

# NIH NIAID Chemical Countermeasures Research Program

## Background

The NIH NIAID Chemical Countermeasures Research Program (CCRP) is a component of the broader civilian biodefense research effort within HHS and NIH. The overarching goal of the CCRP is to integrate cutting-edge research with the latest technological advances in science and medicine to enhance the nation's medical response capabilities during public health emergencies involving the release of chemical threat agents. Many of these Department of Homeland Security (DHS)-identified threat chemicals are not only potential agents of terrorism, but also may be released from transportation and storage facilities during industrial accidents or natural disasters.

The CCRP is a collaborative network of academic, industry, and federal laboratories. It leverages the expertise of multiple NIH Institutes and Centers to manage the research and early development of medical countermeasures (MCMs) that could be used to prevent lethality and/or treat injuries resulting from toxic chemical exposure. The CCRP supports a research infrastructure comprising contracts and interagency agreements with the Department of Defense (DoD) and HHS in addition to an NIH-wide research grant program called the Countermeasures Against Chemical Threats (CounterACT) program. The CounterACT program is directed by the National Institute of Neurological Disorders and Stroke (NINDS) under the oversight of the NIAID CCRP. The program includes the participation of the National Institute of Environmental Health Sciences, National Eye Institute, National Institute on Drug Abuse, National Institute of Arthritis and Musculoskeletal and Skin Diseases, Eunice Kennedy Shriver National Institute of Child Health and Human Development, and the National Library of Medicine. The CounterACT program offers research funding for Specialized Center Cooperative Agreements (U54), Research Project Cooperative Agreements (U01), Exploratory/Developmental grants (R21), and Small Business Innovation Research (SBIR) grants.

## Chemical Threats of Interest

The civilian chemical threat spectrum includes chemical warfare agents (e.g., sarin), toxic industrial chemicals

(e.g., cyanide, chlorine), pesticides (e.g., parathion), and many others. These agents have been identified as threats by the DHS Chemical Terrorism Risk Assessment program and can have a variety of toxic effects. The classes of chemical threats include

- Cholinergic, convulsant, encephalopathic, and sympathomimetic/stimulant agents that target the nervous system and/or induce neuropathology
- Cellular respiration inhibitors, such as blood, hemolytic, and metabolic agents
- Pulmonary, irritant, and corrosive agents that target the respiratory tract and may induce edema and/or other long-term pathologies
- Vesicating agents that may cause dermal and/or ocular pathologies
- Pharmaceutical-based agents, such as incapacitating compounds

## Research Priority Areas

The CCRP research priority areas include but are not limited to

- Basic mechanistic research to identify molecular mechanisms of acute toxicity, biological markers of exposure, and relevant therapeutic targets
- Development and use of screening assays to identify candidate lead MCM compounds
- *In vitro* demonstration of target engagement and appropriate biological activity of candidate therapeutics to counteract the effects of the threat agent
- Development and use of animal natural history models to demonstrate preliminary proof-of-principle efficacy

## What We Offer — Funding Opportunities

Investigators are encouraged to contact CCRP and/or CounterACT staff for information about available NIH funding opportunities in chemical defense and countermeasures research and development. These opportunities are typically available throughout the year.



Current active funding opportunities include

- PAR-18-657: CounterACT Research Centers of Excellence (U54 Clinical Trial Optional)
- PAR-18-721: CounterACT Exploratory/Developmental Projects in Translational Research (R21 Clinical Trial Not Allowed)
- PAR-19-039: CounterACT Identification of Therapeutic Lead Compounds (U01 Clinical Trial Not Allowed)
- PAR-19-040: CounterACT Optimization of Therapeutic Lead Compounds (U01 Clinical Trial Optional)

NIH staff also can provide advice on opportunities available from other U.S. government agencies and departments, such as HHS Biomedical Advanced Research & Development Authority (BARDA), FDA Medical Countermeasures Initiative, and the DoD's Defense Threat Reduction Agency and Medical Countermeasure Systems.

### **What We Offer — Medical Countermeasures Product Development Support Services**

The CCRP can provide the following no-cost support services to investigators whose products show promising results as potential MCMs in preliminary testing:

- **CounterACT Neurotherapeutics Screening Program**
  - Identify novel neurotherapeutics that may be administered with approved standard-of-care treatments to more effectively suppress *status epilepticus* activity and/or mitigate neuropathology after organophosphate exposure.
- **CounterACT Efficacy Research Facility**
  - Conduct pilot studies to characterize novel models of lethal and nonlethal effects.
  - Obtain independent confirmation of product efficacy in validated small or large animal models of chemically induced toxicity.
- **CounterACT Preclinical Development Facility**
  - Conduct non-Good Laboratory Practice (GLP) preclinical studies to characterize and optimize hits identified early in the discovery and development process.
- **CounterACT Ocular Therapeutics Screening Program**
  - Conduct pilot studies to evaluate the efficacy of investigational MCMs against the acute and/or chronic effects of eye exposure to sulfur mustard.

The chief purpose of these support services is to assist applicants in obtaining important proof-of-principle efficacy and/or preclinical data in support of subsequent research applications.

### **What We Offer — Guidance to Academic, Commercial, and Government Investigators**

NIAID encourages all investigators to contact CCRP and/or CounterACT program staff for advice and guidance on how to advance potential models and therapies from the initial idea through the basic research and discovery stages and forward into the early phases of product development.

### **Who To Contact**

Based on the research topic of interest, CCRP staff can facilitate discussions with the appropriate program official(s) of the NIH-wide CounterACT program as well as other U.S. government organizations—BARDA, FDA, and DoD—that have an interest in emergency preparedness and MCM research and development.

To learn more about the CCRP and available support services, contact the CCRP office at 301-451-4416 or any of the following staff members:

- **Gennady E. Platoff Jr., Ph.D.**, at [platoffg@niaid.nih.gov](mailto:platoffg@niaid.nih.gov)
- **Dave Yeung, Ph.D.**, at [dy70v@nih.gov](mailto:dy70v@nih.gov)

To learn more about the NIH-wide CounterACT program, contact

- **David A. Jett, Ph.D.**, at 301-496-6035 or [jettdd@ninds.nih.gov](mailto:jettdd@ninds.nih.gov)

### **Additional Information**

**NIH NIAID Chemical Countermeasures Research Program (CCRP)**

<https://www.niaid.nih.gov/research/chemical-countermeasures-program>

**NIH NINDS CounterACT Program**

<https://www.ninds.nih.gov/counteract>

**HHS Biomedical Advanced Research and Development Authority (BARDA)**

<http://www.phe.gov/barda>

**HHS Public Health Emergency Medical Countermeasures Enterprise (PHEMCE)**

<http://www.phe.gov/preparedness/mcm/phemce>

**FDA Medical Countermeasures Initiative (MCMi)**

<https://www.fda.gov/EmergencyPreparedness/Counterterrorism/MedicalCountermeasures/>



National Institute of  
Allergy and  
Infectious Diseases