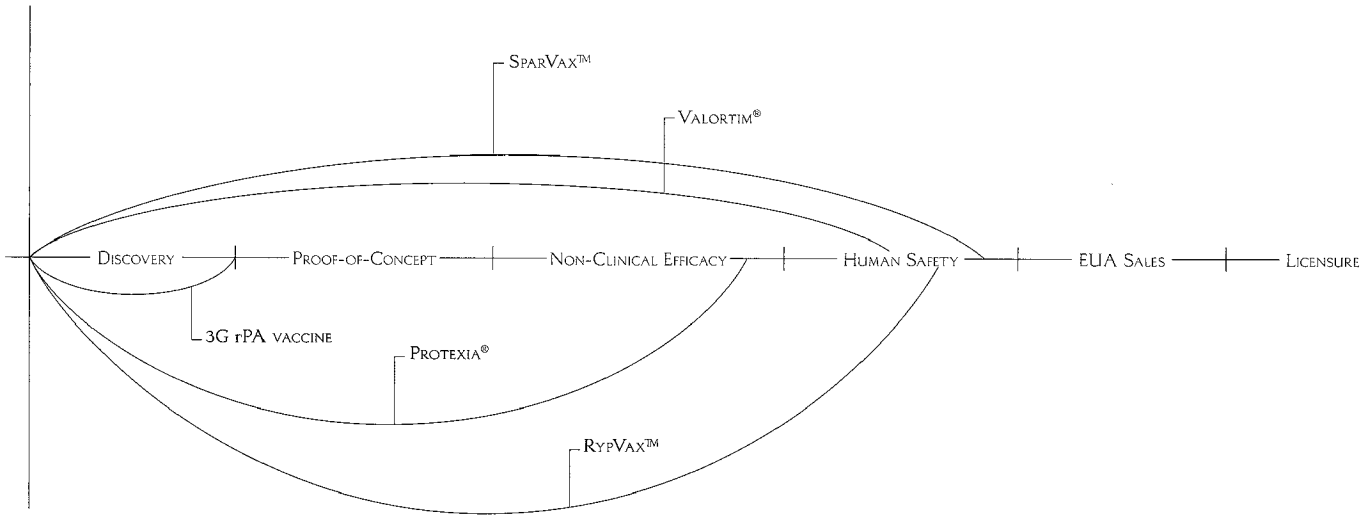
David P. Wright
President and Chief Executive Officer

our products

SPARVAX™ is a novel second generation recombinant protective antigen (rPA) anthrax vaccine being developed for pre- and post-exposure protection against anthrax infection. Phase I and Phase II clinical trials involving 770 healthy human subjects have been completed and showed that SparVax™ was well tolerated and immunogenic in humans. These studies suggest that three doses of SparVax™, administered several weeks apart, should be sufficient to induce protective immunity.

VALORTIM® is a fully human anti-toxin monoclonal antibody designed to protect against and treat anthrax infection. A Phase I clinical trial involving 46 healthy human subjects showed that Valortim® was safe and well tolerated. Preclinical studies suggest that Valortim® has the potential to provide significant protection against anthrax infection when administered prophylactically post-exposure and also may increase survival when administered therapeutically.

biodefense product development



PROTEXIA® is a recombinant version of human butyrylcholinesterase (BChE), a naturally occurring protein found in minute quantities in blood, which is being developed as a pre- and post-exposure therapy for victims of nerve agent attacks. BChE functions as a natural bioscavenger, like a sponge, to absorb and degrade organophosphate poisons (e.g. nerve agents) before they cause neurological damage. A Phase I clinical trial involving approximately 32 subjects is expected to be completed in the second half of 2009.

THIRD GENERATION rPA ANTHRAX VACCINE In addition to SparVax™, we are also developing a third generation rPA anthrax vaccine in response to the U.S. government's desire to have a stable vaccine that does not require refrigeration and which can induce protective immunity in fewer doses than the currently licensed vaccine and the existing second generation vaccine candidates. Our third generation vaccine candidate utilizes the rPA already being manufactured for SparVax™, but it will be freeze-dried and will contain an additional immune stimulant which we believe will allow for enhanced immunogenicity.

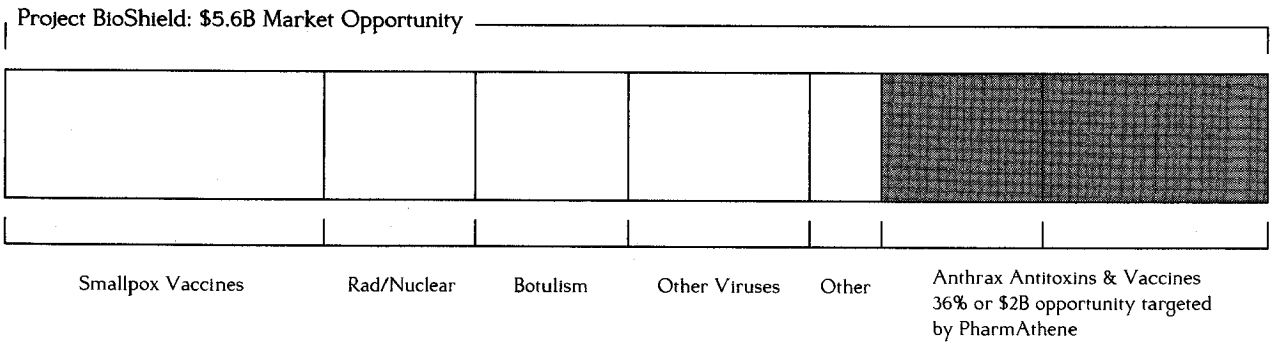
RYPVAX™ is a recombinant plague vaccine comprised of two separate recombinant F1 (rF1) and V (rV) antigens, which have been shown to be protective against bubonic plague and inhalation plague. RypVax™ is intended to provide prophylaxis against exposure to the plague bacterium. It is expected that two or three doses, given several weeks apart, will be sufficient to induce protective immunity potentially followed by an annual booster shot. Three Phase I clinical trials involving 161 subjects have been completed.

about us

PharmAthene, Inc. (NYSE Amex: PIP), formed in March 2001 is pursuing its mission to become the premier company worldwide specializing in the development and rapid commercialization of best-in-class medical countermeasures for the multi-billion dollar biodefense industry. By following a de-risked strategy of acquiring leading compounds and technologies focused only on high priority medical countermeasures solutions identified by the United States and other governments as urgent to procure, PharmAthene has built a solid product pipeline and a strong reputation within the industry. Assuming the achievement of certain milestones and the government exercising all contract options at its sole discretion, up to $554 million in United States government contract and funding commitments have been awarded to us and our predecessors to date to support the Company's current product development programs.

penetrating a multibillion dollar market

The threat of chemical and biological warfare has not been adequately addressed by the established pharmaceutical industry. In recognition of this urgent requirement, the U.S. government has dedicated unprecedented resources to accelerate the research, development and procurement of effective medical countermeasures to combat biological, chemical, nuclear and radiological threats. Project BioShield, signed into law in 2004, authorizes $5.6 billion in secure funding over ten years for the advanced development and purchase of priority medical countermeasures. In addition, significant annual appropriations are provided through the Biomedical Advanced Research and Development Authority (BARDA), which was established to promote research and development of novel biomedical countermeasures by ensuring adequate advanced development funding for promising technologies in advance of procurement.



Project BioShield funding is the cornerstone of the market:	$5.6B
We are actively pursuing additional markets:	
Department of Defense purchases:	$5B
International purchases:	$6B
Commercial purchases:	$1B
Fortune 500 companies	
Leasing opportunities	
Execution of DHHS Implementation Plan:	$35B
Total biodefense market opportunity	**$50B***

*Source: Meda Corp Reports—Chemical and Biological Defense Program Oct. 2005; DHHS Implementation Plan; Company Estimates Through 2018

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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2008

☐ **TRANSITION REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to
Commission File Number: 001-32587

PHARMATHENE, INC.

(Exact name of registrant as specified in its charter)

Delaware	**20-2726770**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
One Park Place, Suite 450, Annapolis, MD	**21401**
(Address of principal executive offices)	(Zip Code)

(410) 269-2600
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class:	**Name of Each Exchange on Which Registered:**
Common Stock, par value $0.0001 per share	NYSE Amex
Warrants to purchase shares of Common Stock	NYSE Amex

Securities registered pursuant to Section 12(g) of the Act:
None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. Yes ☐ No ☒

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

☐ Large Accelerated Filer ☐ Accelerated Filer ☐ Non-Accelerated Filer ☒ Smaller Reporting Company

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of voting stock held by non-affiliates of the registrant was $29,247,869 based upon the closing price on the American Stock Exchange (now the NYSE Amex) on the last business day of the registrant's most recently completed second fiscal quarter (June 30, 2008).

The number of shares of the registrant's Common Stock, par value $0.0001 per share, outstanding as of March 27, 2009 was 28,428,377.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive Proxy Statement to be delivered to stockholders in connection with the Annual Meeting of Stockholders to be held on or about May 20, 2009.

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Special Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K 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 (the "Exchange Act"). 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 following:

- *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 our development programs, including without limitation our bid related to SparVax™ under the Department of Health and Human Services 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, scale-up, and/or process validation/verification 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 under the caption "Risk Factors" in this Report on Form 10-K and in our other reports filed with the U.S. Securities and Exchange Commission (the "SEC") from time to time hereafter. 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," the negative of these words, other variations on these words, or comparable terminology. Such statements include, but are not limited to, the following:

- *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") in April 2008.*

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.

You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this document. Except to the extent required by applicable laws and regulations, we undertake no obligation to update these forward-looking statements to reflect events or circumstances after the date of this document or to reflect the occurrence of unanticipated events. Although we undertake no obligation to revise or update any forward-looking statements, whether as a result of new information, future events or otherwise, you are advised to consult any additional disclosures that we may make directly to you or through reports that we, in the future, may file with the SEC, including Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K.

All forward-looking statements included herein are expressly qualified in their entirety by the cautionary statements contained or referred to elsewhere in this Annual Report. Unless otherwise indicated, the information in this annual report is as of December 31, 2008.

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PART I

Item 1. Business.

Background of PharmAthene, Inc.

PharmAthene, Inc. was incorporated under the laws of the State of Delaware as Healthcare Acquisition Corp. ("HAQ") on April 25, 2005, a blank check company formed to serve as a vehicle for the acquisition of a then unidentified business. HAQ became a public company on August 3, 2005. On August 3, 2007, HAQ consummated a merger (the "Merger") with a Delaware corporation which at the time was known as "PharmAthene, Inc." ("Former PharmAthene"), pursuant to an Agreement and Plan of Merger, dated as of January 19, 2007 (the "Merger Agreement"), by and among HAQ, PAI Acquisition Corp., a Delaware corporation and a wholly-owned subsidiary of HAQ, and Former PharmAthene, whereby Former PharmAthene became a wholly-owned subsidiary of HAQ. Effective upon the consummation of the Merger, HAQ changed its name from "Healthcare Acquisition Corp." 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. Our executive offices are located at One Park Place, Suite 450, Annapolis, Maryland 21401 and our telephone number is 410-269-2600. Our stock trades on the NYSE Amex (formerly the NYSE Alternext US or the American Stock Exchange) under the symbol "PIP."

Unless the context otherwise requires, all references in this report to 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, and "HAQ" refers to the business of Healthcare Acquisition Corp. and its subsidiaries, as a combined entity, prior to the Merger. Unless the context otherwise requires, the information contained in this report gives effect to the consummation of the Merger of August 3, 2007 and the change of our name from "Healthcare Acquisition Corp." to "PharmAthene, Inc."

Overview

We are a biodefense company engaged in 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 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,
- RypVax™ - a recombinant dual antigen vaccine for pneumonic and bubonic plague ("rYP"), and
- a third generation rPA anthrax vaccine.

Products

We acquired our lead product candidate, SparVax™, as part of our purchase of the biodefense vaccines business of Avecia in April 2008. SparVax™ is a second generation recombinant (produced using genetic engineering technology) version of Protective Antigen for use against human anthrax infection. It is intended to be used to protect individuals before and potentially after exposure to *Bacillus anthracis* (the anthrax bacterium). Phase I and Phase II clinical trials involving over 700 healthy adult human subjects have been completed showing that SparVax™ is safe, well tolerated and induces an immune response in humans. Earlier preclinical studies have demonstrated that SparVax™ can protect non-human primates and rabbits against a lethal aerosol challenge of Ames strain anthrax spores.

On February 29, 2008, the Department of Health and Human Services ("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.

Valortim®, our second most advanced product candidate, is a fully human monoclonal (an identical population of highly specific antibodies produced from a single clone) antibody designed to protect against and treat human inhalational anthrax, the most lethal form of infection caused by the *Bacillus anthracis* bacterium. We are co-developing Valortim® with Medarex, Inc., a biopharmaceutical company that specializes in developing fully human antibody-based therapeutic products, and will share with Medarex any profits derived from sales of Valortim®. Preclinical studies in animal models have demonstrated Valortim® to be effective as both a prophylaxis and a therapeutic for inhalational anthrax infection. We and Medarex have completed dosing of healthy volunteers in a Phase I open-label, dose-escalation clinical trial to evaluate the safety, tolerability, immunogenicity (eliciting an undesired immune response), and pharmacokinetics (the study of absorption, metabolism and action of drugs) of a single dose of Valortim® administered intravenously or intramuscularly. No drug-related serious adverse events were reported. Final results from the Phase I trial were presented at the Infectious Disease Society of America meeting in October 2006. Valortim® was granted Fast Track Status by the U.S. Food and Drug Administration (the "FDA"), which may permit us to submit portions of a Biologics License Application ("BLA") or efficacy supplement before the complete BLA is submitted. Fast Track Status can expedite the review process depending upon whether the FDA has sufficient resources to review the portions submitted. In addition, the FDA granted Valortim® orphan drug status for the treatment of inhalation anthrax. On September 28, 2007, the National Institute of Allergy and Infectious Diseases ("NIAID") and the Biomedical Advanced Research and Development Authority ("BARDA") awarded to us a $13.9 million contract for the advanced development of Valortim® as an anti-toxin therapeutic to treat inhalation anthrax infection. We have recognized revenue of $1.4 million through December 31, 2008 under this contract, which we expect will continue to be funded in installments through fiscal year 2011. BARDA has indicated that it plans to provide an additional $2 million to us under the existing NIAID contract, bringing the total amount to $15.9 million. In addition, in March 2009, BARDA issued a Broad Agency Announcement ("BAA") for the Advanced Research and Development of Chemical, Biological, Radiological, and Nuclear Medical Countermeasures, which included an advanced development solicitation for proposals covering anthrax anti-toxins. In response, we submitted an initial proposal providing for further development of Valortim® and are awaiting a response.

Protexia®, our nerve agent countermeasure, is a recombinant form of human butyrylcholinesterase, a naturally occurring enzyme ("BChE"). Preclinical studies in animal models suggest that Protexia® may be effective prophylactically and therapeutically for chemical nerve agent poisoning. We filed an Investigational New Drug application ("IND") with the FDA in the third quarter of 2008 and began a Phase I clinical trial in humans in October 2008. We expect this trial to be completed during the second half of 2009.

The procurement process for the scale-up development and sale of Protexia® is already underway with the U.S. Department of Defense (the "DoD"), the department charged with purchasing biodefense countermeasures for military use. The DoD requested competitive bids in a Request for Proposal for a recombinant form of BChE drug for the prophylactic treatment of chemical nerve agent poisoning, which we submitted in November 2005. In September 2006, we were awarded a multi-year contract by the DoD. The contract provides an initial $41 million for the advanced development of Protexia® through March 2009, and thereafter the U.S. government, at its sole discretion, may elect to continue development assistance with further funding of $65 million. We believe the DoD will make a decision in this regard by the end of the fourth quarter of 2009, following completion of the on-going Phase I human clinical trial for Protexia® and its review of the data from that trial and our manufacturing scale-up efforts. Assuming development milestones are met and contract extensions are exercised by the U.S. government, at its sole discretion, and that the U.S. government elects to procure an initial 90,000 doses of Protexia® from PharmAthene, we could receive up to $219 million in total funding under this contract (including the $41 million and $65 million disclosed above for advanced development). We have recognized revenue of $35.5 million through December 31, 2008 under this contract.

RypVax™, which we acquired as part of the Avecia Acquisition, is a recombinant dual antigen plague vaccine intended to be used to protect individuals before exposure to *Yersinia pestis* (the bacterium that causes plague). In the war fighter, vaccination is anticipated to take place before deployment, to be administered in two or three doses over several weeks, and to be sufficient to induce protective immunity. This vaccine candidate has successfully completed Phase I clinical trials involving a total of 139 healthy adult human subjects. The Phase I trials demonstrated that RypVax™ is safe, well tolerated and elicits an immune response. In preclinical animal models, RypVax™ demonstrated the ability to protect against a lethal aerosol challenge.

In 2004, Avecia was awarded a multi-year contract, under which it could receive up to approximately $50.7 million from NIAID to support the advanced development of the plague vaccine for military use. PharmAthene acquired this contract as part of the Avecia Acquisition. As of December 31, 2008, PharmAthene recognized revenue of $2.7 million under this contract. Future government funding for RypVax™ beyond our existing contract (which expires in the first half of 2010) remains uncertain at this time.

The main objective for our third generation rPA anthrax vaccine, which we acquired as part of the Avecia Acquisition, is to meet the U.S. government's longer term primary goal to obtain an rPA-based anthrax vaccine that can be stored, transported and used without the need for a conventional "cold chain" — an important advantage for civilian biodefense deployment within the SNS. In particular, we intend to produce a vaccine that can maintain stability for three years at 35° C and induce protective immunity in two or fewer doses. By way of comparison, the currently available first generation anthrax vaccine (BioThrax® Anthrax Vaccine Adsorbed ("AVA")), which was initially licensed by the FDA in 1970, has an approved dosing regimen of five doses over a period of 18 months and is required to be stored at between 2° and 8° C.

Two grants from the U.S. National Institutes of Health ("NIH") made in 2005 and 2007 in the aggregate amount of $6.9 million for funding of research activities through April 2009 have supported the initial development of our third generation anthrax vaccine candidate. On September 25, 2008, we were awarded a contract by NIAID for additional development work on our third generation rPA anthrax vaccine. We expect to receive funding of up to approximately $13.2 million during the initial three year base period of the contract. Assuming all development milestones are met and all contract extensions are exercised by NIAID at its sole discretion, we could receive up to approximately $83.9 million over a nine year period (including the base period and the $13.2 million disclosed above) under this contract, which includes a cost reimbursement component and a fixed fee component payable upon achievement of

certain milestone events. Of this amount, we have recognized revenue of $0.1 million through December 31, 2008.

Biodefense Market

The worldwide biodefense market can generally be divided into three segments: U.S. civilian, U.S. military, and non-U.S. markets. U.S. government funding represents the vast majority of the worldwide market. According to the UPMC Center for Biosecurity, U.S. government biodefense military and civilian spending peaked in fiscal year 2005 at over $8 billion and has averaged around $5.4 billion in fiscal years 2007 and 2008. Funding in fiscal year 2009 is expected to increase again to nearly $8 billion. The U.S. civilian market includes funds to protect the U.S. population from biowarfare agents and is largely funded by the Project BioShield Act of 2004. Project BioShield is the U.S. government's largest biodefense initiative. The DoD is responsible for the development and procurement of countermeasures for the military segment which focuses on providing biowarfare protection for military personnel and civilians who are on active duty. Non-U.S. markets address protection against biowarfare agents for both civilians and military personnel in foreign countries. It is expected that foreign countries will want to procure biodefense products as they are developed and validated by procurement by the U.S. government.

Primary Customers

For the next several years, we believe our main customers will be national governments, primarily the U.S. government. Currently, our primary customers are the DoD, NIAID, BARDA and the NIH. For the years ended December 31, 2008 and 2007, contract revenues from the DoD and NIAID related to Protexia® and Valortim® comprised 64% and 100%, of total revenues, respectively. Contract revenues related to SparVax™ and RypVax™, acquired during fiscal year 2008, represented 36% of total revenues for the year ended December 31, 2008.

Currently, the U.S. government may, at its discretion, purchase critical biodefense products for the SNS prior to FDA approval based on Emergency Use Authorization ("EUA") enabled under the Project Bioshield legislation. On an ongoing basis we monitor notices for requests for proposal, grants and other potential sources of government funding that could potentially support the development and commercialization of our product candidates. Nevertheless, changes in government budgets, priorities and agendas as well as political pressures could result in a reduction in overall government financial support for the biodefense sector in general and/or specifically the product candidates we are developing. 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 and/or the likelihood that the government would procure products from us. Our existing contracts with the government typically contain provisions that permit the government unilaterally to cancel or reduce the scope of these contracts. (For further information, see *"Risk Factors — Risks Related to Our Dependence on U.S. Government Contracts U.S. government agencies have special contracting requirements which give them the ability to unilaterally control our contracts."*) As a result, further development of our product candidates and ultimate product sales to the government could be delayed or stopped altogether.

Avecia Acquisition

On March 20, 2008, we entered into a Sale and Purchase Agreement (the "Purchase Agreement") with Avecia for the acquisition of all of the assets related to Avecia's biodefense vaccines business, which included a second generation rPA anthrax vaccine (SparVax™), a recombinant dual antigen plague

vaccine (RypVax™), and a third generation rPA anthrax vaccine program. The Avecia Acquisition closed on April 2, 2008.

At closing, PharmAthene paid to Avecia initial consideration of $10 million in cash and provided a letter of credit in the amount of $7 million as security for the deferred consideration in that same amount, payable upon the earlier to occur of (a) the completion of a financing transaction in which PharmAthene receives gross proceeds of not less than $15 million and (b) October 2, 2009. Additional amounts may become payable to Avecia assuming certain milestones are achieved as follows:

(i) $3 million upon the entry by PharmAthene into a multi-year funded contract or series of contracts with the U.S. or UK governments (or subcontractors thereof) for the further development of Avecia's pneumonic and bubonic plague vaccine (RypVax™) with a total committed aggregate value in excess of $30 million; and

(ii) $10 million upon the entry by PharmAthene into a multi-year funded contract with the U.S. government (or subcontractors thereof) for the further development of RypVax™ as a result of (a) a Resources Allocation Decision of the Resource Allocation Review Board and the Resource Allocation Advisory Committee of the DoD or (b) some other similar substantial funding in excess of $150 million (including the value of any option elements within such contract); and

(i) $5 million upon the entry by PharmAthene into a multi-year funded development contract to be issued by BARDA (part of DHHS) under solicitation number RFP-BARDA-08-15 for the further development of Avecia's anthrax vaccine (SparVax™); and

(ii) $5 million upon the entry by PharmAthene into a contract or contracts for the supply of SparVax™ into the SNS; and

(iii) 2.5% of PharmAthene net sales of SparVax™ to the U.S. government within the period of ten years from the closing of the Avecia Acquisition after the first 25 million doses; and

(iv) 1% of PharmAthene net sales of third generation anthrax vaccine to the U.S. government within the period of ten years from the closing of the Avecia Acquisition.

In addition to the potential milestone payments described above, for a period of 10 years following our first purchase of Drug Substance, if we purchase bulk drug substance for the anthrax and plague vaccines ("Drug Substance") from a supplier other than Avecia, we may be obligated to make the following payments to Avecia in certain circumstances (the "Manufacturing IP Consideration"):

(i) where (A) a national government or agency after award of a contract specifies that production of Drug Substance must be sourced from a supplier other than Avecia or (B) Avecia is unable to fulfill our demand for Drug Substance, 3.75% of the amounts that would have been payable to Avecia had Avecia produced the Drug Substance; and

(ii) where we elect to source Drug Substance from any supplier other than Avecia in all other circumstances, 7.5% of the amounts that would have been payable to Avecia had Avecia produced the Drug Substance.

In no event, however, are we obligated to pay Manufacturing IP Consideration if we terminate our supply arrangements with Avecia as a result of Avecia's unremedied material breach of its obligations to us under our supply agreement with them.

March 2009 Public Offering

On March 27, 2009, we closed on the public sale of an aggregate of 2,116,055 newly issued shares of our common stock at $2.60 per share and warrants to purchase an aggregate of 705,354 shares of our common stock at an exercise price of $3.00 per share, resulting in aggregate gross proceeds of $5,501,743. The warrants will be exercisable beginning on September 27, 2009 and will expire on September 27, 2014, five years from the date they become exercisable.

Equity Investment by Panacea Biotec

In October 2008 a subsidiary of Panacea Biotec Ltd. ("Panacea Biotec") made an equity investment in us, providing gross proceeds of approximately $13.1 million. Under the financing, Panacea Biotec subsidiary Kelisia Holdings Ltd. ("Kelisia") purchased 3,733,334 shares of our common stock at $3.50 per share. In addition, Panacea Biotec's subsidiary received 12-month warrants to purchase up to 2,745,098 additional shares of our common stock at an exercise price of $5.10 per share, subject to a stock ownership cap, following any warrant exercise, of 19.99% of our issued and outstanding common stock. For three years following the closing on this sale of securities, Panacea Biotec has agreed not to purchase additional shares of our stock without our prior written consent. Panacea Biotec's subsidiary has certain limited rights to participate in future private financings by us to maintain its then current ownership level.

Business Concept and Strategy

Our goal is to become the premier company worldwide specializing in the discovery, development and commercialization of prophylactic and therapeutic drugs for defense against bioterrorism and, eventually, to leverage our biodefense capabilities for non-biodefense products in broader commercial markets. Our strategy to achieve this objective includes the following elements:

- **Maximize the value of our current product candidate portfolio as well as products that we may acquire in the future**. Our products target areas that the U.S. government has identified as having critical biodefense needs and preclinical data supports the potential of these products to meet those needs. We intend to develop these products aggressively while fulfilling the requirements of the U.S. government's contracting processes. Development and contracting requirements of biodefense products are unique, and we continue to build capabilities to meet the requirements while developing our products.

- **Continue to build and leverage core capabilities in biodefense**. We have developed and will continue to develop unique biodefense product development and contracting capabilities. Development of the capabilities has required a substantial investment, which we anticipate will be leveraged by acquiring additional biodefense product candidates through licensing and mergers and acquisitions. We believe that product opportunities will come primarily from companies focused on commercial markets that wish to see their products or technologies exploited in biodefense.

- **Where applicable, expand use of our products from biodefense into commercial markets**. Some of our product candidates may be useful for preventing or treating diseases or conditions outside of biodefense. For example, Protexia® may be useful to treat overdoses of cocaine or heroin.

Additionally, after products are FDA approved, it may be possible to market biodefense products through commercial channels. We will evaluate and develop these opportunities as warranted.

Biodefense Industry

Market Overview

The worldwide biodefense market can generally be divided into three segments: U.S. civilian, U.S. military, and non-U.S. markets. U.S. government funding represents the vast majority of the worldwide market. According to the UPMC Center for Biosecurity, U.S. government biodefense military and civilian spending peaked in fiscal year 2005 at over $8 billion and has averaged around $5.4 billion in fiscal years 2007 and 2008. Funding in fiscal year 2009 is expected to increase again to nearly $8 billion.

- ***U.S. Civilian***: The U.S. civilian market includes funds to protect the U.S. population from biowarfare agents and is largely funded by the Project BioShield Act of 2004. Project BioShield, the U.S. government's largest biodefense initiative, governs and funds with $5.6 billion the procurement of biodefense countermeasures for the SNS for the period from July 2004 through 2013. Of the $5.6 billion, $3.4 billion was made available through fiscal year 2008, and the remaining $2.2 billion becomes available in fiscal year 2009. Of the $3.4 billion, $1.9 billion was awarded in procurement contracts through 2008. A total of $3.7 billion remains in the Project BioShield Special Reserve Funds. This amount includes $1.5 billion which was unspent from the initial $3.4 billion traunch and the $2.2 billion that became available in fiscal year 2009.

- ***Military***: The DoD is responsible for the development and procurement of countermeasures for the military segment which focuses on providing biowarfare protection for military personnel and civilians who are on active duty. The President's request for funding in fiscal year 2009 was $1.5 billion compared to annual spending of $1.02 billion for 2008, and $1.2 billion to $1.8 billion from 2005 to 2007. We anticipate that annual funding for the programs through 2013 will continue in a comparable range.

- ***Non-U.S. Markets***: Non-U.S. markets address protection against biowarfare agents for both civilians and military personnel in foreign countries. We anticipate that foreign countries will want to procure biodefense products as they are developed and validated by procurement by the U.S. government.

Project BioShield

Project BioShield, established under the Project BioShield Act of 2004 and the U.S. government's largest biodefense initiative, is focused on acquiring products with low technology risk that will be available for purchase in the near term. The U.S. government has identified the following threats as priorities: anthrax, smallpox, botulinum toxin, radiation, and nerve agent exposure. To evaluate and select the best products for these threats, the DHHS typically issues Requests for Information ("RFI") followed by Requests for Proposals ("RFP"). RFPs detail product and procurement requirements including treatment types, numbers of doses and delivery timeframes. To qualify for Project BioShield funding, products must demonstrate product efficacy in an animal model and initial product safety in Phase I clinical trials, and companies must show that they can provide sufficient manufacturing capability. As of December 31, 2008, 11 awards have been made under Project BioShield, including those for anthrax, radiation and botulinum toxin.

In addition to the threats identified as priorities under Project BioShield, the DoD requires recombinant bioscavengers for prophylaxis against nerve agent exposure faced by combat troops. We are

pursuing the development of products for prophylaxis against and treatment of anthrax, nerve agent exposure, and plague.

Anthrax

The three general modes of infection by *Bacillus anthracis* ("*B. anthracis*"), the bacterium which causes anthrax infection, are by inhalation, ingestion or skin contact with anthrax spores. Inhalation is the form of infection most likely to be lethal. Inhalation anthrax occurs when anthrax spores become airborne and enter a person's body through the lungs. Persons suffering from inhalation anthrax will experience a series of symptoms consisting of fever, muscle aches, fatigue and cough, which last an average of four days. Following this period, there is rapid onset of severe respiratory distress, low blood oxygen and low blood pressure, which generally culminates in death. Inhalation anthrax is usually fatal if left untreated, and has approximately a 50% mortality rate in patients treated aggressively with antibiotics and supportive care. Persons infected by *B. anthracis* that is ingested will suffer from gastrointestinal anthrax; those whose skin comes into contact with anthrax will suffer from cutaneous anthrax. Gastrointestinal anthrax often presents with serious gastrointestinal difficulty, vomiting of blood, severe diarrhea, acute inflammation of the intestinal tract and loss of appetite. Gastrointestinal anthrax has a 25% to 60% mortality rate if left untreated. Cutaneous anthrax generally causes skin infections within a week or two after exposure. Cutaneous anthrax is the least fatal. Without treatment, up to 20% of all skin infection cases are fatal. Treated cutaneous anthrax is rarely fatal.

B. anthracis is a spore forming bacterium that has potential use as a bioterror weapon, especially when delivered in an aerosolized form. Following germination of the spores, the bacteria replicate and produce three toxins. The first of the toxins, Anthrax Protective Antigen ("PA"), polymerizes and attaches to the outside of healthy cells in the infected person, and then facilitates the entry of the two additional destructive toxins, referred to as Lethal Factor and Edema Factor, into the cells.

The DoD estimates that up to ten countries may possess anthrax weapons and an undetermined number of individuals and terrorist groups could have access to anthrax. Anthrax is an effective bioterrorism agent because the spores are stable, can be milled to a fine powder and may be dispersed widely with readily available instruments and machinery. The World Health Organization estimates that 50 kilograms of *B. anthracis* spores released upwind of a city of 500,000 people could result in up to 95,000 fatalities, with an additional 125,000 persons being incapacitated.

As the congressionally mandated report of the Commission on the Prevention of WMD Proliferation and Terrorism, entitled "World at Risk", noted when issued in December 2008, unless the world acts quickly, it is likely that a weapon of mass destruction will be used in a terrorist attack somewhere in the world by the end of 2013, with biological weapons identified as the most likely type of weapon to be used during that time. Among the recommendations in the report is the need to "enhance the nation's capabilities for rapid response to prevent biological attacks from inflicting mass casualties".

We believe that currently available treatment for inhalation anthrax is limited and suboptimal. Following exposure, but prior to the onset of symptoms, antibiotics like ciprofloxacin, doxycycline or penicillin can be used as post-exposure prophylaxis with the goal of preventing progression of the disease. To be fully effective when used in this way, the recommended antibiotic treatment must be continued for 60 days. We believe that both compliance and side effects are problematic for anyone asked to take antibiotics for such an extended period of time. Products like our two rPA-based anthrax vaccine candidates, which are designed to be effective in two or three doses, and our monoclonal human antibody treatment, Valortim®, with a prolonged half-life, might allow for less frequent dosing to achieve adequate post-exposure prophylaxis.

Chemical Weapons and Nerve Agents

Chemical weapons use the toxic properties of chemical substances to produce physiological effects on an enemy. Classic chemical weapons, such as chlorine and phosgene, were employed during World War I and consisted primarily of commercial chemicals used as choking and blood agents, to cause respiratory damage and asphyxiation. Nerve agents, one of the most lethal forms of chemical weapons, were developed in the 1930s in the years leading up to World War II.

Nerve agents function by binding to acetylcholinesterase, an enzyme that normally causes termination of the activity of the neurotransmitter acetylcholine. Nerve agents block the activity of acetylcholinesterase, allowing the activity of acetylcholine to continue unchecked. As a result, nerve impulses are continually transmitted, causing muscle contractions that do not stop. This effect is referred to as a "cholinergic crisis" and results in a loss of muscle control, respiratory failure, paralysis and convulsions. Nerve agent exposure that does not cause death after a short period can lead to permanent brain damage.

Nerve agents, which are liquids at room temperature, are generally lethal far more quickly and in far lower quantities than classic chemical weapons, and are effective both when inhaled and when absorbed through the skin. These agents can be delivered through explosive devices, spray tanks or most liquid or gas dispersion devices and machinery.

There currently is only one FDA approved pre-treatment for nerve agents, pyridostigmine bromide ("PB"). PB is only approved for the pre-treatment of exposure to the nerve agent soman. It confers no protection on its own but enhances the protection conferred by post-exposure treatment. The standard of care for post-exposure treatment involves repeated doses of a cocktail of drugs including atropine, reactivators including the oxime 2-PAM and anti-convulsants. However, this type of care acts primarily on the symptoms of nerve agents, not their underlying cause. We believe available pre-and post-treatment options are inadequate and that there is a need for more efficacious countermeasures, especially as evidence mounts that modified, more toxic forms of organophospates nerve agents may be used in future attacks.

Plague

The Centers for Disease Control and Prevention classify *Yersinia pestis* ("*Y. pestis*") as a Category A bioterrorism agent, the highest threat category ranked by the CDC. Plague is a disease caused by the bacterium *Y. pestis* found endemically in rodents and flea populations in certain parts of the world. The World Health Organization reports an estimated 1,000 to 3,000 human cases of plague worldwide every year. More than a dozen cases occur annually in the western United States, most often in rural and semi-rural areas. There are two primary forms of the disease, bubonic and pneumonic. The majority of cases are of the bubonic form, which is transmitted through the bite of an infected flea or upon exposure to infected material through a break in the skin. Symptoms include swollen, tender lymph glands called buboes. If bubonic plague is not treated, the bacteria can spread through the bloodstream and infect the lungs, causing a secondary case of pneumonic plague. Pneumonic plague affects the lungs and can be transmitted from person to person when an individual breathes in *Y. pestis* particles in through the air. Naturally occurring pneumonic plague is uncommon, although small outbreaks do occur.

Y. pestis used in an aerosol attack could cause an outbreak of the pneumonic form of plague shortly after infection. Once pneumonic disease is established in a human host, the bacteria can be readily transmitted between individuals. The extended time between exposure to the bacteria and diagnosis increases the opportunity to transmit the bacteria over a vast area, making containment a

challenge. Creating a bioweapon carrying *Y. pestis* is highly feasible as the bacterium occurs readily in nature and could easily be isolated and grown in quantity in a laboratory.

To prevent a high risk of death, particularly for pneumonic plague, antibiotics must be given within 24 hours of the first symptoms. However, given the rapid onset of the disease and the difficulty diagnosing pneumonic plague, it can rapidly prove fatal in untreated individuals or in a situation where treatment is delayed. Currently, no vaccine is commercially available.

PharmAthene's Product Candidates

SparVax™: Recombinant Protective Antigen (PA)-based Anthrax Vaccine

SparVax™ is a second generation, rPA anthrax vaccine designed to protect against inhalation anthrax, the most lethal form of B. anthracis infection in humans. The vaccine has been shown to induce anti-PA antibodies in healthy human volunteers and in animal models of inhalation anthrax. These antibodies are believed to function by targeting Protective Antigen, a protein component necessary to initiate the toxic cascade and cell entry of toxins produced by the bacterium. SparVax™ has been shown to be protective in rabbit and non-human primate models when animals are vaccinated and then exposed to lethal inhalation doses of anthrax spores. One Phase I and two Phase II clinical trials have been completed in over 700 individuals. Data from these trials demonstrated that SparVax™ is well tolerated and immunogenic.

SparVax™ is being developed for two indications: post-exposure prophylaxis ("PEP") in conjunction with antibiotics and general use prophylaxis ("GUP"). In a PEP setting, the vaccine would be used following a suspected exposure to augment the natural immune response and provide protection once antibiotics are discontinued. In the GUP setting, the vaccine is administered in advance of any exposure and is intended to induce an immune response that will be protective should there be an exposure.

Pre-clinical Studies

Prior to filing an IND with the FDA, SparVax™ underwent safety testing in rodents and non-human primates. Single dose acute toxicity testing was conducted in mice and rats, while repeat dose toxicity studies were conducted in mice, rats, rabbits and Cynomolgus monkeys. Sparvax™ was well tolerated with no deaths and no behavioral or clinical signs observed in any species. All of the toxicology studies were compliant with Good Laboratory Practices ("GLP") and the data were used to support the IND and allow for the initiation of clinical trials of SparVax™. In the future, as a part of its development program, we will conduct additional animal studies to demonstrate the safety of the vaccine for use in women of childbearing potential (reproductive toxicology).

Non-clinical Studies

SparVax™ is being developed utilizing the Animal Rule (21 CFR 609.1(a)(1-4)) which allows for efficacy testing in appropriate animal models in lieu of clinical efficacy trials. To date, animal model development and efficacy studies in both rabbits and non-human primates for both GUP and PEP indications using SparVax™ have been sponsored by NIAID and conducted by a commercial research organization ("CRO") for us through contract with NIAID. Future studies will be sponsored by us and conducted by this CRO. Data from the studies conducted to date have shown that SparVax™ is immunogenic in both rabbits and non-human primates; protection has been demonstrated in vaccinated animals subjected to aerosol challenge with Ames strain spores.

Clinical Studies

The Phase I trial was a dose escalation study designed to evaluate a range of dose levels administered in two different schedules. Doses ranged from 5 μg to 100 μg given intramuscularly on either a 0, 21 day regimen or a 0, 28 day regimen. A comparator arm using the currently licensed anthrax vaccine was also included. The results demonstrated that the vaccine was safe, well-tolerated and immunogenic. There were no vaccine related serious adverse events ("SAEs") and no vaccine-related changes in blood chemistries, vital signs, or electrocardiograms ("ECGs"). A minority of subjects reported injection site irritation. The incidence, severity, and causality of adverse events were similar across all dose groups. Both regimens produced similar levels of immunogenic response with the peak antibody titer for the 0, 28 day regimen occurring earlier after vaccination as compared to that produced by the 0, 21 day regimen.

The Phase II program was designed to include larger subject numbers and a three-dose schedule at the two highest dose levels tested in Phase I (50 and 100 μg rPA). Two Phase II trials were conducted, both of which used different 3-dose priming schedules to study the effect of different dose levels and different dosing schedules.

The Phase IIa trial compared two regimens (0, 7, 14 day vs. 0, 14, 28 day dosing) at two dose levels (50 and 100 μg). This study also incorporated an antigenic challenge dose (i.e., a dose to show that the initial series of doses adequately "primed" the immune system to respond to natural infection by producing antibody due to immunologic memory) at either day 182 or day 365; the dose was the same as the dose the subject received in the priming series. SparVax™ was well tolerated with no vaccine-related SAEs or changes in blood chemistries, vital signs, or ECGs reported. Further, SparVax™ was immunogenic in this study with the 0, 14, 28 day schedule producing far better antibody titers as compared to the 0, 7, 14 day schedule, regardless of the dose administered. The results from the antigenic challenge dose demonstrate that immunologic memory was induced by the priming series.

The Phase IIb trial compared a longer dosing regimen (0, 28, 56 day dosing) at two different dose levels (50 and 100 μg) with a smaller control group who received the currently licensed anthrax vaccine, AVA. This study also incorporated an antigenic challenge dose at either day 182 or day 365 in the SparVax™ groups; the dose was the same as the dose the subject received in the priming series. Here, too, SparVax™ was well-tolerated with no vaccine-related SAEs or changes in blood chemistries, vital signs or ECGs reported. At least one vaccine-related adverse event was reported in approximately 40% of the SparVax™ subjects at each dose and approximately 80% of the subjects in the AVA group. These were predominantly local injection site reactions, thus the local tolerability of SparVax™ was somewhat better than AVA in this study. The immunogenicity data showed that a good level of response was achieved with both vaccines and with both doses of SparVax™. The antibody titers were comparable between the two SparVax™ dose levels and the AVA arm. The results from the antigenic challenge dose administered to the SparVax™ groups demonstrated that immunologic memory was induced by the priming series.

Future studies will seek to confirm the dose and schedule of SparVax™ that induces antibody levels in humans which are comparable to those shown to be protective in the animal models, demonstrate the acceptability of using SparVax™ in conjunction with antibiotics, and confirm the safety of SparVax™ in a sufficient number of human subjects (as agreed to with FDA).

Funding

To date, funding for the development of SparVax™ has occurred under two contracts from the NIH originally made in 2002 and 2003 which provided for aggregate funding of approximately $118.0

million. Through December 31, 2008, PharmAthene recognized revenue of $9.2 million under these contracts.

On February 29, 2008, the Department of Health and Human Services ("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.

Valortim®: Anthrax Monoclonal Antibody

Valortim® is a fully human monoclonal antibody designed to protect against and treat human inhalational anthrax, the most lethal form of infection caused by the *Bacillus anthracis* bacterium.

Valortim® functions by targeting PA, a protein component of the bacterium that attaches to and facilitates the entry of the destructive toxins Lethal Factor (LF) and Edema Factor (EF) into healthy cells in the infected person. Valortim® is designed to bind to PA and protect the cells from damage by the anthrax toxins. In preclinical studies, Valortim® protected animals against infection, and when administered after exposure, facilitated recovery and survival in animals exposed to lethal inhalation doses of anthrax spores.

Anthrax spore challenge studies in animals have demonstrated protection by Valortim® both when given early following challenge (post-exposure prophylaxis) as well as when given up to 48 hours after challenge (therapeutic intervention). Valortim® binds to a novel site of PA, permitting protection after toxins have already attached to the cell. We believe potency and the unique mechanism of action of Valortim® differentiate it from competing products. In the initial Phase I clinical trial in healthy human volunteers, Valortim® was well-tolerated with no drug-related serious adverse events reported.

Medarex Collaboration and Development Timeline

We are developing Valortim® in collaboration with Medarex, Inc. (a bipharmaceutical company that specializes in developing fully human antibody-based therapeutic products) pursuant to a collaboration agreement entered into in November 2004. Under the terms of the collaboration agreement, we made an initial $2.0 million payment to Medarex to fund planned development activities in 2004, and we are responsible for funding all research and development and commercialization activities that exceed current and future government funding. The collaboration agreement provides that Medarex and PharmAthene will share operating profits according to a formula that establishes our share of the profits at between 20% and 60%, generally as follows: (i) upon execution of the collaboration agreement and the $2.0 million initial payment, our profit share was 20%; (ii) to maintain our 20% profit share we are required to contribute funding in an amount equivalent to the funding provided by the U.S. government to Medarex via grants awarded to fund Valortim® development work (approximately $7.2 million); (iii) our share of operating profits will increase to 50% if a contract for the procurement of Valortim® is entered into with the U.S. government and we have satisfied our obligation to fund the additional $7.2 million; and (iv) our share of the operating profits can increase by 10% for every $5 million of funding we provide over and above the initial payment of $2.0 million and the amount that we provide as funding in excess of the $7.2 million in matching funds provided to Medarex. Our aggregate share of the operating profits is capped at 50% if the condition under clause (iii) is not satisfied and 60% if it is satisfied. Should the parties enter into a contract for the procurement of Valortim® with the U.S. government prior to our satisfying our obligation under clause (ii) above, we are required to make a milestone payment to Medarex in an amount up to $1.5 million in order to achieve a 50% profit share in the program. Prior to distribution of operating profits, each party is entitled to reimbursement of research and development expenses incurred that were not otherwise covered by government funding.

Additional animal model development and testing of Valortim® for therapeutic efficacy in African green monkeys is being carried out under a Collaborative Research and Development Agreement with the U.S. Army Medical Research Institute of Infectious Diseases. In October 2008, we announced results from a pilot study, funded by NIH, designed to attempt to refine a rabbit model as a predictive therapeutic model for anthrax inhalation disease and which showed that Valortim® enhanced survival as compared to a control group in this animal model.

Valortim® has received Fast Track designation from the FDA, which generally indicates that the FDA will facilitate the development and expedite the regulatory review of the product depending on the FDA's resources. However, we can provide no assurance that the review will be successful. In addition, the FDA may withdraw its approval of a Fast-Track product on a number of grounds, including the sponsor's failure to conduct any required post-approval study with due diligence and failure to continue to meet criteria for designation. Valortim® has also been granted orphan drug status, a designation for drugs developed for diseases which affect less than 200,000 persons in the United States and provides for reduced fees to the FDA, market exclusivity for seven years, and other FDA-related privileges.

We conducted an end-of-Phase I meeting with the FDA in October 2007 during which the FDA agreed that the African green monkey model (described below) is acceptable as one of the two required species for licensure of Valortim® under the Animal Rule (21 CFR 314 Subpart I).

Clinical and Preclinical Studies

Valortim® is being developed for two indications: (i) as a post-exposure prophylaxis; and (ii) as a post-exposure therapy.

Clinical Phase I Studies

PharmAthene and Medarex have completed dosing in a Phase I open-label, dose-escalation clinical trial to evaluate the safety, tolerability, immunogenicity, and pharmacokinetics (the study of absorption, metabolism and action of drugs) of a single dose of Valortim® administered intravenously or intramuscularly in healthy volunteers. No drug-related serious adverse effects were reported. Minor adverse events reported included pain at the intramuscular injection site, headache, muscle aches, and occasionally bruising at the site of the intravenous catheter inserted for drug dosing and blood draws. Pharmacokinetic data indicate that Valortim® has good bioavailability following intramuscular injection; additionally, both intravenous and intramuscular injection result in a half-life of 22 to 33 days. Final results from the Phase I study were presented at the Infectious Disease Society of America meeting in October 2006.

Preclinical Studies: Post-exposure Prophylaxis Indication

We have conducted studies in two animal models to evaluate the use of Valortim® as a post-exposure prophylaxis, or, in other words, to protect exposed animals from developing the signs and from dying of inhalation anthrax. Treatment in both animal models was initiated within one hour following exposure to the anthrax spores. Eighty-five percent (85%) of rabbits treated intravenously with doses of Valortim® survived following inhalation exposure to anthrax spores. One hundred percent (100%) of cynomolgus monkeys treated intramuscularly with doses of Valortim® were protected from death following exposure to inhalation anthrax spores.

Preclinical Studies: Post-exposure Therapeutic Indication

We have conducted a study in rabbits to evaluate the use of Valortim® as a therapeutic intervention for inhalation anthrax. This indication for Valortim® would be intended to treat patients who have already developed signs and/or symptoms of inhalation anthrax. In this study, 89% of the animals treated with Valortim® intravenously 24 hours following inhalation exposure to anthrax spores survived. A second group of animals were not treated with Valortim® until 48 hours following exposure; 42% of the animals treated at this timepoint survived. In another study, 100% of the Valortim®-treated rabbits at an intravenous drug dose of 20mg/kg survived compared to 83% of the rabbits at a lower dose (10mg/kg) and 8% percent in the control group. These animals were treated when they had evidence of inhalation anthrax as defined by evidence of PA in their blood or a significant increase in body temperature, whichever came first.

We have conducted an initial study in African green monkeys treated with Valortim® at the time they test positive for PA in the blood. The result of a test for PA in the blood is available within 1-2 hours which allows the animals to be treated earlier in the course of their illness than is possible using blood culture results that are not available for 24 or more hours. All control animals in the study died; 56% of treated animals survived following administration with Valortim® alone. Additional studies to further test Valortim® in rabbits and monkeys are planned in 2009 as well as clinical studies to evaluate the safety of Valortim® in human volunteers when given in conjunction with antibiotics.

In addition to the animal efficacy and human safety studies to advance Valortim® toward licensure under the Animal Rule, work is also ongoing to further explore and define its mechanism of action. Preliminary data generated in collaboration with the University of Maryland suggests that Valortim® has the ability to enhance macrophage killing of *B. anthracis* spores within macrophages; this is in addition to its previously described toxin neutralizing activity. Further work is ongoing to fully elucidate these and other possible effects and functional properties of Valortim®.

Funding

On September 28, 2007, NIAID and BARDA awarded to PharmAthene a $13.9 million contract for the advanced development of Valortim® as an anti-toxin therapeutic to treat inhalation anthrax infection. We have recognized revenue of $1.4 million through December 31, 2008 under this contract, which we expect will continue to be funded in installments through fiscal year 2011. BARDA has indicated that it plans to provide an additional $2 million to us under the existing NIAID contract, bringing the total amount to $15.9 million. In addition, in March 2009 BARDA issued a Broad Agency Announcement (BAA) for the Advanced Research and Development of Chemical, Biological, Radiological, and Nuclear Medical Countermeasures, which included an advanced development solicitation for proposals covering anthrax anti-toxins. The BAA states that research and technical objectives proposed by offerors may include non-clinical research and development, process development, formulation, manufacturing development, and clinical evaluation efforts. In response we submitted an initial proposal providing for further development of Valortim® and are awaiting a response. The BAA further states that offerors receiving a favorable evaluation from BARDA will be asked to prepare a full proposal for submission, and the government has stated that it intends to make final award decisions with respect to proposals for anthrax anti-toxins by September 30, 2009.

Protexia®: Pegylated Recombinant Human Butyrylcholinesterase

Protexia®, our nerve agent countermeasure, is a pegylated recombinant transgenic form of human butyrylcholinesterase ("BChE"). Preclinical studies in animal models suggest that Protexia® may be effective prophylactically and therapeutically for chemical nerve agent poisoning.

BChE is a naturally occurring protein found in minute quantities in blood. In its native form, BChE functions as a natural bioscavenger, like a sponge, to absorb organophospate poisons (e.g. nerve agents) and eliminate them from the circulation before they cause neurological damage. Recombinant BChE is first purified as the unpegylated protein and then modified to arrive at its pegylated form, which confers desirable attributes such as enhanced half life for a longer period of protection and decreased potential for immunogenicity.

We, in collaboration with the Institute for Chemical Defense (ICD), a U.S. military organization where the testing of promising compounds intended for use against traditional and non-traditional nerve agents is performed, have screened recombinant BChE ("rBChE") and pegylated rBChE ("PEG-rBChE") for activity against a number of both traditional and non-traditional nerve agents. Protexia® will also be assessed against traditional agents as part of the work under the DoD contract described below. The DoD has also indicated that additional testing of Protexia® against non-traditional agents may be performed; the results of this testing, however, will be treated as classified national security information and will not be available to us or to the public. In addition, newer more potent forms of rBChE will be screened as second-generation rBChE molecules (having higher affinity binding characteristics and enhanced catalytic activity) become available.

The procurement process for the scale-up development and sale of Protexia® is already underway with the U.S. Department of Defense (the "DoD"), the department charged with purchasing biodefense countermeasures for military use. The DoD requested competitive bids in a Request for Proposal for a recombinant form of BChE drug for the prophylaxis treatment of chemical nerve agent poisoning, which we submitted in November 2005. In September 2006, we were awarded a multi-year contract by the DoD. The contract provides an initial $41 million for the advanced development of Protexia® through March 2009, and thereafter the U.S. government, at its sole discretion, may elect to continue development assistance with further funding of $65 million. We believe the DoD will make a decision in this regard by the end of the fourth quarter of 2009, following completion of the on-going Phase I human clinical trial for Protexia® and its review of the data from that trial and our manufacturing scale-up efforts. Assuming development milestones are met and contract extensions are exercised by the U.S. government, at its sole discretion, and that the U.S. government elects to procure an initial 90,000 doses of Protexia® from PharmAthene, we could receive up to $219 million in total funding under this contract (including the $41 million and $65 million disclosed above for advanced development). We have recognized revenue of $35.5 million through December 31, 2008 under this contract.

Proof of Concept Studies Using rBChE or PEG-rBChE

Pre-exposure Prophylaxis Indication

Pre-treatment with PEG-rBChE provided 100% survival against multiple lethal doses of the nerve agents VX and soman in animal models and the surviving animals displayed no nerve agent side effects. In these experiments, two groups of animals were pre-treated with either PEG-rBChE or a negative control. Eighteen hours later, they were exposed to multiple lethal doses of nerve agent (VX or soman). Another group of animals was exposed to approximately 75% less nerve agent and then treated immediately with the current standard therapy, a three-drug cocktail of atropine, 2-PAM and diazepam. Animals were videotaped post-exposure and evaluated for toxic signs by observers blinded to the treatment groups. In addition, a battery of functional observations and neurological function tests (ability to balance and memory tests) were performed six hours after exposure. None of the control animals exposed to nerve agents alone survived while 100% of animals pretreated with PEG-rBChE survived with no visible nerve agent side effects and no loss of balance or memory relative to negative control animals. In contrast, the animals exposed to much lower levels of nerve agents and subsequently treated with the current standard therapy did not respond as well. Survival in these animals was mixed with 100%

survival in animals exposed to VX but only 50% survival in animals exposed to soman, although all survivors had significant side effects including a pronounced loss of balance and loss of memory.

Post-Exposure Therapeutic Indication

Based on the demonstration of protection when PEG-rBChE was administered before nerve agent exposure, a series of experiments were conducted to determine whether rBChE was effective as a therapy when administered after exposure to nerve agent. The therapeutic efficacy of rBChE was first evaluated in a domestic pig model with rapid (intravenous) exposure to nerve agent ("VX") followed by treatment with rBChE 15 minutes later. All of the control animals receiving nerve agent alone died with an average time to death of 1.5 hours while 50% of animals receiving rBChE survived with a prolonged time to death (average of 5.4 hours) in the animals that died. A second study was conducted to evaluate the therapeutic efficacy of rBChE in a different animal model and to increase the time before treatment with rBChE to one hour. Ninety percent (90%) of the animals exposed to VX on the skin and then treated with rBChE survived as compared to no survivors among the group that was not treated.

Additional work for a post-exposure indication is being conducted under grant funding from the NIH. One study has been completed to date. The study was designed to build upon the experience in the domestic pig model. Untreated animals exposed to VX applied topically to the ear showed signs of organophosphate (OP) poisoning and died within 2-3 hours. In contrast, animals receiving rBChE administered in 5 equal doses post-VX exposure survived with little or no signs of poisoning. Control animals received rBChE but no nerve agent or were exposed to topical VX and given the standard of care (2PAM and atropine). VX-exposed and treated animals showed mild signs of OP poisoning which cleared within 24 hours. The animals that were exposed to VX and treated with either rBChE or 2PAM-atropine gained weight at a comparable rate to that of the rBChE only animals. None of the surviving animals displayed any signs of cognitive impairment. The data suggest that rBChE is comparable to the current standard of care; future work will further refine this comparison.

Development Timeline and Phase I Clinical study

The potential of rBChE and PEG-rBChE as medical countermeasures have been demonstrated by their ability to protect animals from multiple lethal doses of nerve agents and binding to a broad spectrum of agents, including sarin, soman, tabun and VX. Following proof-of-concept studies and award of the DoD contract, we have developed the final product manufacturing process including selection of the PEG reagent. The final product is designated Protexia® to distinguish it from earlier versions of the recombinant protein. Two studies were completed to establish the pharmacokinetic profile of Protexia® in rats and cynomolgus monkeys that helped to guide the dosing strategy for the IND-enabling toxicology studies. The pharmacokinetic profile in rats and monkeys met expectations and compared favorably with that of human plasma-derived BChE.

We completed the manufacture of the first cGMP clinical lot of Protexia®. We filed an Investigational New Drug Application ("IND") with the FDA in the third quarter of 2008 and began a Phase I clinical trial in humans in October 2008. The primary and secondary endpoints of the study are an evaluation of the safety, tolerability, pharmacokinetics and immunogenicity of (i) escalating single doses of Protexia® given intramuscularly in healthy human volunteers and (ii) a second dose of Protexia® administered to a subset cohort approximately 2.5 months after the first dose, respectively. Approximately 32 subjects will participate in the study, comprised of healthy male and female volunteers between the ages of 18 and 55 years who are willing to give informed consent and are in general good health. Under the study protocol, either Protexia® or a saline control will be administered in escalating doses to five groups of volunteers. Safety data through 14 days post-dosing will be evaluated prior to escalation to a higher dose. Subjects in four of the groups (comprised of six subjects each) will receive a

single dose of Protexia® and participate in the trial for two and a half months. One group of eight subjects will receive a second dose of Protexia® approximately 72 days following the first dose and will participate in the study for approximately five months. We expect this trial to be completed during the second half of 2009.

RypVax™: Recombinant F1 (rF1) and V (rV) antigen-based Plague Vaccine

RypVax™ is a recombinant plague vaccine comprising separate recombinant F1 (rF1) and V (rV) antigens produced in *Escherichia coli*. The purified antigens are adsorbed onto an Alhydrogel adjuvant and filled into single-use glass vials. Antibodies to rF1 have been shown to be protective against bubonic plague while antibodies to rV have been shown to enhance protection against pneumonic plague. As this vaccine combines both antigens, it is expected that it will protect against both forms of the disease. The vaccine is intended to be used to protect individuals before exposure to the *Yersinia pestis*. We believe that two or three doses, given several weeks apart, will be sufficient to induce protective immunity; this would potentially then be followed by an annual booster shot.

RypVax™ has successfully completed three Phase I human clinical trials. The vaccine has been demonstrated to be immunogenic, safe and well-tolerated. In preclinical animal models of vaccination with RypVax™ has induced antibodies which provide protection against a lethal aerosol challenge. The manufacturing process for this product is currently at full commercial scale.

Non-clinical Studies

Three acute dose toxicity studies have been conducted in the CD strain of rat, and one study in the ICR-CD-1 mouse strain. A series of repeat dose studies have been carried out in rats (4 doses), rabbits (3 doses) and cynomolgus macaques (2 and 4 doses). A single reproductive toxicology study has been conducted in CD rats. All data generated in these studies to date demonstrated the safety of the vaccine for use in human clinical trials.

Non-clinical efficacy studies completed in aerosol challenge models of *Y. pestis* in mice and cynomologus macaques have shown the vaccine to be immunogenic and protective.

Clinical Studies

Three Phase I clinical trials have been conducted to evaluate the safety, tolerability, and immunogenicity of RypVax™. In total, 161 subjects have received RypVax™ with no vaccine-associated serious adverse events reported. RypVax™ has been shown to be safe, well-tolerated, and immunogenic in all trials conducted to date. A Phase II clinical trial is planned to commence in 2010.

Funding

In 2004, Avecia was awarded a multi-year contract, under which it could receive up to approximately $50.7 million from NIAID to support the advanced development of the plague vaccine candidate for military use. PharmAthene acquired this contract as part of the Avecia Acquisition. As of December 31, 2008, PharmAthene recognized revenue of $2.7 million under this contract. Future government funding for RypVax™ beyond our existing contract (which expires in the first half of 2010) remains uncertain at this time.

Third Generation rPA-based Anthrax Vaccine

In addition to SparVax™, we are also developing a third generation rPA-based anthrax vaccine in response to the U.S. government's desire to have a stable product that does not require refrigeration and which can induce protective immunity in fewer doses than the currently licensed vaccine (AVA) and the existing second generation vaccine candidates. This vaccine candidate utilizes the rPA already being manufactured for the second generation product candidate (SparVax™), but it will be freeze-dried and will contain an additional immune stimulant not present in SparVax™, which we believe will allow for enhanced immunogenicity.

Manufacturing

Work in 2009 under the existing NIH funding (described below) will focus on advancing the manufacture of the third generation candidate vaccine, including the additional immune stimulant, toward intermediate scale cGMP manufacture.

Early data generated on the stability of the freeze-dried rPA component of the candidate vaccine suggest significantly improved stability properties, which we believe supports the likelihood that the vaccine candidate will be stable for 3 years at 35°C. Additional data are needed to confirm this potential, and studies are planned as part of the work to be performed under the NIAID contract.

Pre-clinical Studies

The data generated to date have focused on proof-of-concept studies in animal models to evaluate the immunogenicity of the candidate vaccine. These studies have shown that the vaccine induces a rapid and enhanced immune response that is protective against infection with *Bacillus anthracis* in these animal models.

There have been no pre-clinical toxicology studies completed to date. We plan to initiate acute single dose toxicology studies in rodents in late 2009.

Clinical Studies

This vaccine candidate is in the early research and development stage. We do not anticipate filing an IND with the FDA before 2011, and we will not commence any human clinical trials before an IND has been filed and accepted by the FDA.

Funding

Two NIH grants made in 2005 and 2007 in the aggregate amount of $6.9 million have funded research activities to support the initial development of this vaccine candidate. On September 25, 2008, we were awarded a contract by NIAID for up to approximately $13.2 million for additional development work. We expect to receive this funding during the initial three year base period of the contract. Assuming all development milestones are met and all contract extensions are exercised by NIAID at its sole discretion, we could receive up to approximately $83.9 million over a nine year period (including the base period and the $13.2 million disclosed above) under this contract, which includes a cost reimbursement component and a fixed fee component payable upon achievement of certain milestone events.

U.S. Government Regulatory Pathway

General

Regulation by governmental authorities in the United States and other countries will have a significant impact on our research, product development, manufacturing and marketing of any biopharmaceutical products. The nature and the extent to which regulations apply to us will vary depending on the nature of any such products. Our potential biopharmaceutical products will require regulatory approval by governmental agencies prior to commercialization. The products we are developing are subject to federal regulation in the United States, principally by the FDA under the Public Health Service Act and Federal Food, Drug, and Cosmetic Act ("FFDCA") and by state and local governments, as well as regulatory and other authorities in foreign governments that include rigorous preclinical and clinical testing and other approval procedures. Such regulations govern or influence, among other things, the research, development, testing, manufacture, safety and efficacy requirements, labeling, storage, recordkeeping, licensing, advertising, promotion, distribution and export of products, manufacturing and the manufacturing process. In many foreign countries, such regulations also govern the prices charged for products under their respective national social security systems and availability to consumers.

The Public Health Service Act classifies our current drug candidates which are produced using biological systems, as biological drug products, or biologics ("Biologics"). All drugs intended for human use, including Biologics, are subject to rigorous regulation by the FDA in the United States and similar regulatory bodies in other countries. The steps ordinarily required by the FDA before a biological drug product may be marketed in the United States are similar to steps required in most other countries and include, but are not limited to:

- completion of preclinical laboratory tests, preclinical animal testing and formulation studies;
- submission to the FDA of an IND, which must be in effect before clinical trials may commence;
- performance of adequate and well-controlled clinical trials to establish the safety, purity and potency (including efficacy) of the Biologic and to characterize how it behaves in the human body;
- completion of comparability studies, if necessary;
- submission to the FDA of a BLA that includes preclinical data, clinical trial data and manufacturing information;
- FDA review of the BLA;
- satisfactory completion of an FDA pre-approval inspection of the manufacturing facilities; and
- FDA approval of the BLA, including approval of all product labeling.

Preclinical testing includes laboratory evaluations to characterize the product's composition, impurities, stability, and mechanism of its biologic effect, as well as animal studies to assess the potential safety, purity and potency of each product. Preclinical safety tests must be conducted by laboratories that comply with FDA regulations regarding Good Laboratory Practices ("GLP") and the U.S. Department of

Agriculture's Animal Welfare Act. Violations of these laws and regulations can, in some cases, lead to invalidation of the tests, requiring such tests to be repeated. The results of the preclinical tests, together with manufacturing information and analytical data, are submitted to the FDA as part of an IND and are reviewed by the FDA before the commencement of human clinical trials. Unless the FDA objects to an IND by placing the study on clinical hold, the IND will go into effect 30 days following its receipt by the FDA. The FDA may authorize trials only on specified terms and may suspend clinical trials at any time on various grounds, including a finding that patients are being exposed to unacceptable health risks. If the FDA places a study on clinical hold, the sponsor must resolve all of the FDA's concerns before the study may proceed. The IND application process may become extremely costly and substantially delay development of products. Similar restrictive requirements also apply in other countries. Additionally, positive results of preclinical tests will not necessarily indicate positive results in clinical trials.

Clinical trials involve the administration of the investigational product to humans under the supervision of qualified principal investigators. Our clinical trials must be conducted in accordance with Good Clinical Practice ("GCP") under protocols submitted to the FDA as part of an IND. In addition, each clinical trial is approved and conducted under the auspices of an institutional review board ("IRB") and with the patients' informed consent. The IRB considers, among other things, ethical factors, the safety of human subjects, and the possibility of liability of the institutions conducting the trial. The IRB at each institution at which a clinical trial is being performed may suspend a clinical trial at any time for a variety of reasons, including a belief that the test subjects are being exposed to an unacceptable health risk. Since our products are being developed using funding from the U.S. government, additional review by either the NIH's IRB or the DoD's IRB-equivalent will also be required. These reviews take place following approval by the independent IRB. As the sponsor, we can also suspend or terminate a clinical trial at any time.

Clinical trials are typically conducted in three sequential phases, Phases I, II, and III, involving an increasing number of human subjects. Phase I trials are safety studies performed in a small number of subjects. Phase II studies, which may involve hundreds of subjects, take an in-depth look at the effectiveness of the drug and may include analysis of dose ranges and dose regimens. Finally, Phase III trials typically involve thousands of individuals and provide the documentation of effectiveness and important additional safety data required for licensing.

In 2002, however, the FDA amended its requirements applicable to BLAs to permit the approval of certain Biologics that are intended to reduce or prevent serious or life-threatening conditions based on evidence of safety from trial in healthy subjects and effectiveness from appropriate animal studies when human efficacy studies are not ethical or feasible. These regulations, also known as the "Animal Rule", and published in the Code of Federal Regulations (21 CFR 601 Subpart H) authorize the FDA to rely on evidence from animal studies to provide substantial proof of a product's effectiveness under circumstances where there is a reasonably well-understood mechanism for the toxicity of the agent. Under these requirements, Biologics used to reduce or prevent the toxicity of chemical, biological, radiological or nuclear substances may be approved for use in humans based on evidence of effectiveness derived from appropriate animal studies and any additional supporting data. Products evaluated for effectiveness under this rule are evaluated for safety under preexisting requirements for establishing the safety of new drug and biological products, including Phase I through Phase II clinical trials. Under certain circumstances a single animal species may be acceptable if that animal model is sufficiently well-characterized for predicting a response in humans. The animal study endpoint must be clearly related to the desired benefit in humans and the information obtained from animal studies must allow for selection of an effective dose in humans. We intend to rely on the Animal Rule in seeking marketing approval for our product candidates because we cannot ethically expose humans to anthrax, nerve agents or plague. 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 in countries other than the United States.

Success in early-stage animal studies and clinical trials does not necessarily assure success in later-stage clinical trials. Data obtained from animal studies and clinical activities are not always conclusive and may be subject to alternative interpretations that could delay, limit or even prevent regulatory approval.

All data obtained from the preclinical studies and clinical trials, in addition to detailed information on the manufacture and composition of the product, would be submitted in a BLA to the FDA for review and approval for the manufacture, marketing and commercial shipments of any of our products. FDA approval of the BLA is required before commercial marketing or non-investigational interstate shipment may begin in the United States. However, Project Bioshield gave authority to the FDA to grant EUA for use of unlicensed/unapproved products should there be an emergency declared by the appropriate authority within the DHHS. This legislation will also allow unlicensed products to be procured for the SNS so that they are available at the time an emergency is declared. Our products will be eligible both for consideration for procurement into the SNS and for use in the event of an emergency, although there is no guarantee that our products will meet the criteria set forth by DHHS or the FDA for procurement and EUA, respectively.

With regard to a BLA, the FDA may deny or delay approval of an application that does not meet applicable regulatory criteria, e.g. if the FDA determines that the preclinical or clinical data or the manufacturing information does not adequately establish the safety, purity and potency (including efficacy) of the Biologic. The FDA has substantial discretion in the approval process and may disagree with an applicant's interpretation of the data submitted in its BLA. The FDA can request additional information, seek clarification regarding information already provided in the submission or ask that clinical trials be conducted, all of which can delay approval. The FDA also may, at any time, require the submission of product samples and testing protocols for lot-by-lot confirmatory review or testing, known as lot release, by the FDA prior to commercial distribution. This means a specific lot of Biologic cannot be released for commercial distribution until the FDA has authorized such release. Similar types of regulatory processes will be encountered as efforts are made to market any Biologic internationally. We will be required to assure product performance and manufacturing processes from one country to another.

Once it approves a BLA, the FDA may revoke or suspend the product approval if compliance with post-market regulatory standards is not maintained or if problems occur after the product reaches the marketplace. In addition, the FDA may require post-marketing studies to monitor the effect of approved products, and may limit further marketing of the product based on the results of these post-market studies. The Animal Rule is clear that post-marketing studies are required should the products be used in humans; the nature of these studies will be discussed with FDA as part of the BLA process. The FDA has broad post-market regulatory and enforcement powers, including the ability to levy civil and criminal penalties, suspend or delay issuance of approvals, seize or recall products and revoke approvals.

Facilities used to manufacture Biologics are subject to periodic inspection by the FDA and other authorities, where applicable, and must comply with the FDA's current Good Manufacturing Practices ("cGMP") regulations, the FDA's general biological product standards, and the product establishment standards set forth in the approved BLA. Failure to comply with the statutory and regulatory requirements subjects the manufacturer to possible legal or regulatory action, such as suspension of manufacturing, seizure of product or recall of a product. Adverse experiences with the product must be reported to the FDA and could result in the imposition of market restriction through labeling changes or in product removal. Product approvals may be revoked if compliance with regulatory requirements is not maintained or if problems concerning safety or effectiveness of the product occur following approval.

With respect to post-market product advertising and promotion, the FDA imposes a number of complex regulations on entities that advertise and promote Biologics, including, among others, standards and regulations for direct-to-consumer advertising, off-label promotion, industry-sponsored scientific and educational activities and promotional activities involving the Internet. The FDA has very broad enforcement authority under the FFDCA, and failure to abide by these regulations can result in administrative and judicial enforcement actions, including the issuance of a Warning Letter directing correction of deviations from FDA standards, a requirement that future advertising and promotional materials be pre-cleared by the FDA, and state and federal civil and criminal investigations and prosecutions. Foreign regulatory bodies also strictly enforce these and other regulatory requirements.

Orphan Drug Act

The Orphan Drug Act is intended to provide incentives to pharmaceutical companies to develop and market drugs and Biologics for rare diseases or conditions affecting fewer than 200,000 persons in the United States at the time of application for orphan drug designation. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process. Clinical testing requirements for orphan drugs are the same as those for products that have not received orphan drug designation but pharmaceutical companies may receive grants or tax credits for research, as well as protocol assistance. Further, if a drug or Biologic that receives orphan drug designation and is the first product to receive FDA marketing approval for the orphan designated indication, the product receives a seven-year period of marketing exclusivity during which the FDA cannot approve any application by another party to market the same drug for treatment of an identical indication. There are exceptions to this exclusivity, however. For example, the FDA is allowed to approve a second product with the same active ingredient for the same indication if the sponsor of the approved orphan product consents, grants a license to the second applicant or is unable to assure an adequate supply of the drug, or if the second product has been shown to be clinically superior to the approved orphan drug. Further, orphan drug exclusivity does not block approval of a drug that, although proposed for the same indication, is considered by the FDA (applying a regulatory standard) to be a different drug than the previously approved orphan drug. In addition, the holder of orphan drug status must notify the FDA of any decision to discontinue active pursuit of drug approval or, if such approval or license is in effect, notify the FDA at least one year prior to any discontinuance of product production. If the holder of an orphan designation cannot assure the availability of sufficient quantities of the product to meet the needs of affected patients, the FDA may withdraw orphan drug status.

Fraud and Abuse

We are subject to various federal and state laws pertaining to health care fraud and abuse, including anti-kickback laws, false claims laws and physician self-referral laws. Violations of these laws are punishable by criminal, civil and/or administrative sanctions, including, in some instances, imprisonment and exclusion from participation in federal and state health care programs, including Medicare, Medicaid and veterans' health programs. Because of the far-reaching nature of these laws, we cannot assure you that the occurrence of one or more violations of these laws would not result in a material adverse effect on our business, financial condition and results of operations.

Anti-Kickback Laws

Our operations are subject to federal and state anti-kickback laws. Certain provisions of the Social Security Act prohibit entities such as us from knowingly and willingly offering, paying, soliciting or receiving any form of remuneration (including any kickbacks, bribes or rebates) in return for the referral of items or services for which payment may be made under a federal health care program, or in return for the recommendation, arrangement, purchase, lease or order of items or services for which

payment may be made under a federal health care program. Violation of the federal anti-kickback law is a felony, punishable by criminal fines and imprisonment for up to five years or both. In addition, the DHHS may impose civil penalties and exclude violators from participation in federal health care programs such as Medicare and Medicaid. Many states have adopted similar prohibitions against payments intended to induce referrals of products or services paid by Medicaid or other third party payors.

Other Regulatory Schemes

In addition to the substantial regulations enforced by the FDA, we are also subject to various federal, state and local laws, regulations and recommendations relating to safe working conditions, laboratory and manufacturing practices, the experimental use of animals, and the use and disposal of hazardous or potentially hazardous substances, including radioactive compounds and infectious disease agents, used in connection with our various activities. We cannot accurately predict the extent of government regulation that might result from any future legislation or administrative action.

Manufacturing

While we have no drug substance or drug product manufacturing or production facilities of our own and limited manufacturing capabilities for the supply of transgenic milk (as described below), we believe that acceptable alternatives are available through third-party contract manufacturing organizations, or "CMOs", that have experience in operating under cGMPs established by the Code of Federal Regulations and the Food, Drug and Cosmetic Act (Biologics) regulated by the FDA, and we rely on them for clinical and future commercial production of our product candidates.

For SparVax™ and our third-generation anthrax vaccine, to date the rPA has been produced in *Escherichia coli* at the Avecia bacterial fermentation facilities. Avecia currently serves as our commercial manufacturing organization (CMO) for the bulk drug substance rPA antigen used to make the 2nd and 3rd generation anthrax vaccines. The bulk drug substance manufacturing process is performed at final commercial scale using standard purification unit operations yielding high purity rPA. If we are awarded a contract under RFP-BARDA-08-15 for the advanced development and procurement of 25 million doses of SparVax™, we anticipate engaging a new contract manufacturer for the bulk drug substance for SparVax™ and commencing a technology transfer process from Avecia to this new CMO. Formulation and filling of the final drug product, adjuvanted rPA, is performed at Baxter Pharmaceutical Solutions LLC, located in the United States. The final dosage presentation is in unit dose syringes.

For Protexia®, the starting material used to produce the purified rBChE comes from the milk of transgenic goats raised on a farm we own and operate. We are producing rBChE at commercially feasible quantities. For commercial manufacturing, the bulk rBChE starting material is produced on our farm and the final purification of the bulk drug substance will be performed at a CMO. Final formulation processes and product presentation are still being developed.

For Valortim®, the cell culture process was developed by Medarex, and results in a commercially feasible and high purity product that would be manufactured commercially by a CMO. We have successfully manufactured bulk drug substance at large scale following technology transfer to a CMO. The final drug product has been formulated and filled , tested and released for labeling.

For RypVax™ , the recombinant F1 (rF1) and V (rV) antigens are independently produced in *Escherichia coli* at large scale in the Avecia facilities. The bulk drug substance components are purified by precipitation, chromatographic and filtration processes yielding the high purity recombinant antigens.

The purified antigens are combined, formulated adjuvanted and filled as a liquid divalent recombinant plague vaccine.

Certain raw materials used in producing our product candidates are available from only one source or a limited number of sources. We attempt to mitigate the risk associated with such sole source raw materials by actively managing our inventories. We have not experienced any shortages in supplies of such raw materials. Unavailability of certain materials or the loss of current sources of production could cause an interruption in production on a temporary basis pending establishment of new sources or, in some cases, implementation of alternative processes.

Intellectual Property

Our success depends in part on our ability to obtain patents, to protect trade secrets, and to operate without infringing upon the proprietary rights of others. We seek to protect our proprietary position by, among other methods, filing U.S. and foreign patent applications related to the proprietary technology, inventions and improvements that are important to our business. We currently hold two issued U.S. patents relating to Protexia® and four corresponding foreign patents. These patents are directed to direct gene transfer into the ruminant mammary gland and the method for development of transgenic goats. The issued patents have expiration dates in 2015. In accordance with ongoing research and development efforts, we have six pending U.S. patent applications and 14 corresponding foreign applications covering relevant and newly-developed portions of our transgenic technology.

The following table identifies each of our issued and non-abandoned patents and published pending applications:

Patent/Patent Application	Patent Number/ Application Number	Country of Issue/Filing	Issue Date/File Date	Expiration Date
Direct Gene Transfer Into the Ruminant Mammary Gland	5,780,009	U.S.	Issued July 14, 1998	July 15, 2015
Method for Development of Transgenic Goats	5,907,080	U.S.	Issued May 25, 1999	December 1, 2015
Method for Development of Transgenic Goats	0871357	Netherlands Great Britain France Germany Belgium Switzerland Liechtenstein	May 2, 2003	November 27, 2016
Method for Development of Transgenic Goats	721,132	Australia	Issued October 5, 2000	November 27, 2016
Production of Butyrylcholinesterase in Transgenic Mammals	10,326,892	U.S.	Filed December 20, 2002	December 21, 2022
Production of Butyrylcholinesterase in Transgenic Mammals	051024531	Hong Kong	March 22, 2005	December 19, 2022

Patent/Patent Application	Patent Number/ Application Number	Country of Issue/Filing	Issue Date/File Date	Expiration Date
Production of Butyrylcholinesterase in Transgenic Mammals	1458860	Europe	December 19, 2002	December 19, 2022
Long Half-Life Recombinant Butyrylcholinesterase			Filed	
	US07 017279	WO	August 2, 2007	August 3, 2027
	60 835,827	U.S.	August 4, 2006	August 3, 2027
	12 309909	U.S.	February 2, 2009	August 3, 2027
	US07 017279	Japan	February 4, 2009	August 3, 2027
	07811030.1	Spain	August 27, 2007	August 3, 2027
	US07 017279	Canada	February 3, 2009	August 3, 2027
	US07 017279	Australia	February 10, 2009	August 3, 2027
	196,871	Israel	February 4, 2009	August 3, 2027
Production of HSA-linked Butyrylcholinesterases			Filed	
	11 401,390	U.S.	April 10, 2006	December 21, 2022
	10 326,892	U.S.	December 20, 2002	December 21, 2022
Method for Assaying Antigens	GB07 001353	WO	April 12, 2007	April 13, 2027
	GB 0607462.9	Great Britian	April 13, 2006	April 13, 2027
	12 226101	U.S.	October 7, 2008	April 13, 2027
	2009-504819	Japan	October 10, 2008	April 13, 2027
	2010914	Spain	November 10, 2008	April 13, 2027
	2,648,850	Canada	October 9, 2008	April 13, 2027
	2007242647	Australia	October 24, 2008	April 13, 2027
	194459	Israel	October 2, 2008	April 13, 2027
Vaccine Composition	GB 0801122.3	Great Britian	January 22, 2008	January 22, 2029
	GB2009 050050	WO	January 22, 2009	January 22, 2029
Anthrax Vaccine Formulation and Uses Thereof	61 194967	U.S.	October 2, 2008	October 2, 2009
Stable vaccine compositions and methods of use	12 321564	U.S.	January 22, 2009	January 23, 2029
	GB2009 050051	WO	January 22, 2009	January 23, 2029

In addition, we are a party to various exclusive and non-exclusive licenses, which provide access to intellectual property and know-how useful for our products. For the Protexia® program, we are party to licenses with Exeter Life Sciences for intellectual property related to creating animal clones, GTC Biotherapeutics, Inc. for intellectual property related to the purification of proteins from milk and know-how related to the development of protein drugs in the milk of transgenic animals, Nektar Therapeutics AL, Corporation for intellectual property and know-how related to the pegylation of proteins, Yissum Research Development Company for intellectual property related to the production of proteins in the milk of transgenic animals.

Furthermore, in connection with the Avecia Acquisition, we acquired license agreements with The Defence Science and Technology Laboratory of the United Kingdom Ministry of Defence ("DSTL") originally executed May and December 2006, and recently amended in February 2009. These agreements allow for the licensing of certain patents and technology useful in our rPA and plague vaccine programs under our government contracts with the NIAID. Upon commercialization of a product covered by a license, the license agreements require that we make royalty payments equal to a specified percentage of future sales of products for both government procurement and commercial markets. No royalty payments on these licenses have been incurred. Some of our licenses, which generally extend for the life of any

applicable patent, require us to pay royalties on sales of products that may be derived from or produced using the licensed technology. We derive rights to the patents, patent applications and know-how relating to Valortim® through our collaboration arrangement with Medarex, which owns such rights. For additional information on our license agreements, please refer to Note 10--Commitments and Contingencies--License Agreements in the Notes to our Consolidated Financial Statements.

The expiration dates for the licenses described above are as follows:

License	Expiration Date
Exeter Life Sciences	When sale of licensed product in a specific country or jurisdiction is no longer covered by a valid patent claim
GTC Biotherapeutics, Inc.	December 31, 2026
Nektar Therapeutics AL	On a country-by-country basis upon the expiration of all royalty obligations in the applicable country
Yissum Research Development Company	When the last registered patent expires
DSTL Anthrax	No expiration specified
DSTL Plague	No expiration specified
Medarex	Two years after the earlier of the date that (a) the collaboration product is no longer exploited under the agreement or (b) Unilateral Product (as defined in our collaboration agreement with Medarex) is no longer exploited under a unilateral development and commercialization agreement.

We rely upon certain proprietary trade secrets, know-how and continuing technological advances to develop a competitive position. In efforts to maintain confidentiality and ownership of trade secrets, proprietary information and developments, all of our employees are required to execute agreements regarding confidentiality and assigning to us all rights to any inventions and processes they develop while they are employed by us.

We intend to use license agreements to access external products and technologies, as well as to convey our own intellectual property to others. We will be able to protect our proprietary rights from unauthorized use by third parties only to the extent that our proprietary rights are covered by valid and enforceable patents or are effectively maintained as trade secrets.

Research and Development Costs

During the years ended December 31, 2008 and 2007, we incurred $31.8 million and $16.6 million, respectively, of development expenses related to our research and development programs.

Competition

The pharmaceutical industry is characterized by rapidly evolving technology and intense competition. A large number of companies of all sizes engage in activities similar to our activities and many of our competitors have substantially greater financial and other resources available to them.

Anthrax Product Competition

With respect to the development of a PA-based vaccine, we are aware of two other companies developing competing vaccines: Emergent BioSolutions, Inc., which is the sole supplier to the U.S. government of the only currently available anthrax vaccine - BioThrax® Anthrax Vaccine Adsorbed, and Panacea Biotec Ltd.

Monoclonal antibodies ("MAbs") directed against PA are being developed for post-exposure prophylaxis and as symptomatic therapy for anthrax infection. There are a limited number of companies we are aware of with anti-anthrax MAbs and/or polyclonal antibodies in development, including: Cangene Corporation, Human Genome Sciences, Inc., Elusys Therapeutics, Inc., Emergent BioSolutions, Inc., and IQ Corporation BV.

There are a number of orally available small molecule and other drugs approved and/or under development for the treatment of anthrax. These include broad spectrum antibiotics as well as anthrax specific products. Bayer AG produces Ciprofloxacin, or "Cipro," which has been approved for the post-exposure prophylaxis of inhalation anthrax. In late 2004, generic versions of Cipro were also approved by the FDA. In addition, levofloxacin, an antibiotic marketed in the United States by Ortho-McNeil Pharmaceuticals, and the generic antibiotic, doxycycline, are both approved for post-exposure prophylaxis of inhalation anthrax.

We also believe that third generation anthrax vaccines, consisting of improved formulations of the anthrax Protective Antigen are being developed by Bavarian Nordic, Emergent BioSolutions, Inc., LigoCyte Pharmaceuticals, Inc., and Intercell AG.

Nerve Agent Product Competition

Nerve agents are among the most lethal chemical warfare agents and there are few antidotes available. Symptoms of intoxication develop within seconds and death can result within minutes after exposure by inhalation, absorption through the skin, or by oral consumption.

We are aware of antidotes to nerve agents being developed by pharmaceutical companies, including Countervaile Corporation, Meridian Medical Technologies, a subsidiary of King Pharmaceuticals Inc., and Dynport Vaccine Company, LLC, in collaboration with Baxter Healthcare Corporation.

Plague Product Competition

RypVax™, our recombinant plague vaccine candidate for immunisation against pneumonic or bubonic plague caused by *Y. pestis* infection consists of two recombinant antigens (rF1 and rV), produced in *Escherichia coli*. Dynport Vaccines Corporation has an rF1V fusion vaccine candidate under development in collaboration with the DoD.

Employees

As of December 31, 2008, we employed 151 persons on a full-time basis and 4 on a part-time basis, including 100 individuals engaged in research and development activities and 55 individuals engaged in general and administrative functions such as human resources, finance, accounting, legal and investor relations. Our staff includes 28 employees with Ph.D. or M.D. degrees. None of our employees are party to any collective bargaining agreement, and we believe that our relationship with our employees is good.

Information concerning our directors and executive officers can be found in Part III, Item 10 under the caption "Directors, Executive Officers and Corporate Governance."

Item 1A. Risk Factors

Investing in our securities involves risks. In addition to the other information in this annual report on Form 10-K, stockholders and potential investors 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 a stockholder could lose all or part of his or her 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, and, based on communication we have had with DHHS, we believe that an award may be made in the first half of April 2009. Nevertheless, there can be no assurance that DHHS will not again extend the timeline for issuing an award.

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 a 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 year ended December 31, 2008, we incurred an operating loss of approximately $35.2 million and had an accumulated deficit of approximately $123.8 million at December 31, 2008. 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;
- carrying out our intellectual property strategy;
- establishing our competitive position;
- pursuing third-party collaborations;
- acquiring or in-licensing products;
- receiving regulatory approvals;
- 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. As a result of our continuing losses and our continuing obligations, including those under the agreements relating to the Avecia Acquisition, without additional funding through contracts and grants with the U.S. or foreign governments, we would need to identify additional financing within the next 12 months. At December 31, 2008, our available cash and cash equivalents was approximately $19.8 million, we had $6.3 million of cash that was restricted under our credit facility with Silicon Valley Bank and Oxford Finance Corporation, $7 million of cash that was restricted under our agreements with Avecia, and our short-term investments were $3.2 million. However, at December 31, 2008, we had outstanding debt to the holders of our 8% unsecured convertible notes of approximately $13.4 million, approximately $5.0 million outstanding under our credit facility, and, in connection with the Avecia Acquisition, we have agreed to pay $7 million upon the earlier of the consummation of a financing transaction in which we receive gross proceeds of not less than $15 million or October 2, 2009. In addition, if we receive the award from DHHS for 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. Even taking into

consideration our recent registered offering of securities, we may be required to seek additional financing in the future.

The current 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, the issuance of those securities could result in dilution which may 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 would not fail to meet safety standards in human testing, even if those product candidates were 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 "*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, if we are awarded a contract under RFP-BARDA-08-15 for the advanced development and procurement of 25 million doses of SparVax™, we anticipate engaging a new contract manufacturer to manufacture bulk drug substance for SparVax™. This contract manufacturer has not manufactured that bulk drug substance before, and we would need to commence a process of technology transfer from Avecia, the prior manufacturer of the bulk drug substance, to this new contract manufacturer. There can be no assurance that we would be successful in our technology transfer efforts or that this new contract manufacturer would ever be able to manufacture sufficient amounts of cGMP quality bulk drug substance necessary for us to meet our obligations under any such contract.

We may fail to fully realize the potential of Valortim® and of our co-development arrangement with our partner in the development of Valortim®, which would have an adverse effect upon our business.

We have completed one Phase I clinical trial for Valortim® with our development partner, Medarex, without any reported drug-related significant adverse events. However, 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 when and if 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 or other collaboration partners experience financial difficulties as a result of the current credit crisis and weakening of the global economy, they might be forced to 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. In addition, our current licensing, research and

development, and supply agreements may expire and may not be renewable or could be terminated if we do not meet our obligations.

If we are not able to identify new licensing opportunities or enter into other licensing arrangements on acceptable terms, we may be unable to develop a diverse portfolio of products. In order 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 collaborations 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 countermeasurers 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 "Risk Factors - *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 to December 31, 2008), as of the date this annual report on Form 10-K 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 may result in a decreased and de-prioritized emphasis on procuring the biodefense products we are developing. For example, our existing contracts for the advanced development of plague vaccine, RypVax™, expire in the first half of 2010, and future government funding for this development program remains uncertain at this time. Furthermore, 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 initial funding of $41 million has been received (which decision we anticipate may occur by the end of the fourth quarter of 2009), 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®.

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. A recent 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 recently 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. 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, they may have to reduce their activities. A material deterioration in their ability 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.

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 three pending U.S. patent applications, and have a limited number of international patents pending. 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 and/or our licensors and/or collaborators may be legally prohibited from researching, developing or commercializing such products or be required to obtain licenses to these patents or to develop or obtain alternative technology. We and/or our licensors and/or our collaborators may be legally prohibited from using patented technology, may not be able to obtain any license to the patents and technologies of third parties on acceptable terms, if at all, or may not be able to obtain or develop alternative technologies.

The costs associated with establishing the validity of patents, of defending against patent infringement claims of others and of asserting infringement claims against others is expensive and time consuming, even if the ultimate outcome is favorable. An outcome of any patent prosecution or litigation

that is unfavorable to us or one of our licensors or collaborators may have a material adverse effect on us. The expense of a protracted infringement suit, even if ultimately favorable, would also have a material adverse effect on us.

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

Risks Related to Regulatory Approvals and Legislation

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

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

Legislation limiting or restricting liability for medical products used to fight bioterrorism is new, and 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.

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. Even following the registered offering of securities completed on March 27, 2009, 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 offering of $5.5 million). 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 December 31, 2008, we had outstanding options to purchase approximately 4.0 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. As of December 31, 2008, we had outstanding debt including accrued and unpaid interest to noteholders of approximately $13.4 million in the form of convertible notes, which are convertible at $10 per share. As of December 31, 2008, we had outstanding warrants exercisable for approximately 12.5 million shares of common stock of which 9.4 million of these warrants are exercisable at $6.00 per share and expire in July 2009. 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.

NYSE Amex may delist our securities 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 and 2008 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.

Item 1B. Unresolved Staff Comments.

Not applicable.

Item 2. Properties

Our principal executive offices are located at One Park Place, Suite 450, Annapolis, MD 21401 and are comprised of approximately 12,600 square feet. Effective the first quarter of 2009, we leased approximately 9,300 additional square feet of office space at this location. The lease terms expire in 2017. We sublease from Avecia approximately 12,700 square feet of office space in Haverton Hills, England which expires in October 2010. We also sublease from Avecia in Medford, Massachusetts 8 offices until April 2009. A replacement facility is in the process of being finalized.

We own a farm in Canada consisting of 180 acres of land where we raise transgenic goats. We also leased office space in Canada, but with the closing of our Canadian research facility located in Ville St. Laurent, Montreal this lease was terminated effective May 31, 2008.

Management believes that these facilities are suitable and adequate to meet the Company's anticipated needs.

Item 3. Legal Proceedings.

The Company is not a defendant in any legal proceedings, other than ordinary routine litigation incidental to our business which we believe will not have a material effect on our financial position or results of operations.

On December 20, 2006, we filed a complaint against Siga Technologies, Inc. ("SIGA") in the Delaware Chancery Court. Our complaint alleges, among other things, that we have the right to license exclusively development and marketing rights for SIGA's drug candidate, SIGA-246, pursuant to a merger agreement between the parties that was terminated in October 2006. The complaint also alleges that SIGA failed to negotiate in good faith the terms of such a license pursuant to the terminated merger agreement. We are seeking alternatively a judgment requiring SIGA to enter into an exclusive license agreement with us for SIGA-246 in accordance with the terms of the term sheet attached to the merger agreement or monetary damages. On January 16, 2008, the Delaware Chancery Court issued a ruling denying a motion by SIGA to dismiss the complaint. The parties are now engaged in discovery.

Item 4. Submission of Matters to a Vote of Security Holders.

No matters were submitted to a vote of the Company's security holders during the quarter ended December 31, 2008.

PART II

Item 5. Market for Registrant's Common Equity and Related Stockholder Matters.

Market

Our common stock trades on the NYSE Amex (formerly the NYSE Alternext US or American Stock Exchange) under the symbol PIP. The following table sets forth the range of high and low trading prices of our common stock on the NYSE Amex for the past two years during the fiscal periods shown.

Fiscal Year 2008	High	Low
4th Quarter Ended December 31	$ 2.46	$ 0.05
3rd Quarter Ended September 30	$ 2.70	$ 1.74
2nd Quarter Ended June 30	$ 3.17	$ 2.27
1st Quarter Ended March 31	$ 3.99	$ 2.37

Fiscal Year 2007	High	Low
4th Quarter Ended December 31	$ 5.36	$ 3.35
3rd Quarter Ended September 30	$ 7.68	$ 3.95
2nd Quarter Ended June 30	$ 7.63	$ 7.23
1st Quarter Ended March 31	$ 8.00	$ 7.28

Holders

As of March 23, 2009, in accordance with our transfer agent records, we had 48 record holders of our common stock.

Dividends

We have not paid any dividends on our common stock in 2007 and 2008 and do not intend to declare any dividends in the foreseeable future. While subject to periodic review, the current policy of our Board of Directors 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 the Board of Directors will consider.

Recent Sales of Unregistered Securities; Use of Proceeds from Registered Securities

On September 30, 2008, we signed a securities purchase agreement with Kelisia Holdings Ltd., an indirect wholly-owned subsidiary of Panacea Biotec Limited, pursuant to which Kelisia acquired 3,733,334 shares of our common stock at a negotiated price of $3.50 per share and a 12-month warrant to purchase up to 2,745,098 additional shares of our common stock at an exercise price of $5.10 per share. We received gross proceeds from this transaction, which closed on October 10, 2008, of approximately $13.1 million and net proceeds of approximately $12.7 million.

Upon the closing of the transaction, Panacea Biotec, through its subsidiary Kelisia, owns approximately 14.5% of our issued and outstanding common stock. While the warrant gives Kelisia the right to purchase up to an additional 2,745,098 shares, this right is subject to a stock ownership cap, following any warrant exercise, of 19.99% of our issued and outstanding common stock as of such exercise date.

The issuance of the shares and warrant to Kelisia was not registered under the Securities Act of 1933, as amended (the "Securities Act"). The issuance was exempt from registration pursuant to Section 4(2) of the Securities Act and Regulation D thereunder, as it was a transaction by the issuer that did not involve a public offering of securities and involved an issuance to an accredited investor.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

The following discussion should be read in conjunction with (i) our consolidated financial statements, which present our results of operations for the years ended December 31, 2008 and 2007 as well as our financial positions at December 31, 2008 and 2007, contained elsewhere in this Annual Report on Form 10-K and (ii) our Annual Report on Form 10-K for the year ended December 31, 2007 filed on March 31, 2008, including the consolidated financial statements contained therein, and the Form 8-K/A filed on June 19, 2008 presenting the period historical financial statements for the vaccines business acquired from Avecia. Some of the information contained in this discussion and analysis or set forth elsewhere in this Annual Report on Form 10-K, including information with respect to our plans and strategy for our business and related financing, includes forward-looking statements that involve risks and uncertainties. You should review the "Special Note Regarding Forward Looking Statements" and "Risk Factors" sections of this Annual Report for a discussion of important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Overview

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 rPA anthrax vaccine,
- Valortim® - a fully human monoclonal antibody 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,
- RypVax™ - a recombinant dual antigen vaccine for pneumonic and bubonic plague , and
- a third generation rPA anthrax vaccine.

Recent Events

In March 2009, BARDA issued a Broad Agency Announcement (BAA) for the Advanced Research and Development of Chemical, Biological, Radiological, and Nuclear Medical Countermeasures, which included an advanced development solicitation for proposals covering anthrax anti-toxins. The BAA states that research and technical objectives proposed by offerors may include non-

clinical research and development, process development, formulation, manufacturing development, and clinical evaluation efforts. In response we submitted an initial proposal providing for further development of Valortim® and are awaiting a response.

On March 27, 2009, we closed on the public sale of an aggregate of 2,116,055 newly issued shares of our common stock at $2.60 per share and warrants to purchase an aggregate of 705,354 shares of our common stock at an exercise price of $3.00 per share, resulting in aggregate gross proceeds of $5,501,743. The warrants will be exercisable beginning on September 27, 2009 and will expire on September 27, 2014, five years from the date they become exercisable. We intend to use the net proceeds for general corporate purposes, including the satisfaction of existing obligations.

Critical Accounting Policies

Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. We base our estimates and assumptions on historical experience and various other factors that are believed to be reasonable under the circumstances. Actual results could differ from our estimates and assumptions. We believe the following critical accounting policies, among others, affect our more significant estimates and assumptions and require the use of complex judgment in their application.

FASB 123R regarding share-based payments

The FASB issued FAS 123R, which requires that all share-based payments to employees, including grants of employee stock options, be recognized in the income statement based on their grant date fair values. Costs of all share-based payments are recognized over the requisite service period that an employee must provide to earn the award (i.e. usually the vesting period) and charged to the operating expense associated with that employee.

Revenue Recognition

We generate our revenue from two different types of contractual arrangements: cost-plus-fee contracts and cost reimbursable grants. Revenues on cost-plus-fee contracts are recognized to the extent of costs incurred plus an estimate of the applicable fees earned. We consider fixed fees under cost-plus-fee contracts to be earned in proportion to the allowable costs incurred in performance of the contract. We analyze each cost reimbursable grant to ensure reporting of revenues gross versus net is appropriate based on the guidance in the AICPA Federal Government Contractors Guide or the Financial Accounting Standards Board's (FASB's) Emerging Issues Task Force (EITF) Issue 99-19, Gross Versus Net, whichever is most appropriate.

Our contracts may include the provisions of more than one of our services. Collaborative research and development agreements can provide for one or more of up-front license fees, research payments, and milestone payments. In these situations, we recognize revenue in accordance with the Financial Accounting Standards Board's (FASB's) Emerging Issues Task Force (EITF) Issue 00-21, Revenue Arrangements with Multiple Deliverables. Accordingly, for applicable arrangements, revenue recognition includes the proper identification of separate units of accounting and the allocation of revenue across all elements based on relative fair values, with proper consideration given to the guidance provided by other authoritative literature.

Revenues from the achievement of research and development milestones, if deemed substantive, are recognized as revenue when the milestones are achieved and the milestone payments are due and collectible. If not deemed substantive, we recognize such milestone as revenue on a straight-line basis over the remaining expected term of continued involvement in the research and development process. Milestones are considered substantive if all of the following conditions are met; (1) the milestone is non-refundable; (2) achievement of the milestone was not reasonably assured at the inception of the arrangement; (3) substantive effort is involved to achieve the milestone; and (4) the amount of the milestone appears reasonable in relation to the effort expended, the other milestones in the arrangement and the related risk associated with the achievement of the milestone and any ongoing research and development or other services are priced at fair value. Payments received in advance of work performed are recorded as deferred revenue.

Research and Development Expenses

Research and development costs include salaries, facilities expense, overhead expenses, material and supplies, pre-clinical expense, clinical trials and related clinical manufacturing expenses, stock based compensation expenses, contract services and other outside services. On January 1, 2008, we adopted the Financial Accounting Standards Board's (FASB's) Emerging Issues Task Force (EITF) Issue 07-3, Accounting for Nonrefundable Advance Payments for Goods or Services Received for Use in Future Research and Development Activities. All other costs are charged to expense as incurred.

Intangible Assets

When we acquire development products, we allocate the purchase price, including acquisition expenses and assumed liabilities, to tangible and intangible assets, including goodwill. The portion allocated to intangible assets may be allocated to trademarks, patents and other intangibles. We estimate the useful lives of the assets by considering the remaining life of the patents, estimated future introductions of competing products, and other related factors.

Because of the nature of pharmaceutical research, and particularly because of the difficulties associated with efficacy studies in humans related to the bioterrorist products with which we work and the government's related funding provisions, factors that affect the estimate of the life of the asset are often more uncertain than other non-bioterrorist pharmaceutical research. On an annual basis, we assess recoverability of intangibles from future operations, using undiscounted future cash flows derived from the intangible assets.

Any impairment would be recognized in operating results to the extent the carrying value exceeds the fair value, which is determined based on the net present value of estimated future cash flows; in certain situations, where the carrying value is dependent upon the outcome of a single study and that study is unsuccessful, that impairment may be significant in amount and immediate in timing.

Results of Operations

Revenue

We recognized revenues of $32.9 million and $14.6 million during the years ended December 31, 2008 and 2007, respectively. These revenues consisted primarily of contract funding from the U.S. government for the development of Protexia®, SparVax™ and RypVax™. Of the $32.9 million in 2008 revenues, $11.9 million were due to the Avecia Acquisition in the second quarter of 2008, and particularly the acquired U.S. government contracts supporting the development of the SparVax™, third generation rPA and RypVax™ product candidates.

During the years ended December 31, 2008 and 2007, we recognized revenues related to U.S. government awarded contracts and grants as follows:

- Under the September 2006 contract for the advanced development of Protexia®, we recognized $19.5 million and $14.5 million of revenue for the years ended December 31, 2008 and 2007, respectively.

- Under the September 2007 contract for the advanced development of Valortim®, we recognized $1.4 million and $0.1 million of revenue for the years ended December 31, 2008 and 2007, respectively.

- Under our contract for the development of SparVax™, acquired as part of the Avecia Acquisition in the second quarter of 2008, we recognized approximately $9.2 million of revenue for the year ended December 31, 2008.

- Under our contract for the advanced development of a plague vaccine, RypVax™, acquired as part of the Avecia Acquisition in the second quarter of 2008, we recognized approximately $2.7 million of revenue for the year ended December 31, 2008.

- Under our September 2008 contract award for the additional development work on our third generation rPA anthrax vaccine, we recognized approximately $0.1 million in revenue for the year ended December 31, 2008.

Research and Development Expenses

Our research and development expenses were $31.8 million and $16.6 million for the years ended December 31, 2008 and 2007, respectively. These expenses resulted from research and development activities related to programs for Valortim® and Protexia®, as well as from activities related to the SparVax™ and RypVax™ programs which we acquired in the second quarter of 2008. These research and development expenses are primarily funded through U.S. government contracts and grant awards. We incurred both direct expenses, which included salaries and other costs of personnel, raw materials and supplies, and indirect expenses. We also incurred third-party costs, such as contract research, consulting and clinical development costs for individual projects.

Research and development expenses for the years ended December 31, 2008 and 2007, respectively, were attributable to research programs as follows:

(amounts in millions)	**Year ended December 31,**	
	2008	**2007**
Anthrax therapeutic and vaccines	$ 14.9	$ 4.5
Chemical nerve agent protectants	11.8	10.9
Recombinant dual antigen plague vaccine	4.1	-
Internal research and development	1.0	1.2
Total research and development expenses	$ 31.8	$ 16.6

For the year ended December 31, 2008 as compared to the year ended December 31, 2007, research and development expenses increased $15.2 million primarily attributable to $12.3 million of costs incurred from the programs acquired as a result of the Avecia Acquisition. The anthrax therapeutic

and vaccines program increased $10.4 million primarily as a result of increased process development and manufacturing activity of $5.9 million and increased preclinical and clinical activities of $2.8 million. Costs related to the anthrax therapeutic and vaccines program further increased due to additional internal resource costs. The clinical nerve agent protectant program expenses increased by a net amount of $0.9 million as a result of $1.4 million in additional process development, manufacturing and increased clinical activities during the year, partially offset by reduced internal resource costs. Expense related to the recombinant dual antigen plague vaccine consist of development and preclinical activities.

The research and development expense amounts disclosed above for the years ended December 31, 2008 and 2007 are net of the following cost reimbursements under our government grants (See Note 2 to our Financial Statements - Summary of Significant Accounting Policies – Revenue Recognition):

- In October 2006, the National Institutes of Health (NIH) Countermeasures Against Chemical Threats (Counter ACT) Research Network awarded us a $1.7 million grant to support continued development of Protexia®. We recognize cost reimbursements under this grant as a reduction to offset research expenses. Through the year ended December 31, 2008, $0.1 million of funding on this grant has been recognized as an offset to research and development costs.

- We were awarded approximately $2.7 million in congressional appropriations from the United Stated Army Medical Research and Material Command (USAMRMC) for the development to advance Valortim®. We recognized cost reimbursements of approximately $1.0 million and $0.1 million under this funding as a reduction to offset research expenses for the years ended December 31, 2008 and 2007, respectively.

- We recognized cost reimbursements of approximately $1.0 million under the NIH grant funding for development of our third generation anthrax vaccine candidate, which we acquired from Avecia Vaccines in the second quarter of 2008, as a reduction to offset research expenses for the year ended December 31, 2008.

Internal research and development costs include activities related to the development of future programs, support costs for internal resources and non-cash stock compensation expenses of $0.6 million and $0.4 million for the years ended December 31, 2008 and 2007, respectively.

General and Administrative Expenses

General and administrative functions include executive management, finance and administration, government affairs and regulations, corporate development, human resources, legal, and compliance. For each function, we may incur direct expenses such as salaries, supplies and third-party consulting and other external costs and non-cash expenditures such as expense related to stock option and restricted share awards. Indirect costs such as facilities, utilities and other administrative overhead are also included in general and administrative expenses.

Expenses associated with general and administrative functions were $19.4 million and $13.9 million for the years ended December 31, 2008 and 2007, respectively. These amounts include non-cash stock compensation expense of $2.5 million and $1.4 million for the years ended December 31, 2008 and 2007, respectively.

General and administrative expenses increased $5.5 million for the year ended December 31, 2008 as compared to the year ended December 31, 2007 primarily due to increased stock compensation expense (non-cash expenditure) of $1.1 million (partially as a result of increased headcount acquired

through the Avecia Acquisition), and increased consulting and legal services associated with compliance and operating as a publicly traded entity, costs related to preparing and submitting various bids and proposals and litigation efforts of $2.8 million. Additionally, employee costs, including related travel expenses, increased $1.1 million resulting primarily from the additional headcount acquired through the Avecia Acquisition.

Acquired In-process Research and Development

For the year ended December 31, 2008, we recorded acquired in-process research and development of $16.1 million associated with the Avecia Acquisition. We paid a total purchase consideration of $17.0 million, with the acquisition valued at $18.6 million after the inclusion of acquisition costs. The $16.1 million represented the value of the purchase attributable to the development programs and technology, which was determined to have no future alternative use and was charged to acquired in-process research and development.

Depreciation and Intangible Amortization

Depreciation and intangible amortization expense was $0.8 million and $0.7 million for the years ended December 31, 2008 and 2007, respectively. For the years ended December 31, 2008 and 2007, depreciation was $0.6 million and $0.5 million respectively. Depreciation expenses relate primarily to farm building improvements, leasehold improvements related to newly leased office space and laboratory equipment. For the years ended December 31, 2008 and 2007, we recorded amortization expense of $0.2 million and $0.2 million, respectively, related to patents acquired as part of the acquisition of Nexia Biotechnologies.

Other Income and Expenses

Other income and expenses primarily consists of income on our investments, interest expense on our debt and other financial obligations, changes in market value of our derivative financial instruments and foreign currency translation gains or losses. For the years ended December 31, 2008 and 2007, we recognized interest income of $1.2 million and $1.1 million, respectively.

We incurred interest expense of $2.6 million and $2.1 million for the years ended December 31, 2008 and 2007, respectively. Interest expense relates primarily to our outstanding 8% Convertible Notes (as defined below) and our $10.0 million credit facility.

During the year ended December 31, 2006, we issued 8% convertible notes in an aggregate principal amount of $11.8 million. These notes plus accrued interest were converted into new convertible 8% notes (the "Notes") in an aggregate principal amount of $12.3 million in conjunction with the Merger on August 3, 2007. We recognized interest expense related to the Notes of $1.7 million and $1.2 million for the years ended December 31, 2008 and 2007, respectively. For the years ended December 31, 2008 and 2007, the Company recorded $0.1 million and $0.6 million, respectively, as a mark-to-market gain relating to the conversion feature of the Notes. Additionally, the Company recognized a $0.9 million gain on the extinguishment of debt as a result of the conversion of notes during fiscal year 2007.

We entered into a $10.0 million credit facility on March 30, 2007 with Silicon Valley Bank and Oxford Financial Corporation. We recognized interest expense of $0.9 million and $0.9 million related to this facility for the years ended December 31, 2008 and 2007, respectively.

Liquidity and Capital Resources

Overview

Our primary cash requirements are to fund our research and development programs, general and administrative expense, and acquisition activity. Our cash requirements in future periods could change materially as a result of changes in our business and strategy. These changes could arise from our management team's evaluation of our business strategy, the progress of our research and development activities and clinical programs, licensing activities, acquisitions, divestitures or other corporate developments.

Since inception in March 2001, we have not generated positive cash flow. To bridge the gap between payments made to us under our government contracts and grants and our operating and capital needs, we have had to rely on a variety of financing sources, including the issuance of equity securities and convertible notes, proceeds from loans and other borrowings, and the trust funds obtained in the Merger. For the foreseeable future, we will continue to need to utilize these types of financing vehicles and potentially others to help fund our future operating and capital requirements.

Our consolidated financial statements have been prepared on a basis which assumes that we will continue as a going concern and which contemplates the realization of assets and the satisfaction of liabilities and commitments in the normal course of business. We have incurred cumulative net losses and expect to incur additional losses in conducting further research and development activities. We do not have commercial products and, given the substantial costs relating to the development of pharmaceutical products, have comparatively limited capital resources. Our plans with regard to these matters include continued development of our products as well as seeking additional funds to support our research and development efforts. Although we continue to pursue these plans, there is no assurance that we will be successful in obtaining sufficient financing on commercially reasonable terms or at all or that we will be able to secure additional funding through government contracts and grants.

Continuation of PharmAthene as a going concern is dependent upon, among other things, the success of our research and development programs and our ability to obtain adequate financing. Our consolidated financial statements do not include any adjustments relating to recoverability of the carrying amount of recorded assets and liabilities that might result from the outcome of these uncertainties.

On March 27, 2009, we closed on the public sale of an aggregate of 2,116,055 newly issued shares of our common stock at $2.60 per share and warrants to purchase an aggregate of 705,354 shares of our common stock at an exercise price of $3.00 per share, resulting in aggregate gross proceeds of $5,501,743. The warrants will be exercisable beginning on September 27, 2009 and will expire on September 27, 2014, five years from the date they become exercisable. We intend to use the net proceeds for general corporate purposes, including the satisfaction of existing obligations.

Sources and Uses of Cash

Our cash and cash equivalents were $19.8 million and $40.6 million at December 31, 2008 and 2007, respectively. The $20.8 million decrease in cash and cash equivalents as of December 31, 2008 from December 31, 2007 primarily was attributable to the following: (i) a decrease of $17.0 million, reflecting the $10.0 million initial consideration paid in the Avecia Acquisition and the related funding of the $7.0 million letter of credit, (ii) a decrease of $13.2 million for the funding of operations; (iii) a decrease of $6.3 million reflecting the funding of restricted cash obligations per our amended loan agreement with Silicon Valley Bank and Oxford Finance Corporation, (iv) a decrease of $4.0 million relating to the repayment of debt, and (v) an increase of $12.7 million in connection with the issuance of

common stock and warrants as described below. Our short-term investments were $3.2 million and $12.2 million at December 31, 2008 and 2007, respectively.

On October 10, 2008, in exchange for gross proceeds of $13.1 million, we sold and issued to a subsidiary of Panacea Biotec 3,733,334 shares of our common stock and a 12-month warrant to purchase up to 2,745,098 additional shares of our common stock at an exercise price of $5.10 per share (subject to a stock ownership cap, following any warrant exercises, of 19.99% of our issued and outstanding common stock as of such exercise date).

Operating Activities

Net cash used in operating activities was $13.2 million and $13.6 million for the years ended December 31, 2008 and 2007, respectively. Cash used in operations during the year ended December 31, 2008 reflects a net loss after the effect of non-cash adjustments of $14.8 million, an increase in accounts receivable of $2.2 million, and an increase in accrued expenses and accounts payable of $4.1 million. Non-cash adjustments for the year ended December 31, 2008 included a charge to expense of acquired in-process research and development of $16.1 million as a result of the Avecia Acquisition, non-cash stock compensation expense of $3.0 million and non-cash interest expense of $1.8 million related to our convertible notes. Accounts receivable increased due to contract award receivables due from NIAID related to the further development of SparVax™ and RypVax™ under contracts acquired in the second quarter of 2008 as part of the Avecia Acquisition and from DoD related to increased activities for the advanced development of Protexia®. Accounts payable and accrued expenses increased due to increased development activities primarily related to SparVax™ and RypVax™ and compliance-related, bid and proposal and litigation expenses.

Cash used in operations in 2007 reflects a net loss after the effect of non-cash adjustments of $13.8 million and an increase in accounts receivable of $3.6 million partially offset by an increase in accrued expenses and accounts payable of $3.4 million. Non-cash adjustments for the year ended December 31, 2007 included a $2.4 million credit that resulted from the cancellation of Former PharmAthene's preferred stock warrants, a $0.9 million gain on the extinguishment of debt, a $0.6 million mark to market gain on derivative instruments and stock compensation expense of $1.7 million. Accounts receivable increased due to contract award receivables due from the DoD related to increased activities related to the advanced development of Protexia®. Accounts payable and accrued expenses increased due to approximately $1.1 million in increased development activities, approximately $0.5 million for performance-based employee bonuses, approximately $0.4 million of deferred rent expenses related to the Company's newly leased office space and approximately $0.8 million in increased legal and other administrative activities.

Investing Activities

Net cash used in investing activities was $10.1 million for the year ended December 31, 2008 as compared to $12.9 million for the year ended December 31, 2007. During the year of 2008, we paid $10 million to Avecia and funded a $7 million letter of credit in connection with the Avecia Acquisition. Additionally, we incurred approximately $1.6 million related to transactions costs incurred as a result of the Avecia Acquisition. In order to fund the Avecia Acquisition transaction and the restricted cash obligations pursuant to the Loan Modification Agreement, approximately a net $9.0 million of available-for-sale securities were sold.

Net cash used in investing activities of $12.9 million for the year ended December 31, 2007 resulted primarily from the fourth quarter 2007 purchase of approximately $12.1 million of available-for-

sale securities. The remaining $0.8 million of investing activities for the period ended December 31, 2007 related to the purchase of property and equipment.

Financing Activities

Net cash provided by financing activities was $2.4 million for the year ended December 31, 2008 as compared to $61.9 million for the year ended December 31, 2007. As noted above, we issued 3,733,334 of common stock for net proceeds of $12.7 million in the fourth quarter of 2008. Additionally, we made principal repayments of $4.0 million under outstanding credit facilities for the year ended December 31, 2008.

We are a party to a $10 million secured credit facility evidenced by a Loan and Security Agreement, dated as of March 30, 2007 (the "Loan Agreement"), with Silicon Valley Bank and Oxford Finance Corporation (together, the "Lenders"). Under the credit facility, we borrowed $10 million, which bears interest at an annual rate of 11.5%. The Loan Agreement contains customary affirmative and negative covenants which, among other things, restrict our ability to undertake certain acquisitions, incur certain indebtedness or make certain investments. As a consequence, we sought to obtain the consent of its Lenders to the Avecia Acquisition and entered into a Consent and First Loan Modification Agreement, dated as of March 20, 2008, with the Lenders. We have made cumulative principal repayments of $5.0 million through December 31, 2008.

Net cash provided by financing was $61.9 million for the year ended December 31, 2007. Financing resulted from the $57.9 million of proceeds from the reverse merger with HAQ, and the $10 million credit facility, partially offset by $4.7 million in merger related costs and debt repayment of $1.2 million.

Future Cash Needs

Since inception in March 2001, we have not generated positive cash flow. To bridge the gap between payments made to us under our government contracts and grants and our operating and capital needs, we have had to rely on a variety of financing sources, including the issuance of equity securities and convertible notes, proceeds from loans and other borrowings, and the trust funds obtained in the Merger. For the foreseeable future, we will continue to need to utilize these types of financing vehicles and potentially others to help fund our future operating and capital requirements. In evaluating alternative sources of financing, we consider, among other things, the dilutive impact, if any, on our stockholders, the ability to leverage stockholder returns through debt financing, the particular terms and conditions of each alternative financing arrangement and our ability to service our obligations under such financing arrangements. As disclosed above, we received net proceeds of approximately $12.7 million from the investment by Panacea Biotec's subsidiary in October 2008, and 5.5 million from our registered offering of securities in March 2009. However, as a result of our continuing losses and our continuing obligations, including those under the agreements relating to the Avecia Acquisition, without additional funding through contracts and grants with the U.S. or foreign governments, we would need to identify additional financing within the next 12 months. The current 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 assurance that funding will be available to us on reasonably acceptable terms, or at all. In addition, due to the U.S. government's substantial 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.

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.

Off-Balance Sheet Arrangements

We have entered into facility and equipment operating lease agreements. Our obligations under these agreements are presented in this section under "Contractual Obligations."

Contractual Obligations

The following are contractual commitments at December 31, 2008 associated with leases, research and development arrangements, collaborative development obligations and long term debt:

Contractual Obligations(1)	Total	Less than 1 Year	1-3 Years	3-5 Years	More than 5 years
Operating facility leases	$ 4,134,400	$ 661,400	$ 1,060,400	$ 845,300	$ 1,567,300
Research and development agreements	18,189,800	11,945,200	6,244,600	-	-
Notes payable, including interest	19,471,400	18,795,100	676,300	-	-
Total contractual obligations	$ 41,795,600	$ 31,401,700	$ 7,981,300	$ 845,300	$ 1,567,300

(1) This table does not include any royalty payments of future sales of products subject to license agreements we have entered into our in relation to our in-licensed technology, as the timing and likelihood of such payments are not known.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk.

Our exposure to market risk is currently confined to our cash and cash equivalents, restricted cash and short-term investments. We believe that any interest rate change related to our investment securities held as of December 31, 2008 is not material to our consolidated financial statements. We currently do not hedge interest rate exposure or foreign currency exchange exposure, and the movement of foreign currency exchange rates could have an adverse or positive impact on our results of operations. We have not used derivative financial instruments for speculation or trading purposes. Because of the short-term maturities of our cash and cash equivalents, we do not believe that an increase in market rates would have a significant impact on the realized value of our investments. Our debt is at rates fixed by the lenders. Due to the short-term nature of our debt, we do not believe an increase in the market rates would have a significant impact to our consolidated financial statements.

Item 8. Financial Statements and Supplementary Data.

Our financial statements and supplementary data required to be filed pursuant to this Item 8 appear in a separate section of this report beginning on page F-1.

Item 9. Changes In and Disagreements with Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, we conducted an evaluation of our disclosure controls and procedures, as such term is defined in Rule 13a-15(e) and Rule 15d-15 under the Securities Exchange Act of 1934, as amended, as of the end of the period covered by this report. Based on this evaluation, our principal executive officer and our principal financial officer concluded that our disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed by us in reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosures.

Management's Annual Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act of 1934. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Our internal control over financial reporting includes those policies and procedures that:

(i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets;

(ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of our management and directors; and

(iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management assessed the effectiveness of our internal control over financial reporting as of December 31, 2008. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control-Integrated Framework*.

Based on this assessment, management determined that we maintained effective internal control over financial reporting as of December 31, 2008.

This Annual Report on Form 10-K does not include an attestation report of our independent registered public accounting firm, Ernst & Young LLP, regarding internal control over financial reporting. Management's report was not subject to attestation by our independent registered public accounting firm pursuant to temporary rules of the SEC that permit us to provide only management's report in this Annual Report on Form 10-K.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting that occurred during the period covered by this annual report on Form 10-K that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Internal Control

In designing and evaluating the disclosure controls and procedures, management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs.

Item 9B. Other Information.

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by this Item 10 will be incorporated by reference from our definitive proxy statement or will be filed as an amendment to our Annual Report on Form 10-K within 120 days of our fiscal year end.

Item 11. Executive Compensation.

The information required by this Item 11 will be incorporated by reference from our definitive proxy statement or will be filed as an amendment to our Annual Report on Form 10-K within 120 days of our fiscal year end.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information required by this Item 12 will be incorporated by reference from our definitive proxy statement or will be filed as an amendment to our Annual Report on Form 10-K within 120 days of our fiscal year end.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The information required by this Item 13 will be incorporated by reference from our definitive proxy statement or will be filed as an amendment to our Annual Report on Form 10-K within 120 days of our fiscal year end.

Item 14. Principal Accountant Fees and Services.

The information required by this Item 14 will be incorporated by reference from our definitive proxy statement or will be filed as an amendment to our Annual Report on Form 10-K within 120 days of our fiscal year end.

PART IV

Item 15. Exhibits and Financial Statement Schedules.

(a)

(1) Financial Statements

Reference is made to the Index to the Consolidated Financial Statements beginning on page F-1 of this report.

(2) Financial Statement Schedules

None.

(b) Exhibit Index

Exhibit No.	Description
2.1	Agreement and Plan of Merger, dated January 19, 2007, by and among Healthcare Acquisition Corp., PAI Acquisition Corp., and PharmAthene, Inc. (6)
2.2	Sale and Purchase Agreement, dated March 20, 2008, by and among the Registrant and Avecia Investments Limited, Avecia Biologics Limited and Avecia Biologics, Inc. (10)
2.3	Amendment Agreement, dated April 2, 2008, by and among, PharmAthene, Inc., PharmAthene UK Limited and PharmAthene US Corporation and Avecia Investments Limited, Avecia Biologics Limited and Avecia Biologics, Inc. (12)
3.1.1	Amended and Restated Certificate of Incorporation. (8)
3.1.2	Certification of Amendment to Amended and Restated Certificate of Incorporation. (14)
3.2	By-laws, as amended. (13)
4.1	Specimen Unit Certificate. (1)
4.2	Specimen Common Stock Certificate. (9)
4.3	Specimen Warrant Certificate. (1)
4.4	Form of Warrant Agreement between Continental Stock Transfer & Trust Company and the Registrant. (3)
4.5	Form of Note Exchange Agreement. (6)
4.6	Form of 8% Convertible Note of Healthcare Acquisition Corp. (6)
4.7	Amendment to Unit Purchase Option by and between the Registrant and Maxim Partners, LLC dated January 28, 2007. (7)
4.8	Warrant Clarification Agreement by and between the Registrant and Continental Stock Transfer & Trust Company, dated January 23, 2007. (7)
10.1.1	Letter Agreement among the Registrant, Maxim Group LLC and John Pappajohn dated May 6, 2005. (2)
10.1.2	Letter Agreement among the Registrant, Maxim Group LLC and Derace L. Schaffer, M.D. dated May 6, 2005. (2)
10.1.3	Letter Agreement among the Registrant, Maxim Group LLC and Matthew P. Kinley dated May 6, 2005. (2)
10.1.4	Restated Letter Agreement among the Registrant, Maxim Group LLC and Edward B. Berger dated June 8, 2005. (3)

Exhibit No.	Description
10.1.5	Letter Agreement among the Registrant, Maxim Group LLC and Wayne A. Schellhammer dated June 8, 2005. (3)
10.2	Form of Investment Management Trust Agreement between Continental Stock Transfer & Trust Company and the Registrant. (3)
10.2.1	Amendment No. 1 to of Investment Management Trust Agreement between Continental Stock Transfer & Trust Company and the Registrant. (5)
10.3	Form of Stock Escrow Agreement between the Registrant, Continental Stock Transfer & Trust Company and the Initial Stockholders. (3)
10.4	Form of Registration Rights Agreement among the Registrant and the Initial Stockholders. (1)
10.5.1	Office Services Agreement by and between the Registrant and Equity Dynamics, Inc. (1)
10.5.2	Office Services Agreement by and between the Registrant and The Lan Group. (1)
10.6.1	Promissory Note, dated April 28, 2005, issued to John Pappajohn, in the amount of $70,000. (1)
10.6.2	Promissory Note, dated April 28, 2005, issued to Derace L. Schaffer, M.D., in the amount of $70,000. (1)
10.6.3	Promissory Note, dated April 28, 2005, issued to Matthew P. Kinley, in the amount of $35,000. (1)
10.6.4	Promissory Note, dated July 26, 2005, issued to John Pappajohn, in the amount of $30,000. (4)
10.6.5	Promissory Note, dated July 26, 2005, issued to Derace L. Schaffer, M.D., in the amount of $30,000. (4)
10.6.6	Promissory Note, dated July 26, 2005, issued to Matthew P. Kinley, in the amount of $15,000. (4)
10.7	Form of Unit Option Purchase Agreement between the Registrant and Maxim Group LLC. (3)
10.8	Form of Warrant Purchase Agreement by and between the Registrant, Maxim Group LLC and the Initial Stockholders. (2)
10.9	Form of Registration Rights Agreement by and among Healthcare Acquisition Corp. and the former stockholders and note holders of PharmAthene, Inc. (6)

Exhibit No.	Description
10.10	Stock Escrow Agreement, dated August 3, 2007, by and among the Registrant, a representative of the former stockholders and option holders of the Registrant and Continental Stock Transfer and Trust Company. (11)
10.11	Advisory Agreement by and among Maxim Group LLC and the Registrant, dated January 8, 2007. (7)
10.12	Amended and Restated 2007 Long-Term Incentive Compensation Plan. (15)
10.13	Employment Agreement, dated August 3, 2007, between the Registrant and David P. Wright. (8)
10.14	Employment Agreement, dated December 22, 2006, between the Registrant and Christopher C. Camut. (9)
10.15	Employment Agreement, dated November 3, 2003, between the Registrant and Francesca Marie Cook. (9)
10.16	Employment Agreement, dated November 3, 2003, between the Registrant and Eric Ian Richman. (9)
10.17	Employment Agreement, dated November 3, 2003, between the Registrant and Valerie Dean Riddle. (9)
10.18	Employment Agreement, dated January 31, 2005, between the Registrant and Wayne Morges. (9)
10.19.1	Loan and Security Agreement, dated March 30, 2007, by and among the Registrant, Silicon Valley Bank, Oxford Finance Corporation, and other lenders listed on Schedule 1.1 thereof. (9)
10.19.2	Consent and First Loan Modification Agreement, dated March 20, 2008, by and among the Registrant, Silicon Valley Bank and Oxford Finance Corporation (10).
10.20	U.S. Army Space & Missile Defense Command—"Development and Licensure of Bioscavanger Increment II (Recombinant Drug Candidate)" Award/Contract No. W9113M-06-C-0189, dated September 22, 2006, by and between the Company and the U.S. Army Space & Missile Defense Command. (9)+
10.21	Cooperative Research and Development Agreement, dated September 12, 2006, by and between the Company and the U.S. Army Medical Research Institute of Infectious Diseases. (9)+
10.22	Center for Scientific Review, National Institute of Health, Research Project Cooperative Agreement, Notice of Grant Award No. 1 U01 NS058207-01, dated September 30, 2006, awarded to the Company. (9)+
10.23	Collaboration Agreement, dated November 29, 2004, by and between the Company and Medarex, Inc. (9)+

Exhibit No.	Description
10.24	Research and License Agreement, dated August 8, 2006, by and between the Company and Nektar Therapeutics AL, Corporation. (9)+
10.25	License Agreement, dated March 12, 2007, by and between the Company and GTC Biotherapeutics, Inc. (9)+
10.26.1	Office Lease, dated September 14, 2006, by and between the Company and Park Place Trust, as amended by First Amendment to Office Lease, dated January 22, 2007. (9)
10.26.2	Second Amendment to Office Lease, by and between the Company and Park Place Trust, dated September 16, 2008. (19)
10.27	Biopharmaceutical Development and Manufacturing Services Agreement, dated June 15, 2007, by and between the Company and Laureate Pharma, Inc. (9)+
10.28	Services Agreement, dated March 2, 2007, by and between the Company and GTC Biotherapeutics, Inc. (9)+
10.29	Transitional Services Agreement, dated April 2, 2008, between Avecia Biologics Limited and PharmAthene UK. (16)
10.30	Form of PharmAthene Inc. Executive Employment Agreement. (17)
10.31	Form of PharmAthene Inc. Confidentiality and Non-Solicitation Agreement. (17)
10.32	Master Services Agreement, dated April 2, 2008, between PharmAthene UK Limited and Avecia Biologics Limited. (17) +
10.33	Master Service Agreement, dated December 15, 2004, between Avecia Limited and the Secretary of State for Defence, acting through the Defence Science and Technology Laboratory (DSTL). (18)+
10.34	Master Service Agreement, dated August 18, 2005, between Avecia Limited and DSTL. (18) +
10.35	Manufacturing Licence Agreement, dated June 20, 2006, between Avecia Limited and DSTL. (18) +
10.36	Manufacturing and Marketing Licence Agreement, dated December 4, 2006, between Avecia Limited and DSTL. (18) +
10.37	Letter Agreement, dated March 20, 2008, between Avecia Biologics Limited and DSTL. (18)+
10.38	Contract Award by the National Institute of Allergy and Infectious Diseases (NIAID), dated September 25, 2008. (19)+

Exhibit No.	Description
10.39	Securities Purchase Agreement, dated September 30, 2008, between PharmAthene, Inc. and Kelisia Holdings Ltd. (19)
10.40	Letter Agreement, dated September 30, 2008, between PharmAthene, Inc. and Panacea Biotec, Ltd. (19)
10.41	Investor Rights Agreement, dated October 10, 2008, between PharmAthene Inc. and Kelisia Holdings Ltd. (19)
10.42	Common Stock Purchase Warrant, dated October 10, 2008 in favor of Kelisia Holdings Ltd. (19)
10.43	Deed of Confidentiality between PharmAthene UK Limited, and its employees. (19)
10.44	Contract with the National Institutes of Health for the Production and Testing of Anthrax Recombinant Protective Antigen (rPA) Vaccine (#N01-AI-30052) ("NIH Prime Contract-Anthrax"), dated September 29, 2003 *, +
10.45	Amendments 1 through 13 to the NIH Prime Contract-Anthrax *, **, +
10.46	Contract with the National Institutes of Health for the Development, Testing and Evaluation of Candidate Vaccines Against Plague (#HSSN266200400034C) ("NIH Prime Contract-Plague"), dated September 30, 2004 *, +
10.47	Amendments 1 through 10 to the NIH Prime Contract-Plague *, **, +
14	Code of Ethics. (3)
21	Subsidiaries. *
23	Consent of Ernst & Young LLP Independent Registered Public Accounting Firm*
31.1	Certification of Chief Executive Officer and Principal Financial Officer Pursuant to SEC Rule 13a-14(a)/15d-14(a).
31.2	Certification of Chief Executive Officer and Principal Financial Officer Pursuant to SEC Rule 13a-14(a)/15d-14(a).
32.1	Certification of Chief Executive Officer and Principal Financial Officer Pursuant to 18 U.S.C. Section 1350.
32.2	Certification of Chief Executive Officer and Principal Financial Officer Pursuant to 18 U.S.C. Section 1350.

1. Incorporated by reference to the Registration Statement on Form S-1 of the Registrant filed on May 6, 2005.

Exhibit No.	Description
2.	Incorporated by reference to the Registration Statement on Form S-1/A of the Registrant filed on June 10, 2005.
3.	Incorporated by reference to the Registration Statement on Form S-1/A of the Registrant filed on July 12, 2005.
4.	Incorporated by reference to the Registration Statement on Form S-1/A of the Registrant filed on July 27, 2005.
5.	Incorporated by reference to the Quarterly Report on Form 10-Q filed by the Registrant on November 14, 2005.
6.	Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on January 22, 2007.
7.	Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on January 25, 2007.
8.	Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on August 9, 2007.
9.	Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on September 24, 2007.
10.	Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on March 26, 2008.
11.	Incorporated by reference to the Annual Report on Form 10-K filed by the Registrant on March 31, 2008.
12.	Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on April 8, 2008.
13.	Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on May 2, 2008.
14.	Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on June 19, 2008.
15.	Incorporated by reference to Appendix B to the Proxy Statement on Schedule 14A filed by the Registrant on May 15, 2008.
16.	Incorporated by reference to the Current Report on Form 8-K/A filed by the Registrant on June 18, 2008.
17.	Incorporated by reference to the Quarterly Report on Form 10-Q filed by the Registrant on August 14, 2008.

Exhibit No.	Description
18.	Incorporated by reference to the Amendment to the Quarterly Report on Form 10-Q/A filed by the Registrant on August 19, 2008.
19.	Incorporated by reference to the Quarterly Report on Form 10-Q filed by the Registrant on November 14, 2008.
*	Filed herewith.
**	Amendments No. 2 and 5 to the NIH Prime Contract-Anthrax have been superseded in full by subsequent amendments filed herewith and are therefore omitted. Amendment No. 12 to the NIH Prime Contract-Anthrax and Amendment No. 8 to the NIH Prime Contract-Plague were never executed and are therefore omitted.
+	Certain confidential portions of this exhibit have been omitted and filed separately with the Securities and Exchange Commission pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934.

(c) Financial Statements and Schedules of Subsidiaries and Affiliates

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized, in the city of Annapolis, State of Maryland, on the 31st day of March, 2009.

PHARMATHENE, INC.

By: /s/ David P. Wright
David P. Wright
Chief Executive Officer

POWER OF ATTORNEY

BY THESE PRESENTS, each person whose signature appears below constitutes and appoints David P. Wright, Christopher C. Camut, and Jordan P. Karp his true and lawful attorney-in-fact and agents, with full power of substitution and resubstitution for him and in his name, place and stead, in any and all capacities to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that said attorney-in-fact or his substitute, each acting alone, may lawfully do or cause to be done by virtue thereof.

In accordance with the Exchange Act, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ David P. Wright David P. Wright	Chief Executive Officer and Director (Principal Executive Officer)	March 31, 2009
/s/ Christopher C. Camut Christopher C. Camut	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	March 31, 2009
/s/ John Pappajohn John Pappajohn	Chairman of the Board	March 31, 2009
/s/ John Gill John Gill	Director	March 31, 2009
/s/ James H. Cavanaugh James H. Cavanaugh	Director	March 31, 2009

/s/ Steven St. Peter Steven St. Peter	Director	March 31, 2009
/s/ Derace Schaffer, MD Derace Schaffer, MD	Director	March 31, 2009
/s/ Joel McCleary Joel McCleary	Director	March 31, 2009

PHARMATHENE, INC.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Stockholders of PharmAthene, Inc.

We have audited the accompanying consolidated balance sheets of PharmAthene, Inc. and subsidiaries as of December 31, 2008 and 2007, and the related consolidated statements of operations, convertible redeemable preferred stock and stockholders' equity, and cash flows for the years then ended. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. We were not engaged to perform an audit of the Company's internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of PharmAthene, Inc. and subsidiaries at December 31, 2008 and 2007, and the consolidated results of their operations and their cash flows for the years then ended, in conformity with U.S. generally accepted accounting principles.

/s/ Ernst & Young LLP

McLean, Virginia
March 30, 2009

PHARMATHENE, INC.

CONSOLIDATED BALANCE SHEETS

	December 31, 2008	December 31, 2007
ASSETS		
Current assets:		
Cash and cash equivalents	$ 19,752,404	$ 40,582,643
Restricted Cash	12,000,000	-
Short-term investments	3,190,912	12,153,945
Accounts receivable	8,890,077	4,005,694
Other receivables	1,391,512	1,240,069
Prepaid expenses and other current assets	917,125	492,294
Total current assets	46,142,030	58,474,645
Long-term restricted cash	1,250,000	-
Property and equipment, net	5,313,219	6,571,024
Patents, net	925,489	1,312,991
Other long term assets	220,531	183,588
Deferred costs	37,092	68,884
Goodwill	2,502,909	-
Total assets	$ 56,391,270	$ 66,611,132
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities:		
Accounts payable	$ 3,870,871	$ 1,393,664
Accrued expenses and other liabilities	14,624,757	3,602,886
Convertible notes	13,377,505	-
Current portion of long term debt	4,000,000	4,000,000
Total current liabilities	35,873,133	8,996,550
Other long term liabilities	626,581	374,040
Long-term debt	928,117	16,668,458
Total liabilities	37,427,831	26,039,048
Stockholders' equity:		
Common stock, $0.0001 par value; 100,000,000 shares authorized; 25,890,143 and 22,087,121 shares issued and outstanding at December 31, 2008 and 2007, respectively;	2,589	2,209
Additional paid-in capital	142,392,163	126,490,647
Accumulated other comprehensive income	386,351	1,481,779
Accumulated deficit	(123,817,664)	(87,402,551)
Total stockholders' equity	18,963,439	40,572,084
Total liabilities and stockholders' equity	$ 56,391,270	$ 66,611,132

See the accompanying notes to the consolidated financial statements.

PHARMATHENE, INC.

CONSOLIDATED STATEMENTS OF OPERATIONS

	Year ended December 31,	
	2008	2007
Contract revenue	$ 32,821,526	$ 14,624,595
Other revenue	89,802	19,020
	32,911,328	14,643,615
Operating expenses:		
Research and development	31,812,431	16,559,670
General and administrative	19,397,532	13,882,023
Acquired in-process research and development	16,131,002	-
Depreciation and amortization	813,891	705,370
Total operating expenses	68,154,856	31,147,063
Loss from operations	(35,243,528)	(16,503,448)
Other income (expense):		
Interest income	1,225,471	1,122,565
Gain on extinguishment of debt	-	886,963
Other income	58,106	-
Interest expense	(2,573,406)	(2,122,624)
Change in market value of derivative instruments	118,244	3,029,241
Total other (expense) income	(1,171,585)	2,916,145
Net loss	(36,415,113)	(13,587,303)
Accretion of redeemable convertible preferred stock to redemptive value	-	(4,133,733)
Net loss attributable to common shareholders	$ (36,415,113)	$ (17,721,036)
Basic and diluted net loss per share	$ (1.59)	$ (1.88)
Weighted average shares used in calculation of basic and diluted net loss per share	22,944,066	9,442,885

See the accompanying notes to the consolidated financial statements.

PHARMATHENE, INC.

CONSOLIDATED STATEMENTS OF CONVERTIBLE REDEEMABLE PREFERRED STOCK AND STOCKHOLDERS' EQUITY

	Convertible Redeemable Preferred Stock								Stockholders' Equity			
	Series A		Series B		Series C		Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income	Accumulated Deficit	Stockholders' Equity
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount				
Balance as of 12/31/2006	0	$ 19,130,915	30,448,147	$31,780,064	14,946,479	$14,480,946	621,281	$ 63	$ —	$ 63,954	$(69,851,819)	(69,787,802)
Net loss	—	—	—	—	—	—	—	—	—	—	(13,587,303)	(13,587,303)
Mark to market of available for sale securities	—	—	—	—	—	—	—	—	—	(99,250)		(99,250)
Foreign currency translation adjustment	—	—	—	—	—	—	—	—	—	1,517,075	—	1,517,075
Comprehensive loss	—	—	—	—	—	—	—	—	—	1,417,825	—	(12,169,478)
Exercise of common stock options	—	—	—	—	—	—	62	—	13	—	—	13
Accrual of Series A dividends	—	912,090	—	—	—	—	—	—	(181,477)	—	(730,613)	(912,090)
Accretion of Series A issuance costs	—	12,429	—	—	—	—	—	—	—	—	(12,429)	(12,429)
Accretion of Series A deemed dividend	—	65,434	—	—	—	—	—	—	—	—	(65,434)	(65,434)
Accrual of Series B dividends	—	—	—	1,555,577	—	—	—	—	—	—	(1,555,577)	(1,555,577)
Accretion of Series B issuance costs	—	—	—	24,420	—	—	—	—	—	—	(24,420)	(24,420)
Accretion of common stock purchase warrants	—	—	—	241,305	—	—	—	—	—	—	(241,305)	(241,305)
Accrual of Series C dividends	—	—	—	—	—	738,983	—	—	—	—	(878,293)	(878,293)
Accretion of Series C issuance costs	—	—	—	—	—	56,875	—	—	—	—	(56,875)	(56,875)
Accretion of common stock purchase warrants	—	—	—	—	—	36,893	—	—	—	—	(43,404)	(43,404)
Accretion of preferred stock purchase warrants	—	—	—	—	—	301,818	—	—	—	—	(355,079)	(355,079)
Conversion of stock resulting from reverse merger	(16,442,000)	(20,120,868)	(30,448,147)	(33,601,366)	(14,946,479)	(15,615,515)	—	—	72,284,048	—	—	72,284,048
Issuance of common stock							21,465,778	2,146	57,884,045	—	—	57,886,191
Merger acquisition costs									(5,279,591)			(5,279,591)
Stock compensation	—	—	—	—	—	—	—	—	1,783,609	—	—	1,783,609

	Convertible Redeemable Preferred Stock						Stockholders' Equity					
	Series A		Series B		Series C		Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income	Accumulated Deficit	Stockholders' Equity
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount				
Balance as of 12/31/2007		$		$		$	22,087,121	$ 2,209	$126,490,647	$ 1,481,779	$(87,402,551)	40,572,084
Net loss											(36,415,113)	(36,415,113)
Mark to market of short term investments										82,567		82,567
Foreign currency translation adjustment										(1,177,995)		(1,177,995)
Comprehensive loss										(1,095,428)		(37,510,541)
Employee vesting of restricted shares							69,688	7	(7)			
Issuance of common stock, net issuance costs of $406,070							3,733,334	373	12,660,069			12,660,442
Merger acquisition costs									200,308			200,308
Stock compensation									3,041,146			3,041,146
Balance as of 12/31/2008		$		$		$	25,890,143	$ 2,589	$142,392,163	$ 386,351	$(123,817,664)	$ 18,963,439

See the accompanying notes to the consolidated financial statements.

PHARMATHENE, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year ended December 31,	
	2008	2007
Operating activities		
Net loss	$ (36,415,113)	$ (13,587,303)
Adjustments to reconcile net loss to net cash used in operating activities:		
Acquired in process research and development	16,131,002	-
Change in market value of derivative instruments	(118,244)	(3,029,241)
Extinguishment of debt	-	(886,963)
Depreciation and amortization	813,891	655,210
Compensation expense related to restricted shares and stock options	3,041,146	1,783,609
Non cash interest expense on debt	1,755,408	1,246,754
Changes in operating assets and liabilities:		
Accounts receivable	(2,195,580)	(3,631,770)
Prepaid expenses and other current assets	(266,403)	422,576
Other assets	(21,161)	24,924
Accounts payable	(60,704)	564,426
Accrued expenses	4,137,184	2,801,066
Net cash used in operating activities	(13,198,574)	(13,636,712)
Investing activities		
Purchases of property and equipment	(509,315)	(882,345)
Purchase of Avecia, net of cash acquired	(11,556,117)	-
Purchase of letter of credit	(7,000,000)	-
Purchases of short term investments	(17,169,388)	(12,054,695)
Proceeds from sales of short term investments	26,132,421	-
Net cash used in investing activities	(10,102,399)	(12,937,040)
Financing activities		
Net proceeds from reverse merger with Healthcare Acquisition Corp	-	57,907,248
Proceeds from stock options exercised	-	13
Proceeds from issuance of debt	-	9,904,622
Payments of debt obligations	(4,000,000)	(1,192,694)
Increase of restricted cash requirements	(6,250,000)	-
Net proceeds from issuance of common stock	12,660,442	-
Financing costs	-	(4,692,011)
Net cash provided by financing activities	2,410,442	61,927,178
Effects of exchange rates on cash	60,292	117,005
(Decrease) increase in cash and cash equivalents	(20,830,239)	35,470,431
Cash and cash equivalents, at beginning of year	40,582,643	5,112,212
Cash and cash equivalents, at end of year	$ 19,752,404	$ 40,582,643
Supplemental disclosure of cash flow information		
Cash paid for interest	$ 800,481	$ 867,526

See the accompanying notes to the consolidated financial statements.

Note 1 - Organization and Business

PharmAthene, Inc. ("PharmAthene" or the "Company") was incorporated under the laws of the State of Delaware as Healthcare Acquisition Corp. ("HAQ") on April 25, 2005, a special purchase acquisition corporation formed to serve as a vehicle for the acquisition of a then unidentified business. HAQ became a public company on August 3, 2005. On August 3, 2007, HAQ consummated a merger (the "Merger") with PharmAthene, Inc., a Delaware corporation ("Former PharmAthene"), pursuant to an Agreement and Plan of Merger, dated as of January 19, 2007, by and among HAQ, PAI Acquisition Corp., a Delaware corporation and a wholly-owned subsidiary of HAQ, and Former PharmAthene, whereby Former PharmAthene became a wholly-owned subsidiary of HAQ. Effective upon the consummation of the Merger, HAQ changed its name from "Healthcare Acquisition Corp." to "PharmAthene, Inc." and Former PharmAthene changed its name to "PharmAthene US Corporation." Through February 27, 2009, our operations were conducted by our wholly-owned subsidiary, PharmAthene US Corporation. Effective February 27, 2009, PharmAthene US Corporation was merged with and into PharmAthene, Inc., with PharmAthene, Inc. being the surviving corporation.

Upon completion of the Merger, approximately 12.2 million shares of common stock were issued to the stockholders of Former PharmAthene and the Company assumed all of Former PharmAthene's stock options and warrants that were not cancelled as part of the Merger and 587,249 shares of common stock have been reserved for issuance upon the exercise of such options and warrants. Also, Former PharmAthene's $12.8 million of outstanding secured convertible notes ("Bridge Notes"), including interest, were exchanged for $12.3 million of new unsecured 8% convertible notes maturing on August 3, 2009 (the "Notes"). The Notes are convertible at the option of the holders into common stock at $10.00 per share and became redeemable by PharmAthene without penalty after August 3, 2008. Immediately following the closing of the Merger, the Former PharmAthene stockholders, option holders and warrant holders held approximately 56% of the common stock of PharmAthene on a fully-diluted basis and former stockholders, option holders and warrant holders of HAQ prior to the Merger owned approximately 44% of PharmAthene's common stock on a fully-diluted basis after the Merger. Following completion of the Merger, the business conducted by PharmAthene became the one operated by Former PharmAthene prior to the completion of the Merger.

On March 20, 2008, PharmAthene, Inc. and certain of its affiliates (including a newly-formed UK subsidiary, "PharmAthene UK") (collectively, "PharmAthene" or the "Company") entered into a Sale and Purchase Agreement (the "Purchase Agreement") with Avecia Biologics Limited and certain of its affiliates (collectively, "Avecia") for the acquisition (the "Avecia Acquisition") of substantially all of the assets and liabilities related to Avecia's vaccines business which includes a second generation recombinant protective antigen ("rPA") anthrax vaccine, which is now referred to as SparVaxTM, a recombinant dual antigen plague vaccine ("rYP") which is now referred to as RypVaxTM, and a third generation rPA anthrax vaccine program. On April 2, 2008, the parties amended the Purchase Agreement and the Company completed the Avecia Acquisition acquiring substantially all of the assets and assuming the liabilities, in each case exclusively associated with Avecia's biodefense vaccines business in accordance with the terms of the Purchase Agreement, as amended, including certain products, patents, trademarks, domain names and other intellectual property, license agreements, contracts, goodwill and other intangibles for approximately $18.6 million. See Note 3 Avecia Acquisition for additional information.

PharmAthene is a biopharmaceutical company focused on developing biodefense countermeasure applications. The Company is subject to those risks associated with any biopharmaceutical company that has substantial expenditures for research and development. There can be no assurance that the Company's research and development projects will be successful, that products developed will obtain necessary regulatory approval, or that any approved product will be commercially viable. In addition, the

Company operates in an environment of rapid technological change and is largely dependent on the services and expertise of its employees, consultants and other third parties.

Note 2 - Summary of Significant Accounting Policies

Basis of Presentation

These financial statements reflect the historic results of Former PharmAthene prior to the Merger and that of the combined company following the Merger, and do not include the historic financial results of HAQ prior to the completion of the Merger.

Unless specifically noted otherwise, as used throughout these consolidated financial statements, "the Company", "PharmAthene", "we", "us" or "our" refers to the business of the combined company after the Merger and the business of Former PharmAthene prior to the Merger. Unless specifically noted otherwise, as used throughout these consolidated financial statements, "HAQ" refers to the business of the Healthcare Acquisition Corp. prior to the completion of the Merger. The accompanying audited consolidated financial statements have been prepared in accordance with generally accepted accounting principles in the United States.

Principles of Consolidation

The consolidated financial statements include the accounts of PharmAthene and its subsidiaries, PharmAthene U.S. Corporation, PharmAthene Canada, Inc., which was formed in March 2005, and PharmAthene UK Limited, which was formed in March 2008. All significant intercompany transactions and balances have been eliminated.

Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles in the United States requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Segment Information

The Company currently operates in one material business segment. The entire business is comprehensively managed by a single management team that reports to the Chief Executive Officer. The Company does not operate any material separate lines of business or separate business entities with respect to products or product candidates. Accordingly, the Company does not have separately reportable segments as defined by Statement of Financial Accounting Standards No. 131, *Disclosures about Segments of a Enterprise and Related Information.*

Comprehensive Income

The Company reports comprehensive income in accordance with the provisions of Statement of Financial Accounting Standards No. 130, *Reporting Comprehensive Income.* Comprehensive loss includes all changes in equity for cumulative translation adjustments resulting from the consolidation of foreign subsidiaries as the financial statements of the subsidiary located outside of the United States are measured using the local currency as the functional currency. Assets and liabilities of these subsidiaries are translated at the rates of exchange at the balance sheet date. The resultant translation adjustments are

included in accumulated other comprehensive income, a separate component of stockholders' equity. Additionally, all unrealized gains and losses on short term investments are included in comprehensive loss. Comprehensive loss for each of the twelve month periods ended December 31, 2008 and 2007 was approximately $37.5 million and $12.2 million, respectively.

Foreign currency translation

The functional currency of the Company's wholly owned foreign subsidiaries located in Canada and the United Kingdom are their local currency. Assets and liabilities of the foreign subsidiaries are translated to United States dollars based on exchange rates at the end of the reporting period. Income and expense items are translated at the weighted average exchange rates prevailing during the reporting period. Translation adjustments are accumulated in a separate component of stockholder's equity. Translation gains or losses are included in the determination of operating results.

Cash and Cash Equivalents

Cash and cash equivalents, which consist of short-term money market accounts, are stated at cost, which approximates market value. The Company considers all highly liquid investments with maturities of three months or less when purchased to be cash equivalents. Interest income resulting from cash and cash equivalents and short-term investments was $1.2 million and $1.1 million for the years ended December 31, 2008 and 2007, respectively.

Restricted Cash and Letter of Credit

In connection with the March 20, 2008 Consent and First Loan Agreement with Silicon Valley Bank and Oxford Finance Corporation fully disclosed in Note 9, the Company maintains a segregated account at the Lenders in the amount of at least one and one-quarter times the principal amount of its obligations outstanding to the Lenders. As of December 31, 2008, the Company recorded $5.0 million and $1.3 million in short-term and long-term restricted cash, respectively, under this agreement.

As further disclosed in Note 3, the Company agreed to provide a letter of credit in the amount of $7.0 million as security for the deferred consideration related to the acquisition of assets related to the Avecia Acquisition. This letter of credit will be payable upon the earlier to occur of the completion of a financing transaction in the amount of $15.0 million or more or eighteen months following the closing of the acquisition. As of December 31, 2008, the letter of credit is shown on the balance sheet as short-term restricted cash and is included in accrued expenses and other current liabilities as it is due to Avecia in October 2009.

Short-Term Investments

Short-term investments consist of investment grade government agency and corporate debt securities due within one year. All investments are classified as available-for-sale and are recorded at market value. Unrealized gains and losses are reflected in other comprehensive income. The estimated fair value of the available-for-sale securities is determined based on quoted market prices or rates for similar instruments. Management reviews the Company's investment portfolio on a regular basis and seeks guidance from its professional portfolio manager related to U.S. and global market conditions. We assess the risk of impairment related to securities held in our investment portfolio on a regular basis and noted no impairment during the year ended December 31, 2008. Additionally, the Company's Audit Committee reviews the investment portfolio and strategy on an annual basis.

Significant Customers and Accounts Receivable

The Company's primary customers are the U.S. Department of Defense (the "DoD"), the National Institute of Allergy and Infectious Diseases ("NIAID"), the Biomedical Advanced Research and Development Authority ("BARDA"), and the National Institute of Health ("NIH"). For the years ended December 31, 2008 and 2007, contract revenues from the DoD and NIAID related to Protexia® and Valortim® comprised 64% and 100%, of total revenues, respectively. Contract revenues related to SparVax™ and RypVax™, acquired during fiscal year 2008, represented 36% of total revenues for the year ended December 31, 2008. As of December 31, 2008 and 2007, the Company's receivable balances were comprised 100% of receivables from these customers. Unbilled accounts receivable, included in accounts receivable, totaling $5.0 million and $3.6 million as of December 31, 2008 and 2007, respectively, related to the contracts with these customers. Accounts receivable are stated at invoice amounts and consist primarily of amounts due from the DoD, NIAID and NIH as well as amounts due under reimbursement contracts with other government entities.

While the Company has a policy to provide an allowance for any amount of accounts receivable which it determines to be uncollectible and the Company will write off any uncollectible account when the likelihood of that account's collection is determined to be not probable, the Company has not historically found it necessary to record any write-offs of accounts receivable or to record an allowance for uncollectible accounts.

Other Receivables

Other receivables include Quebec provincial and Canadian Federal credits for internally and externally generated research and development expenditures and value added taxes due from the United Kingdom.

Concentration of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk are primarily cash and cash equivalents, investments and accounts receivable. The Company maintains its cash, cash equivalent and investment balances in the form of money market accounts, debt and equity securities and overnight deposits with financial institutions that management believes are creditworthy. All of the Company's accounts receivables are from any or all of the U.S. government, the Canadian government or the United Kingdom government.

Property and Equipment

Property and equipment consist of land, building and leasehold improvements, laboratory, computer, farm and office equipment and furniture and are recorded at cost. Leasehold improvements are amortized over the economic life of the asset or the lease term, whichever is shorter. Property and equipment are depreciated using the straight-line method over the estimated useful lives of the respective assets as follows:

Asset Category	Estimated Useful Life (in Years)
Building and leasehold improvements	4 - 20
Laboratory equipment	7
Furniture, farm and office equipment	5 - 7
Computer equipment	3

Intangible Assets

Patents are carried at cost less accumulated amortization which is calculated on a straight line basis over the estimated useful lives of the patents. The Company periodically reviews the carrying value of patents to determine whether the carrying amount of the patents is recoverable. For the years ended December 31, 2008, and 2007, there were no adjustments to the carrying values of the patents. The Company is amortizing the cost of the patents over an 11 year period.

Goodwill represents the excess of purchase price over the fair value of net identifiable assets associated with the Avecia Acquisition further described in Note 3. The Company reviews the carrying value of goodwill for impairment annually during the fourth quarter or more frequently if impairment indicators exist. Evaluating goodwill for impairment requires management judgment, including the estimation of future cash flows, future growth rates and profitability and the expected life over which cash flows will occur. Changes in the Company's business strategy or adverse changes in market conditions could impact impairment analyses and require the recognition of an impairment charge equal to the excess of the carrying value of goodwill over its estimated fair value. For the year ended December 31, 2008, the Company determined that there was no impairment of goodwill.

Impairment of Long-Lived Assets

Long-lived assets consist primarily of patents and property and equipment. In accordance with Statement of Financial Accounting Standards ("SFAS") No. 144, *Accounting for the Impairment or Disposal of Long-Lived Assets*, the Company reviews long-lived assets and certain identifiable intangibles for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to future undiscounted net cash flows expected to be generated by the asset. Recoverability measurement and estimating of undiscounted cash flows is done at the lowest possible level for which there is identifiable assets. If such assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of assets exceeds the fair value of the assets. Assets to be disposed of are reported at the lower of the carrying amount or fair value less costs to sell. For the year ended December 31, 2008, the Company determined that there was no impairment of long lived assets.

Accrued expenses

Management is required to estimate accrued expenses as part of the process of preparing financial statements. The estimation of accrued expenses involves identifying services that have been performed on the Company's behalf, and estimating the level of services performed and the associated cost incurred for such services as of each balance sheet date in the financial statements. Accrued expenses include professional service fees, such as fees paid to lawyers and accountants, contract service fees, such as those under contracts with clinical research organizations and investigators in conjunction with clinical trials, and fees to contract manufacturers in conjunction with the production of clinical materials. Pursuant to management's assessment of the services that have been performed on clinical trials and other contracts, the Company recognizes these expenses as the services are provided. Such management assessments include, but are not limited to: (1) an evaluation by the project manager of the work that has been completed during the period, (2) measurement of progress prepared internally and/or provided by the third-party service provider, (3) analyses of data that justify the progress, and (4) management's judgment.

Revenue Recognition

The Company generates its revenue from two different types of contractual arrangements: cost-plus-fee contracts and cost reimbursable grants. Revenues on cost-plus-fee contracts are recognized to the extent of costs incurred plus an estimate of the applicable fees earned. The Company considers fixed fees under cost-plus-fee contracts to be earned in proportion to the allowable costs incurred in performance of the contract. The Company analyzes each cost reimbursable grant to ensure reporting of revenues gross versus net is appropriate based on the guidance in the AICPA Federal Government Contractors Guide or the Financial Accounting Standards Board's Emerging Issues Task Force Issue 99-19, *Gross Versus Net*, whichever is most appropriate. For the years ended December 31, 2008 and 2007, respectively, the Company recorded approximately $2.2 million and $0.2 million of costs reimbursed from the government as a reduction to research and development expense as they are viewed as a reduction of research and development costs under the guidance.

The Company's contracts may include the provisions of more than one of its services. Collaborative research and development agreements can provide for one or more of up-front license fees, research payments, and milestone payments. In these situations, the Company recognizes revenue in accordance with the Financial Accounting Standards Board's Emerging Issues Task Force Issue 00-21, *Revenue Arrangements with Multiple Deliverables*. Accordingly, for applicable arrangements, revenue recognition includes the proper identification of separate units of accounting and the allocation of revenue across all elements based on relative fair values, with proper consideration given to the guidance provided by other authoritative literature.

Revenues from the achievement of research and development milestones, if deemed substantive, are recognized as revenue when the milestones are achieved and the milestone payments are due and collectible. If not deemed substantive, the Company recognizes such milestones as revenue on a straight-line basis over the remaining expected term of continued involvement in the research and development process. Milestones are considered substantive if all of the following conditions are met: (1) the milestone is non-refundable; (2) achievement of the milestone was not reasonably assured at the inception of the arrangement; (3) substantive effort is involved to achieve the milestone; and (4) the amount of the milestone appears reasonable in relation to the effort expended, the other milestones in the arrangement and the related risk associated with the achievement of the milestone and any ongoing research and development or other services are priced at fair value. Payments received in advance of work performed are recorded as deferred revenue.

In September 2006, the Company was awarded a multi-year cost reimbursement contract valued at up to $219 million from the Department of Defense Army Space and Missile Command for advanced development of the Company's broad spectrum chemical nerve agent prophylaxis, Protexia®. The Department of Defense has allocated $40.5 million for the initial stage of development, including manufacturing process development, preclinical and toxicity testing activities, of this contract. The Company recognized $19.5 million and $14.5 million of revenue on this contract for the years ended December 31, 2008 and 2007, respectively.

On September 28, 2007, PharmAthene was awarded a contract for the advanced development of Valortim® from the National Institute of Allergy and Infectious diseases ("NIAID") and the Biomedical Advanced Research and Development Authority ("BARDA"). This approximately $13.9 million contract supports the development of Valortim® for use as an anti-toxin therapeutic to treat inhalation anthrax infection. The contract will be incrementally funded through fiscal year 2009. The Company recognized $1.4 million and $0.1 million of revenue on this contract for the years ended December 31, 2008 and 2007, respectively.

On September 25, 2008, PharmAthene was awarded a contract by the National Institutes of Health, NIAID for additional development work on its third generation rPA anthrax vaccine. NIAID has allocated $13.2 million for the initial stages of development work. Assuming all development milestones are met and all contract extensions are exercised by NIAID at its sole discretion, PharmAthene could receive up to approximately $83.9 million over a nine year period under this contract. The Company recognized $0.1 million of revenue on this contract for the year ended December 31, 2008.

As part of the Avecia Acquisition, the Company acquired contracts for the development of a anthrax vaccine SparVax™ and for the advanced development of a plague vaccine RypVax™. The Company has recognized revenue of $9.2 million and $2.7 on these programs, respectively for year ended December 31, 2008.

Research and Development and In-Process Research and Development

Research and development costs include salaries, facilities expense, overhead expenses, material and supplies, pre-clinical expense, clinical trials and related clinical manufacturing expenses, stock-based compensation expense, contract services and other outside services. On January 1, 2008, the Company adopted the Financial Accounting Standards Board's Emerging Issues Task Force Issue 07-3, *Accounting for Nonrefundable Advance Payments for Goods or Services Received for Use in Future Research and Development Activities*. As of December 31, 2008, the Company has recorded $0.3 million in prepaid development costs relating to non-refundable advance payments. All other costs are charged to expense, as incurred.

The Company accounts for purchased in-process research and development in accordance with the SFAS No. 2, *Accounting for Research and Development Costs* ("SFAS No. 2") along with Financial Accounting Standards Board ("FASB") Interpretation No. 4, *Applicability of FASB Statement No. 2 to Business Combinations Accounted for by the Purchase Method — an interpretation of FASB Statement No. 2* ("FIN 4"). Under these standards, the Company is required to determine whether the technology relating to a particular research and development project acquired through an acquisition has an alternative future use. If the determination is that the technology has no alternative future use, the acquisition amount assigned to assets to be used in the particular research and development project is expensed. If the technology is determined to have an alternative future use, the Company capitalizes and amortizes the costs incurred over the estimated useful lives of the technology acquired. Acquired in-process research and development had no alternative future use and was expensed for $16.1 million as fully disclosed in Note 3.

Share-Based Compensation

The Company accounts for its stock-based compensation plans using the fair value recognition provisions of Statement of Financial Accounting Standards No. 123 (R), *Share-Based Payment* ("SFAS No. 123R") which establishes accounting for share-based awards exchanged for employee services and requires companies to expense the estimated fair value of these awards over the requisite employee service period. Under SFAS No. 123R, share-based compensation cost is determined at the grant date using an option pricing model. The value of the award that is ultimately expected to vest is recognized as expense on a straight line basis over the employee's requisite service period.

The Company has estimated the fair value of each award using the Black-Scholes option pricing model, which was developed for use in estimating the value of traded options that have no vesting restrictions and that are freely transferable. The Black-Scholes model considers, among other factors, the expected life of the award and the expected volatility of the Company's stock price.

Employee share-based compensation expense recognized in the years ended December 31, 2008 and 2007 was calculated based on awards ultimately expected to vest and has been reduced for estimated forfeitures at a rate of approximately 17% and 19%, respectively, for stock options, and 7% for restricted shares, based on the Company's historical option forfeitures. SFAS No. 123R requires forfeitures to be estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates.

Share-based compensation expense recognized under SFAS No. 123R for the years ended December 31, 2008 and 2007, respectively, was:

	Year ended December 31,	
	2008	2007
Research and development	$ 587,957	$ 431,847
General and administrative	2,453,189	1,351,762
Total share-based compensation expense	$ 3,041,146	$ 1,783,609
Share-based compensation expense, per common share Basic and diluted	$ 0.13	$ 0.19

Net Loss Per Share

The Company applies Statement of Financial Accounting Standards No. 128, *Earnings per Share*, which establishes standards for computing and presenting earnings per share. Basic net loss per share of common stock excludes dilution for potential common stock issuances and is computed by dividing net loss by the weighted-average number of shares outstanding for the period. Diluted net loss per share reflects the potential dilution that could occur if securities were exercised into common stock. However, for all periods presented, diluted net loss per share is the same as basic net loss attributable to common shareholders per share as the inclusion of weighted average shares of common stock issuable upon the exercise of stock options and warrants would be anti-dilutive. Securities outstanding in the amount of 19,014,000 and 14,673,000 shares for the years ended December 31, 2008 and 2007, respectively, were excluded from the calculation of diluted net loss per share since their inclusion would be anti-dilutive.

The following table provides a reconciliation of the numerators and denominators used in computing basic and diluted net loss per share:

	Year ended December 31,	
	2008	2007
Numerator:		
Net loss	$ (36,415,113)	$ (13,587,303)
Dividends on and accretion of convertible preferred stock	-	(4,133,733)
Net loss available to common stockholders	$ (36,415,113)	$ (17,721,036)
Denominator:		
Weighted-average shares of common stock outstanding-basic and diluted	22,944,066	9,442,885

Income Taxes

The Company accounts for income taxes in accordance with Statement of Financial Accounting Standards No. 109, *Accounting for Income Taxes* ("SFAS 109"), which requires that deferred tax assets and liabilities be recognized using enacted tax rates for the effect of temporary differences between the book and tax bases of recorded assets and liabilities. SFAS 109 also requires that deferred tax assets be reduced by a valuation allowance if it is more likely than not that some portion of the deferred tax asset will not be realized. In evaluating the need for a valuation allowance, the Company takes into account various factors, including the expected level of future taxable income and available tax planning strategies. If actual results differ from the assumptions made in the evaluation of the Company's valuation allowance, the Company records a change in valuation allowance through income tax expense in the period such determination is made.

The Company adopted the provisions of Financials Accounting Standards Board ("FASB") Interpretation No. 48, *Accounting for Uncertainty in Income Taxes- and Interpretation of FASB Statement No. 109* ("FIN 48") on January 1, 2007. The Company has analyzed tax positions in all jurisdictions where we are required to file an income tax return and we have concluded that we do not have any material unrecognized tax benefits. As a result, there were no material effects on our financial position or results of operations due to the implementation of FIN 48. As of December 31, 2008, the Company had recognized a valuation allowance to the full extent of its deferred tax assets since the likelihood of realization of the benefit cannot be determined. The Company believes that any of its uncertain tax positions would not result in adjustments to its effective income tax rate because likely corresponding adjustments to deferred tax assets would be offset by adjustments to recorded valuation allowances. We file a U.S. federal income tax return as well as returns for various state and foreign jurisdictions. The Company's income taxes have not been subject to examination by any tax jurisdiction since its inception. Accordingly, all income tax returns filed by the Company are subject to examination by taxing jurisdictions.

The Company's policy is to recognize interest and penalties accrued on any unrecognized tax benefits as a component of tax expense. As of the date of adoption of FIN 48, we did not have interest or penalties accrued for any unrecognized tax benefits and there was no interest expense recognized during the current year.

Fair Value of Financial Instruments

The Company's financial instruments include primarily cash and cash equivalents, accounts receivable, short-term investments and other current assets, accounts payable, accrued and other liabilities, notes payable and long-term debt. Due to the short-term nature of the cash and cash equivalents, accounts receivable, short-term investments and other current assets, accounts payable and accrued and other liabilities, the carrying amounts of these assets and liabilities approximate their fair value. The fair value of the Company's notes payable and long term debt approximates fair value, based on current incremental borrowing rates of the Company.

Reclassifications

Certain prior period amounts in the consolidated financial statements have been reclassified to conform to the current period presentation.

Recent Accounting Pronouncements

In December 2007, the EITF reached a consensus on Issue No. 07-1, *Accounting for Collaborative Arrangements*. In EITF 07-1, the EITF defined a collaborative arrangement as a contractual agreement involving a joint operating activity between two (or more) parties, each of which is both (1) an active participant in the activity and (2) exposed to significant risks and rewards that are dependent on the joint activity's commercial success. Additionally, EITF 07-1 provides information to be disclosed on an annual basis by each collaborative arrangement participant for every significant collaborative arrangement, including the nature of the arrangement, the participant's rights and obligations under the arrangement, the accounting policy followed for collaborative arrangements, and the income statement classification and amounts arising from the collaborative arrangement. EITF 07-01 is effective for financial statements issued for fiscal years beginning after December 15, 2008. This consensus is to be applied retrospectively for all periods presented. We are evaluating the potential impact of this consensus and do not expect it to have a material effect on our financial statements.

In December 2007, the FASB issued Statement of Financial Accounting Standards No. 141 (revised 2007), *Business Combinations* ("SFAS 141R"). SFAS 141R establishes principles and requirements for how an acquirer recognizes and measures in its financial statements the identifiable assets acquired, the liabilities assumed, any noncontrolling interest in the acquiree and the goodwill acquired. SFAS 141R also establishes disclosure requirements to enable the evaluation of the nature and financial effects of the business combination. SFAS 141R is effective for financial statements issued for fiscal years beginning after December 15, 2008 as early adoption is not allowed. The Company will adopt SFAS 141R for business combinations entered into after December 31, 2008.

In June 2008, the FASB issued EITF 07-5, "*Determining Whether an Instrument (or Embedded Feature) Is Indexed to an Entity's Own Stock*" ("EITF 07-5"). EITF 07-5 provides guidance in assessing whether an equity-linked financial instrument (or embedded feature) is indexed to an entity's own stock for purposes of determining whether the appropriate accounting treatment falls under the scope of SFAS 133, "Accounting For Derivative Instruments and Hedging Activities" and/or EITF 00-19, "Accounting For Derivative Financial Instruments Indexed to, and Potentially Settled in, a Company's Own Stock". EITF 07-5 is effective for financial statements issued for fiscal years beginning after December 15, 2008 and early application is not permitted. We have not yet determined what, if any, effect EITF 07-5 will have on our results of operations or financial condition.

Note 3 - Avecia Acquisition and Goodwill

On April 2, 2008, the Company completed the Avecia Acquisition, acquiring substantially all of the assets and assuming the liabilities exclusively associated with Avecia's biodefense vaccines business in accordance with the terms of the Purchase Agreement, as amended, including certain products, patents, trademarks, domain names and other intellectual property, license agreements, contracts, goodwill and other intangibles. The transaction was valued at approximately $18.6 million, consisting of the initial consideration of $10.0 million in cash, deferred consideration of approximately $7.0 million, secured by a letter of credit, and transaction costs of approximately $1.6 million. The Purchase Agreement also provides for potential milestone considerations totaling $23.0 million and royalties of 1%-2.5% of net sales depending on product sales within the period of ten years from the consummation of the Avecia Acquisition.

The assets acquired were accounted for in accordance with the provisions of Statement of Financial Accounting Standards No. 141, *Business Combinations* ("SFAS No. 141"). All of the tangible and intangible assets acquired and liabilities assumed of Avecia Vaccines were recorded at their estimated fair market values on the acquisition date. The purchase price was allocated as follows:

(in thousands)	
Current assets	$ 5,340
Current liabilities	(5,418)
Goodwill	2,503
In-process research and development	16,131
Total purchase consideration	$ 18,556

In connection with the transaction, the Company recorded a charge of $16.1 million for acquired research projects associated with products in development for which, at the acquisition date, technological feasibility had not been established and, for accounting purposes, no alternative future use existed.

Pro Forma Financial Information

The unaudited financial information in the table below summarizes the combined results of operations of PharmAthene and Avecia Vaccines on a pro forma basis (as if the companies had been combined as of the beginning of each of the periods presented). The pro forma financial information is presented for informational purposes only and is not indicative of the results of operations that would have been achieved if the acquisition and the reverse merger with Healthcare Acquisition Corp. had taken place at the beginning of each of the periods presented. The pro forma financial information for all periods presented includes adjustments to interest expense, interest income and related tax effects.

The unaudited pro forma financial information for the year ended December 31, 2007 combines the historical results for PharmAthene for the year ended December 31, 2007 and the historical results for Avecia for the same period. The audited financial information for the year ended December 31, 2008 reflects the operations of the consolidated company post-acquisition.

	Year ended December 31,	
(in thousands, except per share data)	2008	2007
	(audited)	(unaudited)
Total revenue	$ 32,911	$ 50,170
Net loss attributable to common stockholders	36,415	17,542
Basic and diluted net loss per share	$ 1.59	$ 1.86

Note 4 - Fair Value Measurements

Effective January 1, 2008, the Company adopted Statement of Financials Accounting Standards No. 157, *Fair Value Measurements*, ("SFAS No. 157") which defines fair value as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants at the measurement date. SFAS No. 157 establishes a three-level fair value hierarchy that prioritizes the inputs used to measure fair value. This hierarchy requires entities to maximize the use of observable inputs and minimize the use of unobservable inputs. The three levels of inputs used to measure fair value are as follows:

- Level 1 — Quoted prices in active markets for identical assets or liabilities.
- Level 2 — Observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets; quoted prices for identical or similar

assets and liabilities in markets that are not active; or other inputs that are observable or can be corroborated by observable market data.

- Level 3 — Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. This includes certain pricing models, discounted cash flow methodologies and similar techniques that use significant unobservable inputs.

The Company's adoption of SFAS No. 157 did not have a material impact on its consolidated financial statements. The Company has segregated all financial assets and liabilities that are measured at fair value on a recurring basis (at least annually) into the most appropriate level within the fair value hierarchy based on the inputs used to determine the fair value at the measurement date in the table below. FAS 157-2 delayed the effective date for all nonfinancial assets and liabilities until January 1, 2009, except those that are recognized or disclosed at fair value in the financial statements on a recurring basis.

As of December 31, 2008, financial assets and liabilities subject to fair value measurements were as follows:

	As of December 31, 2008			
	Level 1	Level 2	Level 3	Balance
Assets				
Available-for-sale securities	$ 3,190,912	$ -	$ -	$ 3,190,912
Liabilities				
Derivative	$ -	$ 6,405	$	$ 6,405

Note 5 - Short-Term Investments – Available for Sale

The amortized cost, gross unrealized gains, gross unrealized losses and fair value of available-for-sale investments by security classification, all of which are short term, at December 31, 2008 and 2007 were as follows:

December 31, 2008	Amortized Cost	Gross Unrealized Gain	Gross Unrealized Loss	Estimated Fair Value
Corporate debt securities	$ 3,183,461	$ 7,451	$ -	$ 3,190,912
Government debt securities	-	-	-	-
Total Securities	$ 3,183,461	$ 7,451	$ -	$ 3,190,912
December 31, 2007				
Corporate debt securities	$ 8,084,453	$ 80,450	$ -	$ 8,164,903
Government debt securities	3,970,242	18,800	-	3,989,042
Total Securities	$ 12,054,695	$ 99,250	$ -	$ 12,153,945

During the years ended December 31, 2008 and 2007, respectively, the Company realized loss of approximately $8,700 and $0 on sales of available-for-sale securities. The gains and losses on available-for-sale securities are based on the specific identification method.

Note 6 - Property and Equipment

Property and equipment consisted of the following:

	December 31,	
	2008	2007
Land	$ 449,787	$ 560,081
Building and leasehold improvements	4,841,800	5,670,628
Furniture, farm and office equipment	222,892	219,855
Laboratory equipment	643,332	866,084
Computer equipment	841,185	556,601
	6,998,996	7,873,249
Less accumulated depreciation	(1,685,777)	(1,302,225)
Property and equipment, net	$ 5,313,219	$ 6,571,024

Depreciation expense for the years ended December 31, 2008 and 2007 was $643,890 and $542,076, respectively.

Note 7 - Patents

In conjunction with the Company's purchase of the assets of Nexia Biotechnologies Ltd. in March 2005 (the "Nexia Acquisition"), the Company recorded intangible assets related to patents of $1,407,000 with a useful life of 11 years. The gross carrying value and accumulated amortization, adjusted based on current foreign currency rates, was $1,414,479 and $488,990, respectively, at December 31, 2008. The gross carrying value and accumulated amortization, adjusted based on current foreign currency rates, was $1,761,329 and $448,338, respectively, at December 31, 2007. For the years ended December 31, 2008 and 2007, the Company has recorded amortization expense of $170,001 and $163,294, respectively. Amortization expense related to the above intellectual property is expected to be approximately $128,000 per year for the next five years.

Note 8 - Accrued Expenses and Other Liabilities

Accrued expenses and other liabilities consisted of the following:

	December 31,	
	2008	2007
Accrued development expenses	$ 4,140,072	$ 1,486,918
Accrued professional services	1,149,622	552,098
Accrued employee expenses	936,282	856,659
Deferred consideration - Avecia Acquisition	7,000,000	-
Restructuring liability	-	498,596
Other	1,398,781	208,615
Accrued expenses and other liabilities	$ 14,624,757	$ 3,602,886

Note 9 - Long Term Debt

Convertible 8% Notes

In connection with the Merger, the Company issued convertible 8% notes (the "Notes") in the aggregate principal amount of $12.3 million to Former PharmAthene's noteholders replacing the existing $12.8 million (principal and accrued interest of 8%) Bridge Notes. The original Bridge Notes were entered into in June and August 2006 with certain investors in Former PharmAthene's Series B Redeemable Convertible Preferred Stock and Series C Redeemable Convertible Preferred Stock. The transaction was treated as a debt extinguishment under Emerging Issues Task Force No. 96-19 ("EITF 96-19"). Debtor's Accounting for a Modification or Exchange of Debt Instruments. Under EITF 96-19, the new debt was recorded at fair value with the difference between the new and the old debt recorded as an extinguishment in the income statement. This resulted in a gain of approximately $0.9 million for the year ended December 31, 2007. In accordance with EITF 00-19, Accounting for Derivative Financial Instruments Indexed to, and Potentially Settled in, a Company's Own Stock, the Company analyzed the conversion feature and determined that it was an embedded derivative that required bifurcation due to the potential for adjustment to the conversion price and considering the contract does not have a fixed or determinable maximum number of shares that may be required to be issued there is the potential that an infinite number of share could be required to settle the contract. The Company is marking to market the derivative and recorded the changes in other income and expense. For the years ended December 31, 2008 and 2007, the Company recorded $0.1 million and $0.6 million, respectively, as a mark-to-market gain relating to the convertible debt.

The Notes accrue interest at an interest rate of 8% per annum, except in the event of a default in which instance the interest rate will increase to 12%. The principal amount of the Notes and any accrued interest are convertible into shares of PharmAthene common stock at the option of the holder at any time based upon a conversion rate of $10.00 per share. The Notes have a maturity date of August 3, 2009. The Company recognized interest expense of approximately $1.7 million and $632,900 on the Notes for the years ended December 31, 2008 and 2007, respectively. The Company recognized interest expense of approximately $557,900 for the year ended December 31, 2007 related to Former PharmAthene's Bridge Notes.

In connection with the Merger, the Company agreed to pay off two of the holders of the Bridge Notes rather than issue new Notes to them. The Company paid $242,694, in the aggregate, to such holders in fulfillment of this obligation in October 2007.

$10 Million Debt Financing

On March 30, 2007, the Company entered into a $10 million credit facility with Silicon Valley Bank and Oxford Finance Corporation (together, the "Lenders"). Under the credit facility the Company borrowed $10 million, which bears interest at the rate of 11.5%. Pursuant to the terms of the loan and security agreement evidencing the credit facility, the Company made monthly payments of interest only through September 30, 2007 and, thereafter, makes monthly payments of principal and interest over the remaining 30 months of the loan. The loan is secured by a security interest on all of the Company's assets other than certain intellectual property. The Company may prepay the debt provided it pays certain prepayment fees. In connection with the credit facility, the Company issued to Silicon Valley Bank and Oxford Financial Corporation warrants, which expire on March 30, 2017 to purchase an aggregate of 100,778 shares of common stock with an exercise price of $3.97 per share.

The loan agreement ("Loan Agreement") contains customary affirmative and negative covenants which, among other things, restricts the Company's ability to undertake certain acquisitions, incur certain indebtedness or make certain investments. Due to the then-anticipated merger with Avecia Biologics Limited, PharmAthene sought to obtain the consent of the Lenders to the Avecia Acquisition and entered into a Consent and First Loan Modification Agreement, dated as of March 20, 2008, with the Lenders (the "Loan Modification Agreement") pursuant to which, among other things, the Lenders consented to the Avecia Acquisition provided that (i) PharmAthene (or its UK subsidiary involved in the acquisition) is the surviving entity in the acquisition, (ii) the total initial cash consideration upon the consummation of the acquisition does not exceed $11 million, (iii) the consummation of the acquisition will not otherwise result in an event of default as defined under the Loan Agreement, after giving effect to the acquisition and (iv) within 20 days following the consummation of the acquisition, PharmAthene causes its UK subsidiary to become a co-borrower or a secured guarantor under the Loan Agreement.

The Loan Modification Agreement also amends the Loan Agreement to provide (i) that PharmAthene shall maintain, at all times, at a segregated account, at either Silicon Valley Bank or Silicon Valley Bank Securities, unrestricted and unencumbered cash or cash equivalents in the amount of at least one and one-quarter times the outstanding obligations of PharmAthene to the Lenders, (ii) that if PharmAthene or any of its affiliates creates or acquires any subsidiary, PharmAthene shall notify the Lenders and take all such action as to cause each domestic subsidiary to guarantee the obligations of PharmAthene under the Loan Agreement granting a continuing pledge and security interest in and to the assets of such subsidiary, (iii) that PharmAthene shall deliver to the Lenders a control agreement with M&T Bank granting the lenders a first perfected security interest in the accounts of PharmAthene held at M&T Bank and (iv) amending the definition of "material adverse change" under the Loan Agreement to provide that a material adverse change shall be a determination of the Lenders based upon information available to them and in their reasonable judgment that there is a reasonable likelihood that PharmAthene shall fail to comply with one or more of the financial covenants contained in the Loan Agreement. As discussed in Note 2, the Company has recorded $5.0 million and $1.3 million in short-term and long-term restricted cash, respectively, in connection with provision (i) above.

The Company has recognized interest expense of approximately $867,600 and $923,400, respectively, for the years ended December 31, 2008 and 2007.

Note 10 - Commitments and Contingencies

Leases

The Company leases offices in the United States under a 10 year office lease, which commenced on May 1, 2007. Additionally, with the Avecia Acquisition, the Company leases offices in the United Kingdom under a lease expiring in 2010. Remaining annual minimum payments are as follows:

2009	$ 606,800
2010	583,300
2011	404,300
2012	416,400
2013	428,900
2014 and thereafter	1,567,300
	$ 4,007,000

For the years ended December 31, 2008 and 2007, total rent expense under operating lease agreements approximated $753,800 and $589,900, respectively.

During September 2008, the Company entered into an agreement to lease additional office space at its headquarters in Annapolis, MD commencing in the first half of 2009.

License Agreements

In January 2006, the Company licensed certain patent rights from a research company. The license agreement required a $50,000 up-front payment. Additionally, the agreement provides for a sublicense fee of 20% and milestone payments of $25,000 upon the granting of a U.S. patent, $200,000 upon the initiation of certain studies or trials, and $250,000 upon BLA approval. Upon commercialization, the license agreement requires royalty payments equal to a specified percentage of future sales of products for both government procurement and commercial market sales subject to the license through the expiration of the licensed patents. No sublicense fee or milestone payments have been incurred for the years ended December 31, 2008 and 2007, respectively.

In August 2006, the Company entered into a research and licensing agreement allowing for the licensing of certain patent rights from a research company. The agreement includes research expense reimbursement payments and certain development milestone payments. Upon commercialization, the license agreement requires royalty payments equal to a specified percentage of future sales of products for both government procurement and commercial market sales subject to the license through the expiration of the licensed patents. No research expense reimbursement payments or milestone payments have been incurred for the years ended December 31, 2008 and 2007, respectively.

In connection with the Nexia Acquisition, the Company acquired a license agreement originally executed in September 2004 for the rights to certain technologies. This agreement included an option to license product processing technology necessary to perform development of Protexia® as required under the Company's government contract with the Department of Defense. The Company executed a new licensing agreement with a development company on March 12, 2007 which results in a license to all technology provided under the original agreement including the necessary purification technology previously included in an option and access to additional information and technology deemed to be essential for development of Protexia® and performance under the Department of Defense contract. Under the new agreement, the Company must pay initial license fees totaling $700,000 and royalty payments based on net sales, with $100,000 due in the first year. These expenses are eligible for reimbursement by the U.S. government under the contract with the Department of Defense. During 2007, the Company expensed $100,000 related to this agreement. During the third quarter of 2008, the Company expensed an additional $200,000 related to this agreement.

In connection with the Avecia Acquisition, the Company acquired license agreements with The Defence Science and Technology Laboratory of the United Kingdom Ministry of Defence ("DSTL") originally executed May and December 2006, and recently amended in February 2009, for the rights to certain technologies. These agreements allow for the licensing of certain patents and technology necessary to perform development of the rPA and plague vaccine programs as required under the Company's government contracts with the NIAID. Upon commercialization, the license agreements require that PharmAthene make royalty payments equal to a specified percentage of future sales of products for both government procurement and commercial markets. No royalty payments on these licenses have been incurred.

Note 11 - Related Party Transactions

Through July 2007, the Company leased its office space from an entity that was affiliated with the organization to which Former PharmAthene had issued warrants for 263,296 shares of common stock in August 2003. The Company paid $93,386 in rent expense related to this operating lease for the year

ended December 31, 2007. The Company relocated to its new office space and the lease with the affiliate entity was terminated. Additionally, in conjunction with the Merger as further discussed is Note 1, these warrants were assumed and converted into 14,180 common stock warrants with an exercise price of $0.19 per share.

Several directors and officers of the Company invested in Former PharmAthene's Bridge Notes in the second and third quarters of 2006. Additionally, an investor in the Company's new office space also invested in Former PharmAthene's Bridge Notes in the second and third quarters of 2006. In connection with the Merger, these Bridge Notes were converted into approximately $248,000 of Notes.

For the year ended December 31, 2007 in connection with the Merger, the Company paid approximately $1.3 million to an investment bank affiliated with one of its directors.

Note 12 - Medarex Collaboration

In November 2004, the Company and Medarex, Inc. ("Medarex") entered into a collaboration agreement under which the companies are working to develop and commercialize MDX-1303 (known as Valortim®), a fully human monoclonal antibody targeting the *Bacillus anthracis* protective antigen. MDX-1303 was developed by Medarex using its UltiMAb Human Antibody Development System®, and this antibody is currently in clinical development by PharmAthene for use against human anthrax infection.

Under the terms of the agreement, Medarex and PharmAthene have agreed jointly to continue to investigate the potential for Valortim® to be used as a therapeutic for individuals with active disease as well as for prophylactic treatment of individuals exposed to anthrax. For the years ended December 31, 2008 and 2007, PharmAthene recorded research and development expenses of approximately $353,700 and $685,700 related to the development activities for Valortim®. PharmAthene is fully responsible for funding all future research and development activities that are not supported by government funds. The companies will share future profits, if any, according to a pre-agreed allocation percentage.

Note 13 - Stockholders' Equity

Common Stock

On October 10, 2008 Kelisia Holdings Ltd., an indirect wholly-owned subsidiary of Panacea Biotec Limited, acquired 3,733,334 shares of PharmAthene common stock at a negotiated price of $3.50 per share and a 12-month warrant to purchase up to 2,745,098 additional shares of PharmAthene common stock at an exercise price of $5.10 per share. The Company received net proceeds from this transaction of approximately $12.7 million.

Upon the closing of the transaction, Panacea Biotec, through its subsidiary Kelisia, owns approximately 14.5% of PharmAthene's issued and outstanding common stock. While the warrant gives Kelisia the right to purchase up to an additional 2,745,098 shares, this right is subject to a stock ownership cap, following any warrant exercise, of 19.99% of PharmAthene's issued and outstanding common stock as of such exercise date.

2002 Long-Term Incentive Plan

In connection with the Merger, the Company assumed awards that were granted by Former PharmAthene under Former PharmAthene's 2002 Long-Term Incentive Plan (the "2002 Plan") which provided for the grant of incentive stock options, restricted common stock and stock appreciation rights. Under the 2002

Plan, option awards were granted to eligible employees, consultants, officers and directors. The fair value of each option grant was estimated on the date of grant using the Black-Scholes option-pricing model based on selected inputs. The board of directors of Former PharmAthene established the vesting schedule for the awards. Grants made to new employees upon commencement of employment, typically provided for annual vesting of 25% of shares each year on the anniversary date of hire. For annual grants to existing employees, grants typically provided for monthly vesting over four years. These options had a maximum term of no more than 10 years. As of December 31, 2008, an aggregate of 399,682 shares of common stock are reserved for issuance upon the exercise of outstanding assumed awards. The 2002 Plan was not assumed by the Company following the Merger; therefore, no further grants may be made under the 2002 Plan.

The following tables summarize the activity of the 2002 Plan:

	Shares		Weighted-Average Exercise Price	Weighted-Average Remaining Term
Outstanding, January 1, 2007	404,314	$	3.64	
Granted	121,950	$	3.90	
Exercised	(67)	$	3.90	
Forfeited	(84,340)	$	4.10	
Outstanding, December 31, 2007	441,857	$	3.67	7.7 years
Exercisable, December 31, 2007	255,444	$	3.54	7.3 years
Outstanding, January 1, 2008	441,857	$	3.67	
Granted	-			
Exercised	-			
Forfeited	(42,175)	$	3.85	
Outstanding, December 31, 2008	399,682	$	3.57	6.4 years
Exercisable, December 31, 2008	312,324	$	3.50	6.1 years
Vested and expected to vest, December 31, 2008	333,574			

Range of Exercise Price	Number Outstanding at 12/31/08	Weighted-Average Remaining Term	Weighted Average Exercise Price	Number Exercisable at 12/31/08	Weighted Average Exercise Price
$0.00-$3.00	110,301	4.7 years	$2.96	110,301	$2.96
$3.01-$5.36	289,381	7.1 years	$3.80	202,023	$3.80
Total	399,682	6.4 years	$3.57	312,324	$3.50

The aggregate intrinsic value is calculated as the difference between (i) the closing price of the common stock at December 31, 2008 which was $2.30 and (ii) the exercise price of the underlying awards, multiplied by the number of options that had an exercise price less than the closing price on the last trading day of 2008. The aggregate intrinsic value of options outstanding was zero as of December 31, 2008.

2007 Long-Term Incentive Plan

On August 3, 2007, our stockholders approved the 2007 Long Term Incentive Plan (the "2007 Plan") which provides for the granting of incentive and non-qualified stock options, stock appreciation rights, performance units, restricted common awards and performance bonuses (collectively "awards") to our officers and employees. Additionally, the 2007 Plan authorizes the granting of non-qualified stock options and restricted stock awards to our directors and to any independent consultants. At that time, the Company reserved 3,500,000 shares of common stock for distribution of awards under the 2007 Plan. At the 2008 annual meeting held on June 13, 2008, the Company's shareholders approved proposed amendments to the 2007 Plan, increasing from 3,500,000 shares to 4,600,000 shares the maximum number of shares subject to the plan and adding an evergreen provision pursuant to which the number of shares subject to the plan will increase automatically in each year, beginning in 2009 and continuing through 2015, according to certain limits set forth in the 2007 Plan. The Board of Directors in conjunction with management determines who receives awards, the vesting conditions of which are generally four years, and the exercise price. Options may have a maximum term of no more than ten years.

As of December 31, 2008, the Company had remaining 791,257 shares available to be granted under the 2007 Plan. The following tables summarize the activity of the 2007 Plan:

	Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Term
Options			
Outstanding, January 1, 2007	-	$ -	
Granted	2,356,867	$ 5.25	
Exercised	-	$ -	
Forfeited	(54,717)	$ 5.20	
Outstanding, December 31, 2007	2,302,150	$ 5.25	9.5 years
Exercisable, December 31, 2007	348,680	$ 5.21	9.5 years
Outstanding January 1, 2008	2,302,150	$ 5.25	
Granted	1,353,250	$ 2.71	
Exercised	-	$ -	
Forfeited	(92,459)	$ 4.80	
Outstanding, December 31, 2008	3,562,941	$ 4.30	9.0 years
Exercisable, December 31, 2008	949,466	$ 5.23	8.8 years
Vested and expected to vest, December 31, 2008	2,973,631		

Range of Exercise Price	Number Outstanding at 12/31/08	Weighted-Average Remaining Term	Weighted Average Exercise Price	Number Exercisable at 12/31/08	Weighted Average Exercise Price
$0.00-$5.00	1,358,500	9.4 years	$2.75	11,875	$3.78
$5.01-$5.36	2,204,441	8.7 years	$5.26	937,591	$5.25
Total	3,562,941	9.0 years	$4.30	949,466	$5.23

The aggregate intrinsic value is calculated as the difference between (i) the closing price of the common stock at December 31, 2008, which was $2.30 per share and (ii) the exercise price of the underlying awards, multiplied by the number of options that had an exercise price less than the closing price on the last trading day of 2008. The aggregate intrinsic value of options outstanding was approximately $15,100 as of December 31, 2008.

The following tables summarize the activity of the 2007 plan for restricted shares:

	Shares	Weighted-Average Grant Price	Weighted-Average Contractual Term
Restricted Shares			
Outstanding, January 1, 2007	-	$ -	
Granted	216,836	$ 5.27	
Vested	-	$ -	
Forfeited	(1,529)	$ 5.20	
Outstanding, December 31, 2007	215,307	$ 5.27	9.9 years
Outstanding, January 1, 2008	215,307	$ 5.27	
Granted	17,500	$ 3.18	
Vested	(69,686)	$ 5.27	
Forfeited	-	$ -	
Outstanding, December 31, 2008	163,121	$ 5.05	8.7 years
Vested and expected to vest, December 31, 2008	151,702	$ 5.05	8.7 years

Range of Exercise Price	Number Outstanding at 12/31/08	Average Remaining Contractual Life in Years	Weighted Average Exercise Price
$0.00-$5.00	17,500	9.2	$3.18
$5.01-$5.36	145,621	8.7	$5.28
Total	163,121	8.7	$5.05

Valuation assumptions used to determine fair value of share-based compensation

The fair value for the 2008 and 2007 awards were estimated at the date of grant using the Black-Scholes option-pricing model using the following assumptions:

	December 31,	
	2008	2007
Weighted average volatility	66%	66-72%
Risk-free interest rate	2.2-3.9%	3.7-4.9%
Expected annual dividend yield	-	-
Expected weighted average life, in years	7.0	7.0

The valuation assumptions were determined as follows:

- Weighted average volatility: We determine the expected volatility by using an average historical volatility from comparable public companies with an expected term consistent with ours.

- Risk-free interest rate: The yield on zero-coupon U.S. Treasury securities for a period that is commensurate with the expected term of the award.

- Expected annual dividend yield: The estimate for annual dividends is zero because we have not historically paid a dividend and do not intend to do so in the foreseeable future.

- Expected life: The expected term of the awards represents the period of time that the awards are expected to be outstanding. We use historical data and expectations for the future to estimate employee exercise and post-vest termination behavior and therefore do not stratify employees into multiple groups.

Determination of Fair Value

Prior to the closing of the Merger, PharmAthene's common stock had never been publicly traded. From inception through the closing of the Merger, the fair value of its common stock was determined by Former PharmAthene's board of directors with input from management. Upon the closing of the Merger on August 3, 2007, PharmAthene's stock price was used as the basis for determining fair value.

Unit Purchase Option

In connection with the initial public offering, the underwriters paid $100 for an option to purchase up to a total of 225,000 units. The units issuable upon exercise of this option are identical to those offered in the initial public offering (i.e., each unit consists of one share of common stock and one warrant) except that the associated warrants have a different exercise price as further discussed in the warrant section below. This option became exercisable at $10.00 per unit on August 3, 2007, and expires on July 28, 2010. The exercise price and number of units issuable upon the exercise of the option may be adjusted in certain circumstances, including in the event of a stock dividend, or recapitalization, reorganization, merger or consolidation.

Under an amendment to the unit purchase option agreement, the Company is not obligated to pay cash or other consideration to the holders of the unit purchase option or "net-cash settle" the obligation of HAQ under the unit purchase option.

Warrants

In connection with HAQ's initial public offering in 2005, HAQ sold 9.4 million warrants to acquire shares of common stock at an exercise price of $6.00. Each warrant entitles the holder to purchase from the Company one share of common stock and expires four years from the effective date of the offering (i.e., on July 28, 2009). Furthermore, in connection with the initial public offering, HAQ issued to the representative of the underwriters an option to purchase up to a total of 225,000 units (as discussed above). Underlying the units are 225,000 shares of common stock and 225,000 warrants to acquire shares of common stock at an exercise price of $7.50 per share.

Pursuant to the credit facility further discussed in Note 9, the Company issued 100,778 common stock warrants with an exercise price of $3.97 per share. Additionally, in conjunction with the Merger and as

discussed in Note 11, the Company issued 14,180 common stock warrants with an exercise price of $0.19 per share.

In connection with the stock purchase by Kelisia Holdings Ltd. in 2008 disclosed above, the Company issued a warrant to purchase up to 2,745,098 additional shares of PharmAthene common stock at an exercise price of $5.10 per share.

	Warrants for Shares of Common Stock	Weighted-Average Exercise Price	Warrants for Shares of Preferred Stock	Weighted-Average Exercise Price
Outstanding at December 31, 2006	10,223,911	5.69	1,179,610	4.07
Granted	-	-	98,300	4.07
Converted	100,778	3.97	(98,300)	4.07
Forfeited	(584,731)	0.19	(1,179,610)	4.07
Outstanding at December 31, 2007	9,739,958	$ 6.01	-	-
Granted	2,745,098	5.10	-	-
Forfeited	-	-	-	-
Outstanding at December 31, 2008	12,458,056	$ 5.81	-	-

Note 14 - Income Taxes

For the years ended December 31, 2008 and 2007, there is no current provision for income taxes, and the deferred tax provision has been entirely offset by a valuation allowance. Actual income tax benefit differs from the expected income tax benefit computed at the federal statutory rate as follows:

	December 31, 2008	December 31, 2007
Statutory federal tax benefit	$ (12,375,599)	$ (4,620,323)
State income tax, net of federal benefit	(812,065)	(689,367)
Other permanent differences	(349,219)	602,249
Book gain on warrants	-	(823,936)
Canada deferred rate change	-	682,832
Foreign Rate Differential	1,616,669	-
Jurisdictional difference in book income	4,105,939	-
Increase in valuation allowance	7,814,275	4,848,345
Income tax expense	$ -	$ -

The Company's net deferred tax assets consisted of the following:

	December 31, 2008	December 31, 2007
Deferred tax assets:		
Net operating loss carryforwards	$ 26,045,695	$ 20,819,453
Fixed Assets/Intangibles	7,131,555	3,716,752
Research and development credits/Loss carryforwards	1,022,090	1,384,691
Accrued expenses and other	1,858,109	413,381
Total deferred tax assets	36,057,449	26,522,964

	December 31,	
	2008	2007
Deferred tax liabilities:		
Bridge Note Revaluation	(166,766)	(411,243)
Total deferred tax liabilities	(166,766)	(411,243)
Net deferred tax assets	35,890,683	25,923,033
Less: valuation allowance	(35,890,683)	(25,923,033)
Net deferred tax assets	$ -	$ -

The deferred tax amounts discussed above are classified as follows:

	December 31,	
	2008	2007
Current deferred tax assets	$ 163,157	$ 378,620
Non-current deferred tax assets	35,727,526	25,544,413
Less: valuation allowance	(35,890,683)	(25,923,033)
Net deferred tax assets	$ -	$ -

In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some or all of the deferred tax asset will not be realized. The ultimate realization of the deferred tax asset is dependent upon the generation of future taxable income during the periods in which the net operating loss carryforwards are available. Management considers projected future taxable income, the scheduled reversal of deferred tax liabilities and available tax planning strategies that can be implemented by the Company in making this assessment on a jurisdiction-by-jurisdiction basis. Based upon the level of historical taxable income and projections for future taxable income over the periods in which the net operating loss carryforwards are available to reduce income taxes payable, management has established a full valuation allowance against the net deferred tax asset in 2008 consistent with 2007.

The U.S. federal net operating loss carryforwards of approximately $53 million will begin to expire in various years beginning 2021. The use of the Company's net operating loss carryforwards may be restricted if the Company experienced a change in ownership in accordance with I.R.C. Section 382. The Canadian federal net operating loss carryforwards of approximately $10.9 million will begin to expire in 2014. Certain Canadian federal net operating losses may have an unlimited life. The UK net operating loss carryforwards of approximately $1.2 million have an unlimited life. Additionally, despite the net operating loss carryforwards, the Company may have a future tax liability due to alternative minimum tax or state minimum tax requirements.

The Company adopted the provisions of Financials Accounting Standards Board ("FASB") Interpretation No. 48, *Accounting for Uncertainty in Income Taxes- and Interpretation of FASB Statement No. 109* ("FIN 48") on January 1, 2007. The Company has analyzed tax positions in all jurisdictions where we are required to file an income tax return and we have concluded that we do not have any material unrecognized tax benefits. As a result, there were no material effects on our financial position or results of operations due to the implementation of FIN 48. As such, the Company believes that any of its uncertain tax positions would not result in adjustments to its effective income tax rate.

The Company policy is to recognize interest and penalties accrued on any unrecognized tax benefits as a component of tax expense. As of the date of adoption of FIN 48, we did not have interest or penalties accrued for any unrecognized tax benefits and there was no interest expense recognized during the current year.

The following tax years remain subject to examination

Major Jurisdictions	Open Years
U.S. Federal	2005 - 2008
U.S. States	2004 - 2008
Canada	2005 - 2008
United Kingdom	2008

For income tax returns filed by the Company, the Company is no longer subject to U.S. federal, state and local tax examinations by tax authorities for years prior to 2004, although carryforward tax attributes that were generated prior to 2004 may still be adjusted upon examination by tax authorities if they either have been or will be utilized.

The Company intends to indefinitely reinvest the undistributed earnings from its foreign subsidiaries.

Note 15 - Terminated Merger Agreement

On December 20, 2006, the Company filed a complaint against Siga Technologies, Inc. ("SIGA") in the Delaware Chancery Court. The complaint alleges, among other things, that the Company has the right to license exclusively development and marketing rights for SIGA's drug candidate, SIGA-246, pursuant to a merger agreement between the parties that was terminated in October 2006. The complaint also alleges that SIGA failed to negotiate in good faith the terms of such a license pursuant to the terminated merger agreement. The Company is seeking alternatively a judgment requiring SIGA to enter into an exclusive license agreement with the Company for SIGA-246 in accordance with the terms of the term sheet attached to the merger agreement or monetary damages. On January 16, 2008, the Delaware Chancery Court issued a ruling denying a motion by SIGA to dismiss the compliant. The parties are now engaged in discovery.

Note 16 - Subsequent Events

In March 2009 BARDA issued a Broad Agency Announcement (BAA) for the Advanced Research and Development of Chemical, Biological, Radiological, and Nuclear Medical Countermeasures, which included an advanced development solicitation for proposals covering anthrax anti-toxins. The BAA states that research and technical objectives proposed by offerors may include non-clinical research and development, process development, formulation, manufacturing development, and clinical evaluation efforts. In response we submitted an initial proposal providing for further development of Valortim® and are awaiting a response.

Effective March 2009, the lenders under the Company's credit facility agreed to reduce the amount of unrestricted and unencumbered cash or cash equivalents we are required to maintain in the segregated account to one-half times (0.5x) our outstanding obligations to them.

On March 27, 2009, the Company closed on the public sale of an aggregate of 2,116,055 newly issued shares of its common stock at $2.60 per share and warrants to purchase an aggregate of 705,354 shares of its common stock at an exercise price of $3.00 per share, resulting in aggregate net proceeds of

$5,501,743. The warrants will be exercisable beginning on September 27, 2009 and will expire on September 27, 2014, five years from the date they become exercisable. The Company intends to use the net proceeds for general corporate purposes, including the satisfaction of existing obligations.

(d) Exhibit Index

Exhibit No.	Description
2.1	Agreement and Plan of Merger, dated January 19, 2007, by and among Healthcare Acquisition Corp., PAI Acquisition Corp., and PharmAthene, Inc. (6)
2.2	Sale and Purchase Agreement, dated March 20, 2008, by and among the Registrant and Avecia Investments Limited, Avecia Biologics Limited and Avecia Biologics, Inc. (10)
2.3	Amendment Agreement, dated April 2, 2008, by and among, PharmAthene, Inc., PharmAthene UK Limited and PharmAthene US Corporation and Avecia Investments Limited, Avecia Biologics Limited and Avecia Biologics, Inc. (12)
3.1.1	Amended and Restated Certificate of Incorporation. (8)
3.1.2	Certification of Amendment to Amended and Restated Certificate of Incorporation. (14)
3.2	By-laws, as amended. (13)
4.1	Specimen Unit Certificate. (1)
4.2	Specimen Common Stock Certificate. (9)
4.3	Specimen Warrant Certificate. (1)
4.4	Form of Warrant Agreement between Continental Stock Transfer & Trust Company and the Registrant. (3)
4.5	Form of Note Exchange Agreement. (6)
4.6	Form of 8% Convertible Note of Healthcare Acquisition Corp. (6)
4.7	Amendment to Unit Purchase Option by and between the Registrant and Maxim Partners, LLC dated January 28, 2007. (7)
4.8	Warrant Clarification Agreement by and between the Registrant and Continental Stock Transfer & Trust Company, dated January 23, 2007. (7)
10.1.1	Letter Agreement among the Registrant, Maxim Group LLC and John Pappajohn dated May 6, 2005. (2)
10.1.2	Letter Agreement among the Registrant, Maxim Group LLC and Derace L. Schaffer, M.D. dated May 6, 2005. (2)

Exhibit No.	Description
10.1.3	Letter Agreement among the Registrant, Maxim Group LLC and Matthew P. Kinley dated May 6, 2005. (2)
10.1.4	Restated Letter Agreement among the Registrant, Maxim Group LLC and Edward B. Berger dated June 8, 2005. (3)
10.1.5	Letter Agreement among the Registrant, Maxim Group LLC and Wayne A. Schellhammer dated June 8, 2005. (3)
10.2	Form of Investment Management Trust Agreement between Continental Stock Transfer & Trust Company and the Registrant. (3)
10.2.1	Amendment No. 1 to of Investment Management Trust Agreement between Continental Stock Transfer & Trust Company and the Registrant. (5)
10.3	Form of Stock Escrow Agreement between the Registrant, Continental Stock Transfer & Trust Company and the Initial Stockholders. (3)
10.4	Form of Registration Rights Agreement among the Registrant and the Initial Stockholders. (1)
10.5.1	Office Services Agreement by and between the Registrant and Equity Dynamics, Inc. (1)
10.5.2	Office Services Agreement by and between the Registrant and The Lan Group. (1)
10.6.1	Promissory Note, dated April 28, 2005, issued to John Pappajohn, in the amount of $70,000. (1)
10.6.2	Promissory Note, dated April 28, 2005, issued to Derace L. Schaffer, M.D., in the amount of $70,000. (1)
10.6.3	Promissory Note, dated April 28, 2005, issued to Matthew P. Kinley, in the amount of $35,000. (1)
10.6.4	Promissory Note, dated July 26, 2005, issued to John Pappajohn, in the amount of $30,000. (4)
10.6.5	Promissory Note, dated July 26, 2005, issued to Derace L. Schaffer, M.D., in the amount of $30,000. (4)
10.6.6	Promissory Note, dated July 26, 2005, issued to Matthew P. Kinley, in the amount of $15,000. (4)
10.7	Form of Unit Option Purchase Agreement between the Registrant and Maxim Group LLC. (3)

Exhibit No.	Description
10.8	Form of Warrant Purchase Agreement by and between the Registrant, Maxim Group LLC and the Initial Stockholders. (2)
10.9	Form of Registration Rights Agreement by and among Healthcare Acquisition Corp. and the former stockholders and note holders of PharmAthene, Inc. (6)
10.10	Stock Escrow Agreement, dated August 3, 2007, by and among the Registrant, a representative of the former stockholders and option holders of the Registrant and Continental Stock Transfer and Trust Company. (11)
10.11	Advisory Agreement by and among Maxim Group LLC and the Registrant, dated January 8, 2007. (7)
10.12	Amended and Restated 2007 Long-Term Incentive Compensation Plan. (15)
10.13	Employment Agreement, dated August 3, 2007, between the Registrant and David P. Wright. (8)
10.14	Employment Agreement, dated December 22, 2006, between the Registrant and Christopher C. Camut. (9)
10.15	Employment Agreement, dated November 3, 2003, between the Registrant and Francesca Marie Cook. (9)
10.16	Employment Agreement, dated November 3, 2003, between the Registrant and Eric Ian Richman. (9)
10.17	Employment Agreement, dated November 3, 2003, between the Registrant and Valerie Dean Riddle. (9)
10.18	Employment Agreement, dated January 31, 2005, between the Registrant and Wayne Morges. (9)
10.19.1	Loan and Security Agreement, dated March 30, 2007, by and among the Registrant, Silicon Valley Bank, Oxford Finance Corporation, and other lenders listed on Schedule 1.1 thereof. (9)
10.19.2	Consent and First Loan Modification Agreement, dated March 20, 2008, by and among the Registrant, Silicon Valley Bank and Oxford Finance Corporation (10).
10.20	U.S. Army Space & Missile Defense Command—"Development and Licensure of Bioscavanger Increment II (Recombinant Drug Candidate)" Award/Contract No. W9113M-06-C-0189, dated September 22, 2006, by and between the Company and the U.S. Army Space & Missile Defense Command. (9)+
10.21	Cooperative Research and Development Agreement, dated September 12, 2006, by and between the Company and the U.S. Army Medical Research Institute of Infectious Diseases. (9)+

Exhibit No.	Description
10.22	Center for Scientific Review, National Institute of Health, Research Project Cooperative Agreement, Notice of Grant Award No. 1 U01 NS058207-01, dated September 30, 2006, awarded to the Company. (9)+
10.23	Collaboration Agreement, dated November 29, 2004, by and between the Company and Medarex, Inc. (9)+
10.24	Research and License Agreement, dated August 8, 2006, by and between the Company and Nektar Therapeutics AL, Corporation. (9)+
10.25	License Agreement, dated March 12, 2007, by and between the Company and GTC Biotherapeutics, Inc. (9)+
10.26.1	Office Lease, dated September 14, 2006, by and between the Company and Park Place Trust, as amended by First Amendment to Office Lease, dated January 22, 2007. (9)
10.26.2	Second Amendment to Office Lease, by and between the Company and Park Place Trust, dated September 16, 2008. (19)
10.27	Biopharmaceutical Development and Manufacturing Services Agreement, dated June 15, 2007, by and between the Company and Laureate Pharma, Inc. (9)+
10.28	Services Agreement, dated March 2, 2007, by and between the Company and GTC Biotherapeutics, Inc. (9)+
10.29	Transitional Services Agreement, dated April 2, 2008, between Avecia Biologics Limited and PharmAthene UK. (16)
10.30	Form of PharmAthene Inc. Executive Employment Agreement. (17)
10.31	Form of PharmAthene Inc. Confidentiality and Non-Solicitation Agreement. (17)
10.32	Master Services Agreement, dated April 2, 2008, between PharmAthene UK Limited and Avecia Biologics Limited. (17) +
10.33	Master Service Agreement, dated December 15, 2004, between Avecia Limited and the Secretary of State for Defence, acting through the Defence Science and Technology Laboratory (DSTL). (18)+
10.34	Master Service Agreement, dated August 18, 2005, between Avecia Limited and DSTL. (18) +
10.35	Manufacturing Licence Agreement, dated June 20, 2006, between Avecia Limited and DSTL. (18) +
10.36	Manufacturing and Marketing Licence Agreement, dated December 4, 2006, between Avecia Limited and DSTL. (18) +

Exhibit No.	Description
10.37	Letter Agreement, dated March 20, 2008, between Avecia Biologics Limited and DSTL. (18)+
10.38	Contract Award by the National Institute of Allergy and Infectious Diseases (NIAID), dated September 25, 2008. (19)+
10.39	Securities Purchase Agreement, dated September 30, 2008, between PharmAthene, Inc. and Kelisia Holdings Ltd. (19)
10.40	Letter Agreement, dated September 30, 2008, between PharmAthene, Inc. and Panacea Biotec, Ltd. (19)
10.41	Investor Rights Agreement, dated October 10, 2008, between PharmAthene Inc. and Kelisia Holdings Ltd. (19)
10.42	Common Stock Purchase Warrant, dated October 10, 2008 in favor of Kelisia Holdings Ltd. (19)
10.43	Deed of Confidentiality between PharmAthene UK Limited, and its employees. (19)
10.44	Contract with the National Institutes of Health for the Production and Testing of Anthrax Recombinant Protective Antigen (rPA) Vaccine (#N01-AI-30052) ("NIH Prime Contract-Anthrax"), dated September 29, 2003 *, +
10.45	Amendments 1 through 13 to the NIH Prime Contract-Anthrax *, **, +
10.46	Contract with the National Institutes of Health for the Development, Testing and Evaluation of Candidate Vaccines Against Plague (#HSSN266200400034C) ("NIH Prime Contract-Plague"), dated September 30, 2004 *, +
10.47	Amendments 1 through 10 to the NIH Prime Contract-Plague *, **, +
14	Code of Ethics. (3)
21	Subsidiaries. *
23	Consent of Ernst & Young LLP Independent Registered Public Accounting Firm*
31.1	Certification of Chief Executive Officer and Principal Financial Officer Pursuant to SEC Rule 13a-14(a)/15d-14(a).*
31.2	Certification of Chief Executive Officer and Principal Financial Officer Pursuant to SEC Rule 13a-14(a)/15d-14(a).*
32.1	Certification of Chief Executive Officer and Principal Financial Officer Pursuant to 18 U.S.C. Section 1350.*

Exhibit No.	Description
32.2	Certification of Chief Executive Officer and Principal Financial Officer Pursuant to 18 U.S.C. Section 1350.*

1. Incorporated by reference to the Registration Statement on Form S-1 of the Registrant filed on May 6, 2005.

2. Incorporated by reference to the Registration Statement on Form S-1/A of the Registrant filed on June 10, 2005.

3. Incorporated by reference to the Registration Statement on Form S-1/A of the Registrant filed on July 12, 2005.

4. Incorporated by reference to the Registration Statement on Form S-1/A of the Registrant filed on July 27, 2005.

5. Incorporated by reference to the Quarterly Report on Form 10-Q filed by the Registrant on November 14, 2005.

6. Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on January 22, 2007.

7. Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on January 25, 2007.

8. Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on August 9, 2007.

9. Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on September 24, 2007.

10. Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on March 26, 2008.

11. Incorporated by reference to the Annual Report on Form 10-K filed by the Registrant on March 31, 2008.

12. Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on April 8, 2008.

13. Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on May 2, 2008.

14. Incorporated by reference to the Current Report on Form 8-K filed by the Registrant on June 19, 2008.

15. Incorporated by reference to Appendix B to the Proxy Statement on Schedule 14A filed by the Registrant on May 15, 2008.

Exhibit No.	Description
16.	Incorporated by reference to the Current Report on Form 8-K A filed by the Registrant on June 18, 2008.
17.	Incorporated by reference to the Quarterly Report on Form 10-Q filed by the Registrant on August 14, 2008.
18.	Incorporated by reference to the Amendment to the Quarterly Report on Form 10-Q A filed by the Registrant on August 19, 2008.
19.	Incorporated by reference to the Quarterly Report on Form 10-Q filed by the Registrant on November 14, 2008.
*	Filed herewith.
**	Amendments No. 2 and 5 to the NIH Prime Contract-Anthrax have been superseded in full by subsequent amendments filed herewith and are therefore omitted. Amendment No. 12 to the NIH Prime Contract-Anthrax and Amendment No. 8 to the NIH Prime Contract-Plague were never executed and are therefore omitted.
+	Certain confidential portions of this exhibit have been omitted and filed separately with the Securities and Exchange Commission pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934.

corporate information

Directors

John Pappajohn
Chairman of the Board

James H. Cavanaugh, Ph.D.
Director

John M. Gill, Ph.D.
Director

Joel McCleary
Director

Derace L. Schaffer, M.D.
Director

Steven St. Peter, M.D.
Director

David P. Wright
Director

Officers

David P. Wright
President & Chief Executive Officer

Christopher C. Camut
Vice President & Chief Financial Officer

Francesca Cook
Vice President,
Policy & Government Affairs

Joan Fusco, Ph.D.
Senior Vice President, Operations

Jordan Karp, J.D.
Senior Vice President &
General Counsel

Wayne Morges, Ph.D.
Vice President,
Regulatory Affairs & Quality

Eric I. Richman
Senior Vice President,
Business Development &
Strategic Planning

Valerie Riddle, MD, FACP
Vice President & Medical Director

Independent Registered Public Accounting Firm

Ernst & Young
McLean, Virginia

Counsel

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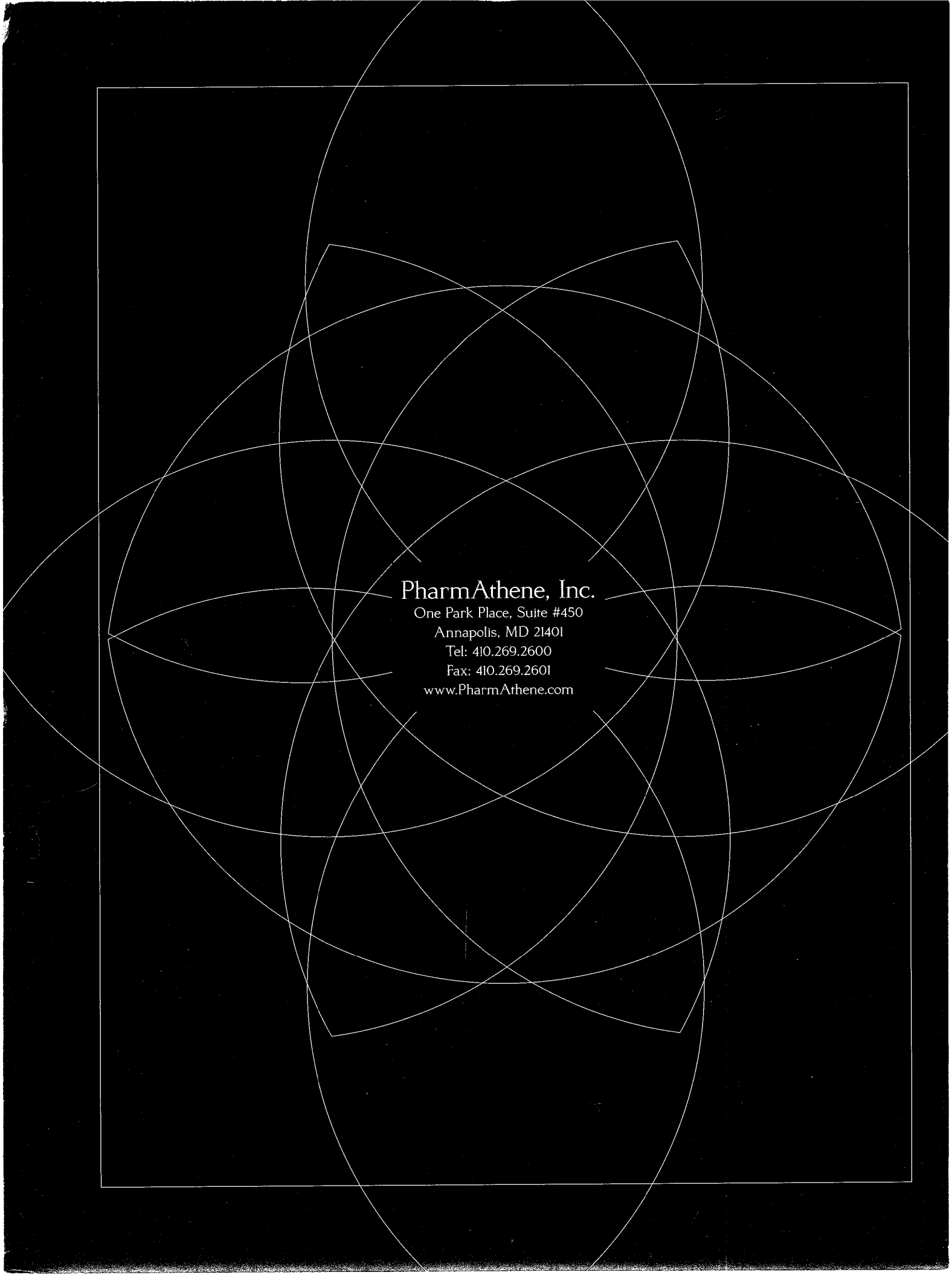
This Annual Report contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). This information may involve known and unknown risks, uncertainties and other factors that are difficult to predict and may cause our actual results, performance or achievements to be materially different from future results, performance or achievements expressed or implied by any forward-looking statements. These risks, uncertainties and other factors include, but are not limited to, risks detailed under the caption "Risk Factors" in our Annual Report on Form 10-K and in our other reports filed with the U.S. Securities and Exchange Commission (the "SEC") from time to time hereafter. 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," the negative of these words, other variations on these words, or comparable terminology.

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. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this document. Except to the extent required by applicable laws and regulations, we undertake no obligation to update these forward-looking statements to reflect events or circumstances after the date of this document or to reflect the occurrence of unanticipated events. 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.



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