



Botulism Research

NIAID, NIH

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Botulism Research at NIH

**National Institute of Allergy and
Infectious Diseases (NIAID)--
Biodefense**

Additional Research:

- ❖ **National Institute of Neurological Disorders and Stroke (NINDS)**
- ❖ **National Institute of General Medical Sciences (NIGMS)**
- ❖ **National Eye Institute (NEI)**
- ❖ **National Institute of Child Health and Human Development (NICHD)**

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Botulism Research at NIAID Biodefense



**2002
NIAID Biodefense
Research Agenda
CDC Category A
Agents**

Biodefense Research Priorities Immediate Goals

- ❖ **Develop and test human monoclonal antibodies to the 7 BoNT serotypes A,B,C,D,E,F,G**
- ❖ **Develop recombinant fragment C vaccine against the 7 BoNT serotypes**

Biodefense Research Priorities Intermediate/Long Term Goals

- ❖ **Identification of toxin receptors**
- ❖ **Characterization of mechanism of action of the 7 serotypes**
- ❖ **Determination of the molecular basis of proteolytic specificity**
- ❖ **Develop small molecule inhibitors of toxin protease activity**

NIAID Funding for Botulism

- ❖ **Multiple Mechanisms**
- ❖ **Multiple Types of Institutions**
- ❖ **Broad Scope—Basic Through Translational**

Basic Research—R01, R21, R03

- ❖ Investigator initiated
- ❖ Program Announcement (PA)
- ❖ Stated scientific areas

PA-04-119 “Biodefense and Emerging Infectious Disease Research Opportunities”

Ongoing Basic Research

- ❖ Receptors for neurotoxins
- ❖ Development of genetic tools for *C. botulinum*
- ❖ Crystal structure of catalytic domain-substrate complex

Cooperative Agreements—U01

- ❖ **NIAID initiative—well defined research**
- ❖ **Request for Application (RFA)**
- ❖ **Performance-based, milestone-driven**

RFA-AI-05-019 “Cooperative Research Partnerships for Biodefense”

Ongoing Cooperative Agreement Research

- ❖ **Antibody-based therapies: human monoclonal; humanized rabbit polyclonal**
- ❖ **Vaccines**
- ❖ **Small molecule inhibitors**
- ❖ **Diagnostics**

Small Business Grant (R41,42,43,44)

- ❖ **Intent to commercialize a product**
- ❖ **May partner with research institution**
- ❖ **Program Announcement**

PAS-02-149 "Small Business Biodefense Program"

Ongoing Small Business Research

- ❖ **Vaccine/vaccine delivery systems**
- ❖ **Small molecule inhibitors**
- ❖ **Plant-derived human mabs**
- ❖ **Protein arrays for antibody detection**

Contracts

- ❖ **NIAID initiative--specific need**

- ❖ **Request for Proposal (RFP)**

RFP-NIH-NIAID-DMID-03-04, Food and Waterborne Diseases Integrated Research Network (FWDIRN)

FWDIRN Contract Research

University of Maryland

- ❖ **Toxin PK**

Tufts University

- ❖ **Animal models**
- ❖ **High throughput drug screening**
- ❖ **Small molecule inhibitors**
- ❖ **X ray crystallography**
- ❖ **In vitro assays**

New Funding Opportunity

**New RFA: ricin, Shiga toxins, SEB,
C. perfringens epsilon toxin,
BoNTs**

**RFA-AI-06-035, Cooperative
Research Partnerships into
Therapeutics and Diagnostics for
Biodefense Toxins**

Submission Date: November 27, 2006

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New RFA Research Areas

Diagnostics

- ❖ **Rapid sample preparation**
- ❖ **Multiplexed, high throughput**

Therapeutics

- ❖ **Drug target/drug design**
- ❖ **Pre-clinical evaluations**
- ❖ **New/improved animal models or non-animal alternatives**

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Useful Links

NIAID Funding:

<http://www3.niaid.nih.gov/researchFunding/>

NIAID Biodefense:

http://www3.niaid.nih.gov/research/biodefense/biod_related.htm

NIH Ongoing Extramural Research

<http://www.crisp.cit.nih.gov/>