Congressman Brady and CRDF announce the award of a grant to fund research on early detection and protection against biological, chemical agents to a U of P researcher (07/22/03)

PHILADELPHIA ---- Congressman Robert A. Brady (D., PA) and the U.S. Civilian Research and Development Foundation (CRDF) announced that a University of Pennsylvania scientist is the recipient of one of five new Cooperative Research grants, totaling over $400,000, to joint teams of U.S. and former Soviet scientists who will be working on finding innovative solutions to minimize the impact of terrorist threats.

Research funded under the grants includes protection against bacterial pathogens and radiation, as well as early detection of chemical and biological warfare agents. Three of the five grants team scientists from the United States with former Soviet scientists who have experience in the design, development or production of weapons of mass destruction technologies.

Carroll, Martin, of the University
of Pennsylvania, teamed with Usmanov,
Rustam, of the Institute of Biochemistry, Uzbekistan Academy of Sciences, Tashkent, Uzbekistan is the local recipient of the research grant. The project is the Study of the Hematopoietic Colony Stimulating Properties of a Splenic Extract of Central Asian Tortoise (Testudo Horsfieldi)

Project Summary:

Chernobyl
demonstrated that practical medicine has no radio-therapeutic means to assist the irradiated organism to cope with a radiation injury. This lack of therapy has relevance in the modern era of potential nuclear terrorism threats. There exist biologically active compounds of natural origin that produce marked stimulating effect on the radiation affected haemopoietic and immune systems. The Central Asian tortoise (Tetsudo horsfieldi) has been used as a raw material, since the animal has been shown 50-100 times more radio-resistant than a human being or any other mammal. Aqueous spleen extracts and blood cytosol have shown high therapeutic activity upon subcutaneous administration to lethally irradiated mice. This project plans to decode the primary structure of the components above to study mechanisms of their action as well as to perform synthesis of their most efficient analogues to be used in management not only of radio injury but also the management of blood diseases.

The five grants follow seven cooperative anti-terrorism research grants that were announced earlier this year. The grants, which provide nine months of support for a maximum amount of $100,000 to each joint team, fall under the CRDF's Special Competition for Research on Minimizing the Effects of Terrorist Acts on Civilian Populations. The competition is the foundation's response to the events of September 11, 2001 and was authorized by the CRDF Board of Directors in October 2001 as a meaningful and timely contribution to the fight against terrorism.

Funding for the CRDF Cooperative Grants Program, which sponsors the cooperative research anti-terrorism grants, comes from the U.S. Department of State, National Science Foundation, and National Institutes of Health. The CRDF is currently completing its review of additional proposals and plans to announce further cooperative research awards in the near future.

The U.S. Civilian Research and Development Foundation is a private, nonprofit organization authorized by the U.S. Congress and established by the National Science Foundation in 1995. The CRDF supports scientific and technical collaboration between the United States and the countries of the former Soviet Union through grants, technical resources, and training. The foundation also promotes the transition of weapons scientists to civilian work to help reduce the global spread of weapons of mass destruction. The CRDF is based in Arlington, Virginia with offices in Moscow and Kyiv.

The research grants were also awarded to:

Severinov, Konstantin, Rutgers University, Piscataway, NJ

Gabisonia, Tarasi, G. Eliava Institute of Bacteriophage, Mirobiology and Virology, Georgian Academy of Sciences, Tbilisi, Georgia

Project Title: Polyvalent Bacteriophage Preparation as an Effective Remedy Against Massive Outbreaks of Antimicrobial-Resistant Salmonellosis

Project Summary:

Bacteria of the genus Salmonella belong to a category of food or waterborne pathogens that are moderately easy to disseminate and can cause moderate morbidity and low mortality. Since the beginning of the 1990s, strains of Salmonellosis typhimurium resistant to a range of antibiotics have emerged and are threatening to become a serious public health problem. As a result, interest in the use of bacteriophage preparations as an alternative to antibiotic treatments has greatly increased. The aim of this project is to create polyvalent combined bacteriophage preparations to be used as an antimicrobial preparation against all bacterial pathogens that cause Salmonella infections in humans.

Richardson, Rudy, University of Michigan, Ann Arbor, MI

Malygin, Vladimir, Institute of Physiologically Active Substances, Russian Academy of Sciences, Chernogolovka, Russia

Project Title: Development of a Medical Analytical System for OP Compound-Induced Delayed neurotoxicity (OPIDN) Risk Assessment

Project Summary:

This proposal is a result of activities and discussions held at a CRDF Special Competition Joint FSU U.S. Scientific Workshop #12125

"Organophosphate-Induced Delayed Neurotoxicity: assessment of human exposure to neuropathic organophosphates", Washington, DC, July 30-31, 2002 (The U.S. Organizer Dr. H. Dupont Durst, the FSU Organizer Dr. Galina F. Makhaeva). Rapid and specific detection of human exposure to chemical agents and accurate diagnosis of chemically induced disease are essential components of disaster management. Certain organophosphorus compounds (OPs) are classical chemical warfare agents and are known to be in the arsenals of several nations and terrorist groups. The purpose of the project is to optimize a detection device, previously developed by the FSU team, which measures blood neuro-toxic esterase (NTE) levels for the rapid assessment of human exposure to OPs. The project is expected to result in the development of an effective, highly sensitive, automatic, field-capable biosensor device for rapid NTE assay in whole blood.

Fenn, John, Virginia Commonwealth University, Richmond, VA

Rebrov, Alexei, Design-Technological Institute of Instrument Engineering for Geophysics and Ecology, Novosibirsk, Russia

Project Title: Field Detector System for Explosives, Chemical Warfare Agents, Other Hazard Substances at Trace Level in Air

Project Summary:

Instruments that can detect and identify chemical warfare agents and explosives at trace levels in air can provide early warning of terrorist attacks, allowing prospective victims to take protective measures and minimize damage. Detectors that have rapid response, high sensitivity, and high reliability are essential in minimizing false alarms. The purpose of this project is to develop an integrated, miniaturized and rugged detection system suitable for field use.

Bunton, Clifford, University of California, Santa Barbara, Santa Barbara, CA

Simanenko, Yurii, Litvinenko Institute of Physical-Organic and Coal Chemistry, UAS Donetsk, Ukraine

Project Title: Exploration of Chemistry of Environmentally Friendly Decontamination

Project Summary:

Chemical weapons are either nerve agents, e.g., phosphonofluoridates, which irreversibly inhibit acetyl choline esterase, or blister agents, e.g., chloroalkyl sulfides, Mustard, which attack soft tissue. Despite internationally agreed controls on the starting materials (which are industrially important and widely used chemicals), it is difficult to prevent terrorists and rogue states from obtaining these materials and converting them into lethal agents by simple chemistry described in scientific literature. There are complications in the development of effective decontaminants because of the effect of reaction medium, particularly water. This project's approach will be to select low-toxic model compounds whose reactions are mechanistically similar to reactions of the agents, and to examine them in micelles and microemulsions in order to evaluate the key factors in optimization of practical decontamination formulations, which will be effective against all agents and can be used safely on individuals.