



PharmAthene

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**FOR IMMEDIATE RELEASE:**

**PHARMATHENE PRESENTS DATA ON RECOMBINANT  
HUMAN BUTYRYLCHOLINESTERASE PROGRAM AT BIOSCIENCE REVIEW 2006**

**ANNAPOLIS, MARYLAND, June 12, 2006** — PharmAthene, Inc., a leading biodefense company focused on the development and commercialization of medical countermeasures to combat bioterrorism, presented data last week at the Bioscience Review 2006 meeting, outlining a newly-developed manufacturing process to facilitate commercial-scale production of the Company's recombinant human butyrylcholinesterase product, Protexia®.

Protexia is being developed by PharmAthene as a pre and post-exposure therapy for military or civilian victims of a chemical nerve agent attack.

Protexia is a recombinant form of human butyrylcholinesterase (BChE), a naturally occurring protein found in minute quantities in blood. BChE functions as a natural bioscavenger, like a sponge, to absorb toxins such as organophosphate (OP), nerve agents (sarin, soman, tabun, VX) and certain pesticides, before they cause irreversible neurological damage.

While the utility of BChE to protect against nerve agent exposure is well documented, a major limitation in its development has been the inability to produce it in commercial volumes due to limited raw material availability (outdated blood), low levels of the enzyme in blood, and low production yields using traditional biotechnology methods.

To overcome these limitations, PharmAthene has developed a recombinant form of human BChE, (rBChE), which is produced using proprietary transgenic technology, enabling substantially larger production yields than what is currently possible using other expression systems of through purification of the native protein from human plasma. PharmAthene estimates that its transgenic technology will have the capacity to produce sufficient rBChE for both military and civilian defence.

Solomon Langermann, Ph.D., Vice President and Chief Scientific Officer, remarked "Our discovery of a new pathway for the manufacture of commercial-scale quantities of BChE is an



important milestone in the Protexia development program. Using this new method we have already successfully produced more than 3 kilograms of rBChE. Additional efforts are ongoing to further refine a scalable manufacturing process in support of preclinical toxicology and safety testing.”

Dr. Langermann continued, “Preclinical research conducted by PharmAthene’s development partners, the US Army Medical Research Institute of Chemical Defence (USAMRICD) and DRDC Suffield, the Defence Research and Development arm of the Canadian Government, have demonstrated in *in-vivo* studies, rBChE’s capability as a medical countermeasure to protect laboratory animals from the toxic effects of chemical nerve agents. In proof of concept studies, pre-treatment with rBChE provided 100% survival against the nerve agents VX and soman. In post-exposure therapeutic studies, administration of rBChE following chemical nerve agent exposure resulted in enhanced survival compared to control animals. Results from several of these studies were reported by USAMRICD and DRDC at the 2006 Bioscience Review meeting, which was held June 4-9 in Hunt Valley, Maryland.”

### **About Chemical Weapons**

Chemical weapons use the toxic properties, as opposed to the explosive properties, of chemical substances to produce physical or physiological effects on an enemy. Classical 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, which caused respiratory damage and asphyxiation. The advent of such blistering agents as mustard gas, which causes painful burns necessitating medical attention even in low doses, marked the first chemical weapons to produce a significant military effect.

Organophosphate nerve agents, or anti-cholinesterase agents, were discovered by the Germans in the 1930’s following intensive research into new insecticides. Their discovery represents the beginning of modern chemical warfare. These agents cause toxicity by binding to and inhibiting acetylcholinesterase, an enzyme in the body that is essential for nervous system function, leading to increases in acetylcholine and “cholinergic crisis” that can cause loss of muscle control, respiratory failure, paralysis, convulsions, permanent brain damage and eventually death.

These so-called nerve gases, which are actually all liquids at room temperature, are lethal far more quickly and in far lower quantities than are the other classical chemical warfare agents (vesicants, choking and blood agents) and are effective both when inhaled and when absorbed through the skin. Nerve agents can be classified as either G-agents (sarin, soman, tabun) or V-agents (VX), both of which are exceedingly volatile and toxic.

### **About Protexia: Recombinant Human Butyrylcholinesterase**

PharmAthene acquired the Protexia program and related assets from Nexia Biotechnologies in March, 2005. Protexia is a form of recombinant human butyrylcholinesterase (rBChE), a potent organophosphate (OP) scavenger protein produced in the milk of transgenic goats, which is being developed for use as a prophylactic and therapeutic against acute organophosphate (OP)



nerve agent toxicity, as well as cocaine overdose or succinylcholine induced apnea. BChE acts as a natural OP scavenger, binding OP's in a stoichiometric irreversible manner and preventing further damage.

**About PharmAthene, Inc.**

PharmAthene, a privately-held biotechnology company, was formed to meet the critical needs of the United States by developing biodefense products. PharmAthene is dedicated to the rapid development of important and novel biotherapeutics to address biological pathogens and chemicals that may be used as weapons of bioterror. PharmAthene's lead programs include Valortim™, a treatment for anthrax, and Protexia, a treatment for nerve agent exposure. PharmAthene is located in the Chesapeake Innovation Center in Annapolis, MD, America's first business accelerator for the homeland and national security sectors. For more information on PharmAthene, please visit [www.PharmAthene.com](http://www.PharmAthene.com).

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