Acquisition Opportunities at The Joint Science and Technology Office for Chemical and Biological Defense (JSTO-CBD)

Small Business Innovation Research & Small Business Technology Transfer (SBIR / STTR) .......AND BEYOND!

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DISCLAIMER

Information presented is for informational purposes only and is NOT binding upon DTRA or the U.S. Government
DoD Acquisition Opportunities

SBIR / STTR

Broad Agency Announcements (BAAs)
SBIR and STTR: Three-Phased Program

- Early Exploration of Ideas
  - Feasibility Study
- Concept Refinement
  - Prototype Development
- Further R&D/Demonstration
  - Production & Sales
SBIR and STTR: Three-Phased Program

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<thead>
<tr>
<th>PHASE I</th>
<th>SBIR</th>
<th>STTR</th>
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<tbody>
<tr>
<td>Project Feasibility</td>
<td>6-months Up to $167,500 *</td>
<td>12-months Up to $167,500 *</td>
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<tr>
<th>PHASE II</th>
<th>SBIR</th>
<th>STTR</th>
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<tr>
<td>Project development to prototype</td>
<td>2-years Up to $1,100,000 *</td>
<td>2-years Up to $1,100,000 *</td>
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<th>PHASE III</th>
<th>SBIR</th>
<th>STTR</th>
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<tr>
<td>Commercialization (in military and/or private sector markets)</td>
<td>No funding or time constraints; must use non-SBIR funds</td>
<td>No funding or time constraints; must use non-STTR funds</td>
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* may vary by program within DoD
DoD SBIR Key Technology Areas

- Air Platforms
- Battlespace Environments
- Chemical & Biological Defense
- Weapons
- Human Systems
- Materials & Processes
- Information Systems Technology
- Space Platforms Technology
- Biomedical
- Sensors, Electronics & Electronic Warfare
- Nuclear Technology
- Ground and Sea Vehicles Technology
USD (R&E) Technology Focus Areas

(list still in development and subject to change)

- Hypersonics
- Directed Energy
- Command, Control and Communications
- Space Offense & Defense
- Cybersecurity
- Artificial Intelligence / Machine Learning
- Missile Defense
- Quantum Science & Computing
- Microelectronics
- Nuclear Modernization
DoD SBIR/STTR Announcements

Dates established by Assistant Secretary of Defense/Research & Engineering (ASD R&E); not all DoD Components participate in each announcement

- A DoD Agency-wide Announcement includes:
  - DoD Instructions
  - Service/Component-specific Instructions
  - Topics

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<tr>
<th>Announcement Schedule</th>
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<td>Solicitation</td>
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* NEW! All proposals due No Later Than 8:00pm Eastern Time for all DoD SBIR and STTR Announcements
DoD SBIR/STTR Announcements – ‘THE’ WEBSITE

https://sbir.defensebusiness.org
Technical Questions About Topics?

✓ Direct Contact with Topic Authors
  • **During Pre-Release**, the names of the topic authors, phone numbers and e-mail addresses are listed with the topic
  • Questions are be limited to specific information related to a particular topic’s requirements
  • Offerors may not ask for advice or guidance on solution approach, nor submit additional material to the topic author

✓ **SBIR/STTR Interactive Topic Information System (SITIS)** [http://sbir.defensebusiness.org/sitis](http://sbir.defensebusiness.org/sitis)
  • **After Solicitation ‘Opens’**, offerors must submit written questions through SITIS; no direct contact with Topic Authors are allowed
  • Questioner and respondent remain anonymous and all questions and answers are posted electronically for general viewing
DoD Acquisition Opportunities

Chemical and Biological Defense

Technology Focus Areas
Medical Diagnostics

Lab-based Analytical Methods

Fieldable Diagnostics
Detection and Diagnostics

Vision
• Comprehensive integrated early warning to reduce the effects of biological and chemical threats

Mission
• Finding and fostering science and technology that informs rapid and efficient consequence management, to include endemic and emerging disease

Values
• Product Driven
• Innovative and Creative
Detection and Diagnostics Teams

Our **Detection Team** pursues novel approaches in developing an advanced capability to inform and protect the warfighter from CB hazards by developing technologies to make actionable battlespace decisions, focusing on capability gaps for the warfighter in:

- non-medical chemical and biological detection
- remote sensing concepts
- technology enablers
- threat signature characterization

The **Diagnostics Team** develops next generation diagnostic technologies that are rapid, sensitive, and specific for the diagnosis of Warfighter exposure and/or infection. This capability looks to discovery:

- Point-of-need/care diagnostics with laboratory reference level sensitive and specificity
- Novel and innovative diagnostic assays and platforms
- Full diagnostic system capabilities from sample preparation to bioinformatics analysis
Chemical Detection: Areas of Emphasis

- Man-worn Chemical Hazard Sensors
- Expeditionary Analytical Toolkit (ExAnT)
- Integrated Threat Awareness
Biological Detection: Areas of Emphasis

- Emerging/Novel Bio Threat Sensing
- Distributed Biological Reconnaissance
- Autonomous Point Biological Collection and Detection
- Synthetic Biology
- Genome Editing
- Emerging/Novel Bio Threat Sensing
Current Medical Diagnostics Programs

**FEVER** Program to develop a host-based diagnostic able to differentiate between viral and bacterial infections.

**ICED** Program to develop a point-of-need diagnostic to diagnose exposure to cholinesterase-inhibiting chemical warfare agents.

**SUDD** Program to develop portable low cost lateral flow assays to diagnose infection from Burkholderia pseudomallei or Yersinia pestis.

**CANDO** Program to develop diagnostic assays for the hard to detect pathogens: *Brucella* spp., *Rickettsia prowazekii*, and alphaviruses.

**RADAR** Program to develop a point-of-need diagnostic to identify antibiotic resistant microorganism and perform antibiotic susceptibility testing.

**RHODA** Program to develop a host-based assay for diagnosing the early onset to sepsis due to a synthetic or genetically modified biological threat agent.

**ICED** Program to develop a point-of-need diagnostic to diagnose exposure to cholinesterase-inhibiting chemical warfare agents.
Vaccines/Biological Therapeutics

Provide our warfighters with vaccines and therapeutics to eliminate or mitigate biological threats thereby maintaining combat effectiveness and safeguarding lives.
Medical Countermeasures
The Vaccines and Therapeutics Division is responsible for ensuring robust pipelines of vaccine and therapeutic candidates that can be transitioned and matured into products by our advanced development partners thereby supporting the overall enterprise goal to develop and deliver novel medical technologies to address current and emerging biological threats in order to protect the lives and maintain the battle readiness of our warfighters.

Focus Areas: Vaccines & Therapeutics

**Therapeutics Team (RD-CBMB)**
Discovery and development of therapeutics for alphaviruses, filoviruses, botulinum toxin, and broad-spectrum antibiotics targeting multi-drug resistant bacterial threat pathogens

**Vaccines Team (RD-CBMV)**
Discovery and development of vaccines for: alphaviruses, filoviruses, *Bacillus anthracis* (anthrax), *Burkholderia mallei* (glanders), *Burkholderia pseudomallei* (meliodosis), *Francisella tularensis* (tularemia), *Coxiella burnetii* (Q Fever), and botulinum, ricin and SEB toxin

**Supporting S&T**
Investments in animal model development, novel manufacturing technologies that exploit readily adaptable expression platforms and leverage flexible biomanufacturing technologies, understanding host-pathogen/toxin interaction for identification of targets and/or biomarkers, adjuvants and stabilization technologies, drug delivery methods, and compound library compilation and characterization
**Focus Agents**

**Viruses**
- Hemorrhagic Fever Viruses – Ebola & Marburg
- Encephalitic Alphaviruses – EEEV, VEEV, WEEV

**Toxins**
- Marine toxins
- BoNt

**Bacteria**
- Bacillus anthracis
- Francisella tularensis
- Burkholderia mallei /pseudomallei
- Coxiella burnetii
- Yersinia pestis

**Enabling Technologies**
- Basic research into host-pathogen/toxin interaction
- Stabilization technologies

**Current Approaches**

**Viruses**
- Virus Like Particles
- DNA vaccine
- Viral vectored vaccine

**Toxins**
- Protein Subunit
- mAbs

**Bacteria**
- Protein Subunit
- Bacterial vector platforms
- Live Attenuated

- Animal model development
**Focus Agents**

- **Viruses**
  - Filoviruses (Ebola, Marburg) and hemorrhagic fever viruses
  - Encephalitic Alphaviruses VEEV, EEEV, WEEV

- **Toxins**
  - Botulinum Toxin

- **Bacteria**
  - Burkholderia spp.
  - Bacillus anthracis
  - Francisella tularensis
  - Yersina pestis

**Current Approach**

- Novel therapeutic approaches
- Host-directed & agent-based
- Novel mAb treatments
- Repurposing of FDA-approved drugs

- Small molecule therapeutics
- Repurposing of FDA-approved drugs
- Novel therapeutic approaches
- Host-directed & agent-based
- Antibiotic potentiation
- Circumvent/address resistance
- FDA-approved drug repurposing

**Enabling Technologies**

- Animal model development
- Basic research into host-pathogen/toxin interaction
- Controlled drug delivery
- Novel formulation
Discover, develop, and/or repurpose U.S. Food and Drug Administration (FDA)- licensable medical countermeasures effective against chemical threats to the warfighter.
Current Efforts and Interest

ENABLING SCIENCE

• Develop computational and in vitro screening assays to analyze the safety of developmental MCMs and inform the down-selection process
• Develop and assess animal models for their suitability to support the development of the chemical medical countermeasures

Effective & Safe
• Low Operational Burden
• Low Logistical Burden

CHEMICAL PROPHYLAXIS / PRETREATMENTS

• Explore technologies to decrease immunogenicity and increase circulatory half life of nerve agent catalytic scavenger candidates
• Identify and assess FDA-approved drugs against a Nerve Agents and specific class Emerging Chemical Threat

CHEMICAL THERAPEUTICS

• Protection of the central nervous system against organophosphorus chemical warfare agents.
• Broad spectrum cholinesterase reactivators
• Assess FDA-approved drugs against a specific class of Emerging Chemical Threat
• Develop human equivalent dosing of MCM against compounds of interest
Wearable Sensors & Physiological Monitoring

Sense exposure

Monitor health

Second Skin
Chemical Countermeasures/ Disease Surveillance

Dr. Ed Argenta

Information Systems Division
DTRA Research & Development Directorate

Joint Science & Technology Office for
Chemical & Biological Defense

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Acquisition Opportunities with the Chemical & Biological Defense Program

Broad Agency Announcements (BAAs)
Funding Opportunities

- Always posted on FedBizOpps or Grants.gov
- All DTRA solicitations each have a unique e-mail address for Q&A
- Generally referenced on the DTRA webpage: http://www.dtra.mil/Contracts/Business-Opportunities/Current-Solicitations/
- Monitor the sites for updates!
  - http://www.fbo.gov
  - http://www.grants.gov
  - http://www.sbir.gov
  - http://www.dtra.mil
Acquisition Opportunities in the DTRA Chem/Bio Technologies Department

- **Broad Agency Announcements (BAA)**
  - DTRA ‘two-step’ proposal process: Phase I Quad Chart and White Paper; Invited Phase II Full Proposal Package

- **Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)**
  - Advertised at [https://sbir.defensebusiness.org](https://sbir.defensebusiness.org)
  - SBIR Phase I leads to a possible contract award, whereas the BAA ‘Phase I’ (see above) does NOT lead to an award
Fundamental Research BAA Solicitation:
HDTRA1-14-24-FRCWMD-BAA

• In effect March 2015-September 2024; posted at Grants.gov
• TRL1, 2, 3, and ~early 4; Basic and Exploratory Applied Research (6.1 & 6.2)
• Applications MUST be submitted to Grants.gov using the application packages posted with the opportunity
• Majority of resulting awards will be grants; other award types are permissible
• BAA continuously OPEN for good ideas
  • HOWEVER – interested parties must first send e-mail (200 word max) to Thrust Area Email detailed in BAA (Section 7)
  • Based on interest, a White Paper may be accepted
• Questions? Email: HDTRA1-FRCWMD-A@mail.mil
Chemical Biological Technologies Department BAA, FY2019 Program Build

• Applied Research & Advanced Technology Development

• Seeks R&D projects with strong technical merit valuable to program requirements and goals to improve military chemical and biological defense capabilities

• BAA released 1 February 2019; Quad Charts/White Papers due: 18 March 2019 No Later Than (NLT) 2:00pm Eastern Time

• Questions? Email: Dtra.belvoir.J9.mbx.CB-BAA@mail.mil
Rapid Innovation Fund (RIF) BAA

- Rapid Innovation Fund now a ‘Permanent’ Program of Record
- Not issued as a DTRA BAA, but rather an OSD ‘Joint Services BAA’
- Assistant Secretary of Defense/Research & Engineering (ASD R&E)
- Historically up to $3M/project; max. 2-Year PoP
- TRL5/6 leading to higher TRL
- Transition Partner/Acquisition Program of Record identified
- Open to Industry & Small Businesses, but small businesses have preference
- See: https://defenseinnovationmarketplace.dtic.mil/business-opportunities/rapid-innovation-fund/
Websites of Key Importance

• SBIR & STTR Programs
  http://www.sbir.gov

• DoD SBIR Proposal Submission *(all DoD Services & Agencies)*
  https://sbir.defensebusiness.org

• DTRA Business Opportunities

• DTRA BAA Proposal Submission
  http://www.dtrasubmission.net
Federal Business Opportunities: [https://www.fbo.gov/](https://www.fbo.gov/)


DoD SBIR/STTR Program Information for Small Businesses: [https://sbir.defensebusiness.org](https://sbir.defensebusiness.org)


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Acquisition Opportunities with the Chemical & Biological Defense Program

But First –

A Primer in DoD Acquisition Language
‘6-Point What?’

• DOD divides its RDT&E account into seven categories, each with a numerical code
  • Basic Research (known as ‘6.1’)
  • Applied Research (‘6.2’)
  • Advanced Technology Development (‘6.3’)
  • Advanced Component Development and Prototypes (‘6.4’)
  • System Development and Demonstration (‘6.5’)
  • RDT&E Management Support (‘6.6’)
  • Operational System Development (‘6.7’)

RDT&E Funding

• The ‘6.1,’ ‘6.2’, and ‘6.3’ categories are often grouped together as "Science and Technology" (S&T): basic research, applied research, and advanced technology development, respectively.

• S&T is separate from the ‘6.4’ and higher categories (thru ‘6.7’), which are focused on the final development and testing of specific systems.

• Nearly all DOD support for R&D at colleges and universities comes from the S&T accounts.
Basic Research

- Technology Readiness Level (TRL) 1 (of 9)
- 6.1 funding designation
- JSTO-CBD definition aligned with DoD definition:

“Basic Research is systematic study directed toward greater knowledge or understanding the fundamental aspects of phenomena and has the potential for broad, rather than specific, application”
Basic vice Applied & Advanced R&D (cont’d)

- Applied Research
  - Technology Readiness Level (TRL) 2, 3, or 4 (of 9)
  - 6.2 funding designation
  - JSTO-CBD definition aligned with DoD definition:
    
    “translates promising basic research into solutions for broadly defined military needs and includes studies, investigations, and non-system specific technology efforts. It may also include design, development, and improvement of prototypes and new processes to meet general mission area requirements.”
• Advanced Technology and Development
  • Technology Readiness Level (TRL) 4, 5, 6 (of 9)
  • 6.3 funding designation
  • JSTO-CBD definition aligned with DoD definition:
    “development of subsystems and components and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in a simulated environment”
SBIR/STTR Phases vice Typical TRL Levels

- **SBIR/STTR Phase I: Proof-of-Concept/ Feasibility**
  - (~6-Month PoP); TRL 3/4

- **SBIR/STTR Phase II: Prototype Development**
  - (2-Year PoP); TRL 4/5

- **SBIR/STTR Phase III: Commercialization**
  - MUST ONLY USE NON-SBIR/NON-STTR FUNDS; TRL ~>5/6

Note: the correlation between TRL & SBIR Phase represent general guidelines with some flexibility associated with each phase.
Technology Readiness Levels (TRLs)
DoD TRL Definitions

TRL LEVEL

1. Basic principles observed and reported.
2. Technology concept and/or application formulated.
3. Analytical and experimental critical function and/or characteristic proof of concept.
4. Component and/or breadboard validation in laboratory environment.
5. Component and/or breadboard validation in relevant environment.
6. System/subsystem model or prototype demonstration in a relevant environment.
DoD TRL Definitions (cont’d)

TRL LEVEL

7. System prototype demonstration in an operational environment.
8. Actual system completed and qualified through test and demonstration.
9. Actual system proven through successful mission operations.

- Different TRL definitions for DoD vice NASA
- TRL definitions differ for hardware vice software
- ‘non-Medical’ TRL definitions vary from ‘medical’ TRL definitions
- The only ‘constant’: TRL 1 – TRL 9

SEE: http://acqnotes.com/acqnote/tasks/technology-readiness-level
Contract vs Grant
(in really, really basic terms)

• Contract
  • Requires specific deliverables to receive payment
    • CDRL: Contract Data Requirements List
  • Issued in response to a proposal submitted against a specific technology topic

• Grant
  • Often, Principal Investigator (PI) directed research
  • Deliverables more loosely defined
  • Usually applied towards early stage (basic) research