U.S. Small Business Administration (SBA)
Leveraging America’s Seed Fund
Goals

- Meet federal *research and development needs*
- Increase private-sector *commercialization* of innovation derived from federal research and development funding
- Stimulate technological *innovation*
- Foster and encourage *participation* in innovation and entrepreneurship by women and socially/economically disadvantaged individuals
- Foster *technology transfer* through cooperative R&D between small businesses and research institutions (STTR)
Small Business Innovation Research (SBIR)

3.2% of external research budgets
(extramural R&D budgets greater than $100 million/year)

~$3.28 billion (FY19)

Small Business Technology Transfer (STTR)

0.45% of external research budgets
(extramural R&D budgets greater than $1 billion/year)

~$453 million (FY19)

Requires small businesses to subcontract with a nonprofit U.S. research institution

Combined ~5,000 new awards to small businesses each year
Key Elements of SBIR/STTR Funding

**NON-DILUTED CAPITAL**
The funding agency cannot take an equity position or ownership of your firm

**IP/DATA RIGHTS PROTECTION**
Government can’t share your reports or data with anyone outside of the federal government for 20 years

**DIRECT FOLLOW ON PHASE III AWARDS**
No need for further competition (J&A not required)
SBIR & STTR Participating Agencies

- Department of Agriculture (USDA)
- Department of Commerce (DoC) NIST, NOAA
- Department of Defense (DoD)
- Department of Education (ED)
- Department of Energy (DOE)
- Department of Health and Human Services (HHS)
- Department of Homeland Security (DHS)
- Department of Transportation (DOT)
- Environmental Protection Agency (EPA)
- National Aeronautics and Space Administration (NASA)
- National Science Foundation (NSF)
## FY2019 SBIR/STTR Budgets by Agency

<table>
<thead>
<tr>
<th>Agencies</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Defense (DoD)*</td>
<td>$1.80 B</td>
</tr>
<tr>
<td>Department of Health and Human Services (HHS)**,</td>
<td>$1.15 B</td>
</tr>
<tr>
<td>including the National Institutes of Health (NIH)</td>
<td></td>
</tr>
<tr>
<td>Department of Energy (DOE), including Advanced</td>
<td>$308 M</td>
</tr>
<tr>
<td>Research Projects Agency – Energy (ARPA-E)</td>
<td></td>
</tr>
<tr>
<td>National Science Foundation (NSF)</td>
<td>$212 M</td>
</tr>
<tr>
<td>National Aeronautics and Space Administration (NASA)</td>
<td>$183 M</td>
</tr>
<tr>
<td>U.S. Department of Agriculture (USDA)</td>
<td>$30 M</td>
</tr>
<tr>
<td>Department of Homeland Security (DHS)</td>
<td>$17 M</td>
</tr>
<tr>
<td>Department of Commerce: National Oceanic and</td>
<td>$9.5 M</td>
</tr>
<tr>
<td>Atmospheric Administration (NOAA)</td>
<td></td>
</tr>
<tr>
<td>Department of Education (ED)</td>
<td>$8.4 M</td>
</tr>
<tr>
<td>Department of Transportation (DOT)</td>
<td>$5.2 M</td>
</tr>
<tr>
<td>Department of Commerce: National Institute of Standards</td>
<td>$3.9 M</td>
</tr>
<tr>
<td>and Technology (NIST)</td>
<td></td>
</tr>
<tr>
<td>Environmental Protection Agency (EPA)*</td>
<td>$3.6 M</td>
</tr>
</tbody>
</table>

* Budgeted Amount; other Agencies Obligated Amount

** Provides grants and contracts

SBIR: $3.28 Billion
STTR: $453 Million
<table>
<thead>
<tr>
<th><strong>Contracting Agencies</strong></th>
<th><strong>Granting Agencies</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Agency establishes plans, protocols, requirements</td>
<td>▪ Principal Investigator initiates approach</td>
</tr>
<tr>
<td>▪ Highly focused topics</td>
<td>▪ Less-specified topics</td>
</tr>
<tr>
<td>▪ Procurement mechanism</td>
<td>▪ Assistance mechanism</td>
</tr>
<tr>
<td>▪ More fiscal requirements</td>
<td>▪ More flexibility</td>
</tr>
<tr>
<td>▪ Invoiced on progress</td>
<td>▪ Allows upfront payment</td>
</tr>
<tr>
<td>▪ Binding agreement between a buyer &amp; seller for goods/services</td>
<td>▪ Funds support a public purpose, best efforts in research</td>
</tr>
<tr>
<td><strong>DoD, DHS, NASA, EPA, DOT, DoED</strong></td>
<td><strong>NSF, DoE, USDA, NIST, NOAA</strong></td>
</tr>
</tbody>
</table>

**Contracting and Granting:** **HHS/NIH** (mostly grants)
Three Phase Process

Phase I
Concept Development
6 months – 1 year
~ $150,000

Phase II
Prototype Development
24 months
~ $1,000,000

Phase III
Commercialization
No SBIR funding

Solicitation to Award Process

Find Solicitation
Proposal Submission
Evaluation
Award Phase I
## Differences Between SBIR and STTR

<table>
<thead>
<tr>
<th></th>
<th>SBIR</th>
<th>STTR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Partnering Requirement</strong></td>
<td>Permits partnering</td>
<td>Requires a non-profit research institution partner</td>
</tr>
<tr>
<td><strong>Principal Investigator</strong></td>
<td>Primary employment (&gt;50%) must be with the small business</td>
<td>PI may be employed by either the research institution partner or small business (check solicitation)</td>
</tr>
<tr>
<td><strong>Work Requirement</strong></td>
<td>May subcontract up to: 33% (Phase I) 50% (Phase II)</td>
<td>Minimum: 40% Small Business 30% Research Institution Partner</td>
</tr>
<tr>
<td><strong>Program Size</strong></td>
<td>3.2% (FY19 - $3.28B)</td>
<td>0.45% (FY19 - $453M)</td>
</tr>
<tr>
<td><strong>Majority VC ownership</strong></td>
<td>Allowed by some agencies</td>
<td>Not allowed</td>
</tr>
<tr>
<td><strong>Participating Agencies</strong></td>
<td>II agencies (extramural R&amp;D budget &gt; $100M)</td>
<td>5 agencies (extramural R&amp;D budget &gt; $1B)</td>
</tr>
</tbody>
</table>
What does an SBIR/STTR firm look like?

- Company must be for profit, U.S. owned and operated, and under 500 people
- Work must be done in the U.S.
- Focus is on performing R&D – Not purchasing equipment, commercializing a technology that has already been developed, or one that has very low risk and only needs capital

The small business is ALWAYS the applicant and awardee!
Principal Investigator (PI)

→ Must be employed by the small business (or partnering research institution for STTR) at **time of award** (check solicitation)

→ Should have appropriate expertise to oversee project scientifically and technically

→ Expertise of the PI and team are one of the three evaluation factors
Where to Begin? - Topic Searches

Keyword searches – Learn which agencies fund your technology area!

www.sbir.gov/sbirsearch/topic/past
Where to Begin? – Award Searches

→ Identify successful firms
→ Identify agency investments in technology areas

www.sbir.gov/sbirsearch/award/all
Why We Work on America’s Seed Fund

Online Tutorials

→ 55 Courses including:
  → Agency overviews
  → Program basics
  → Data rights
  → IP protection

www.sbir.gov/tutorials
SBA works with a number of local partners to counsel, mentor, and train small businesses in the innovation ecosystem.
Brittany.Sickler@sba.gov

@SBIRgov
#seedthefuture

www.sbir.gov
Federal Laboratory Consortium (FLC)
YOUR ONE-STOP SHOP FOR FEDERAL LABORATORY INFORMATION

Andy Myers
FLC Laboratory Representative
Kansas City National Security Campus
Technology Transfer Lead

May 2019
THE FLC’S MISSION

**PROMOTE** awareness and foster dialogue about federal R&D and the significant economic benefits of Technology Transfer (T2) among government, industry, academia, and external partners.

**EDUCATE** the federal T2 professionals on commercialization best practice strategies through various training opportunities and resources.

**FACILITATE** federal laboratories T2 goals through FLC-created tools and services that enable an accessible path for getting technologies from lab to market.

*Foster lab-to-market strategies and connections to accelerate federal technologies.*
Technology Transfer

**Technology transfer** (T2) is the movement of technology, knowledge, facilities, or capabilities developed in one place or for one purpose then applied and exploited in another place or for another purpose. It can occur:

- Between Universities and the private sector
- Between government entities
- Between the government and the private sector

Federal technology transfer

- Results in commercialization of new products
- Enhances laboratory and/or agency mission objectives
- Is mandated by Federal laws, Executive Orders, and etc.
EASY-TO-FIND LABORATORY DATA

Federal Laboratories

Facilities

Available Technologies

Equipment

Lab Publications

Funding

Programs

Your one-stop shop for Federal Lab information

Search FLC Business

Connect with a laboratory

Engage with an expert

https://www.federallabs.org/flcbusiness/search

Reversible Computation Gate in Superconducting Circuits

This technology replaces standard logic components for more energy-efficient digital logic. To execute digital logic operations, devices use gates—typically irreversible gates whose functions cannot be inverted. By using reversible gates, the logic operations of these gates can be inverted.

Quick View

More Details

USGS Water Science Centers

Water information is fundamental to national and local economic well-being, protection of life and property, and effective management of the Nation’s water resources. The USGS works with partners to monitor, assess, conduct targeted research, and deliver information on a wide range of water resources.

Quick View

More Details

Stable Isotope Laboratory

Description of Capability: Analytical isotope-dilution mass spectrometry for stable isotopes of carbon, oxygen, nitrogen, and sulfur in environmental and biogeochemical samples.

Quick View

More Details

Luminescence Geochronology Lab

Description of Capability: Dating of geological, palaeontological and archaeological materials. Luminescence dating is a form of geochronology that measures the energy of photons being released in natural settings, issuing radiation (i.e., X-rays, UV, K, and K).

Quick View

More Details

Tephrochronology Project Laboratory

Description of Capability: Tephrochronology and microcosmology. Specializes in the use of the U.S. Geological Survey's (USGS) tephrochronology framework to support scientific investigations.

Quick View

More Details
COLLABORATIVE RESEARCH ACCESS

- National Experts
- State of the Art Facilities
- Specialized Equipment
- Innovation

LABS CAN PARTNER WITH:

- Businesses? YES
- Academia? YES
- Nonprofits? YES
- GOV Entities? YES
- Foreign Entities? YES
- Individuals? YES
- Other? YES
SBIR Example
Naval Medical Center

- Phase II SBIR Grant
- CRADA with the Naval Medical Center in San Diego
  - Allowed for a California-based small business to utilize the facilities and expertise at the Naval Medical Center to advance the technology and develop a clinically useful tool that could benefit patients with amputations in gait training
- Mutual Benefit for both parties
  - Access to expertise and state of the art facilities
  - Fed lab involved in cutting edge R&D Efforts in a critical tech area
SBIR Example
National Wildlife Research Center

- USDA Phase I SBIR Project – Information Systems Technologies Inc.
- CRADA
  - Joint Research & Development of artificial intelligence platform for identifying feral swine by sight and sound
  - Allows for the exchange of information and ideas, and co-development of intellectual property
- Mutual Benefit for both parties
  - Access to expertise and end users
  - Fed lab involved in cutting edge R&D Efforts in a critical tech area
T2 SUCCESS TRACK

STEP 1: Identify your R&D needs and requirements

STEP 2: Search lab resources and Technologies

STEP 3: Work with lab to determine T2 mechanism

STEP 4: Re-assess your desire and needs

STEP 5: Connect with lab rep

STEP 6: Negotiate and finalize agreement

STEP 7: Execute, collaborate, and commercialize

For Assistance contact your FLC Regional POC

www.federallabs.org
REGIONS POCs

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Jennifer Stewart
Far West Regional Coordinator

MIDWEST
Brooke Pyne
Midwest Regional Coordinator

NORTHEAST
Valerie Larkin
Northeast Regional Coordinator

MID-ATLANTIC
Jack Pevenstein
Mid-Atlantic Regional Coordinator

SOUTHEAST
Michael Merriken
Southeast Regional Coordinator

MID-CONTINENT
John Eiseman
Mid-Continent Regional Coordinator
CONNECT WITH US!

flcbusiness.org
QUESTIONS

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FLC Laboratory Representative
Kansas City National Security Campus
Technology Transfer Lead,
TechTransfer@kcnsc.doe.gov

Thank you!
SBIR Road Tour
SEEDING AMERICA'S FUTURE INNOVATIONS™

Defense Advanced Research Projects Agency (DARPA)
Small Business Programs Office (SBPO)

Susan Celis
Program Director
susan.celis@darpa.mil
DARPA makes pivotal investments in ideas that lead to breakthrough technologies for national security.

To maximize the pool of innovative proposal concepts it receives, DARPA strongly encourages participation by all capable sources: industry, academia, and individuals.

The DARPA Culture

• Maintain and encourage innovation and the ability to execute rapidly and effectively.
• DARPA Program Managers – “Key individuals“ are:
  • selected from industry, academia, and Government agencies (longevity with DARPA 3-5 years)
  • considered at the top of their fields
  • tackles difficult challenges and takes big risks which push the limits of their disciplines.

• Become familiar with the challenges and opportunities of National Security.

• Contact a DARPA Program Manager (PM) about your idea prior to submitting a white paper or proposal to gain insight into the general need for the type of effort. PMs are the key to working with DARPA.

• Ideas should be compelling with potential for revolutionary change.

• Visit [www.grants.gov](http://www.grants.gov) or [www.fedbizopps.gov](http://www.fedbizopps.gov) to view DARPA Broad Agency Announcements (BAAs), Research Announcement (RAs), and Requests for Proposals (RFPs).

• Visit [https://sbir.defensebusiness.org/](https://sbir.defensebusiness.org/) to view DoD SBIR and STTR Program Announcements.

Think **boldly**. Embrace risk.
Technology Offices

**BTO**  **Biological Technology**
Bio-complexity | Bio-systems | Disease | Health | Med-Devices | Syn-Bio

**DSO**  **Defense Sciences**
Autonomy | Complexity | Fundamentals | Materials | Math | Sensors

**I2O**  **Information Innovation**
Algorithms | Cyber | Data | ISR | Networking | Processing | Programming

**MTO**  **Microsystems**
Decentralization | Electronics | EW | Globalization | Microsystems | Mobile | Photonics | PNT | Spectrum

**STO**  **Strategic Technology**
Air | Communications | Countermeasures | EW | ISR | Mobile | Spectrum | Tech-Foundations

**TTO**  **Tactical Technology**
Air | Ground | ISR | Maritime | Munitions | Robotics | Space

Distribution Statement "A"
(Approved for Public Release, Distribution Unlimited)
Streamlined and Competitive Process

Broad Agency Announcement (BAA) Characteristics:

• No common Statement of Work (SOW)
• Varying technical approaches/solutions are anticipated
• Proposals are evaluated with technical quality and approach as the main factor
• Communication with proposers allowed during the open period of the BAA
• White papers or proposal abstracts may be solicited
• Usually have Industry Days where Program Managers brief interested communities on the research program solicitation

BAA Types:

• Tech Offices will issue program-specific BAAs throughout the year
• Tech Offices will also issue one or two year-long BAAs with a more general scope (rolling submission process)
# Seedlings vs. Programs vs. SBIR/STTR

<table>
<thead>
<tr>
<th>Seedlings</th>
<th>Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Open to all capable sources</td>
<td>• Open to all capable sources</td>
</tr>
<tr>
<td>• Usually submitted through Office-Wide BAA</td>
<td>• Proposals solicited through specific program BAAs</td>
</tr>
<tr>
<td>• Small short duration (6-9 months) projects</td>
<td>• Often multi-year, multi-disciplinary efforts</td>
</tr>
<tr>
<td>• Move concepts from “disbelief” to “mere doubt”</td>
<td>• Technology development to move from “possibility” to “capability”</td>
</tr>
<tr>
<td>• May lead to the next generation of program ideas</td>
<td></td>
</tr>
</tbody>
</table>

### SBIR/STTR

| • Open to eligible small business concerns |
| • Usually submitted through DoD SBIR/STTR BAA |
| • Phase I feasibility up to $225K |
| • Phase II prototype development up to $1.5M |
| • May lead to the next generation of program ideas |
Important questions to consider when approaching DARPA with ideas:

• What are you trying to do? (no jargon!)
• How does this get done today?
• What is new about your approach?
• If you succeed, what difference do you think it will make?
• How long do you think it will take?
• Can your work transition (to the DoD or others)?
• How much will it cost?

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Susan Celis
Program Director
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Small Business Support Team
(703) 526-4170
sbir@darpa.mil

Distribution Statement "A"
(Approved for Public Release, Distribution Unlimited)
SBIR Road Tour
SEEDING AMERICA'S FUTURE INNOVATIONS™

U.S. Air Force (USAF)
United States Air Force Mission

Fly, Fight, and Win…In Air, Space, and Cyberspace

“The first essential of air power is preeminence in research.”
- General Henry “Hap” Arnold

“…innovation – fueled by intelligent, creative Airmen – will remain a key part of who we are and what we value as a service.”
- General Welsh
Turning Science into Capabilities

Air Force Science and Technology Strategy

Science and Knowledge Leads to Technologies Leads to Capability Concepts Leads to Service Core Function Capabilities

- NUCLEAR
- TECHNOLOGY
- LIFE CYCLE MANAGEMENT
- TEST & EVALUATION
- SUSTAINMENT
- INSTALLATION & MISSION SUPPORT

- Air Superiority
- Global Precision Attack
- Personnel Recovery
- Command & Control
- Global Integrated ISR
- Cyberspace Superiority

- Space Superiority
- Special Operations
- Rapid Global Mobility
- Nuclear Deterrence Operations
- Agile Combat Support
- Education and Training
The AF Small Business Innovation Research (AF SBIR/STTR) Program

**FY2018 Portfolio**

**Inputs**

- Air Force
- ~$663M
- +48%

---

**Need Topics**

- Responsive – Urgent Needs
- Relevant – Service Core Functions
- Revolutionary – Game Changers

---

**Investments**

- ~$90M
  - Phase 2 - Concepts
  - +11%

- ~$330M
  - Phase 2 - Prototypes
  - +48%

- ~$230M
  - Phase 2+ - Commercialization
  - +64%

- ~$7M
  - Program Administration
  - -41%

---

**Results**

- Technology Base
- Innovation Potential
- Fueling the Economy
- Technology Transitions
- Fielded Capabilities

---

**Success**

- +11%
- +48%
- +64%
- -41%

---

**FY2018 Portfolio Investments**

- Air Force
- ~$663M
- +48%

---

**Responsive – Urgent Needs**

- Relevant – Service Core Functions
- Revolutionary – Game Changers

---

**Program Administration**

- ~$7M
- -41%

---

**Success**

- +11%
- +48%
- +64%
- -41%

---

DISTRIBUTION A: APPROVED FOR PUBLIC RELEASE (Case #: 88ABW-2018-3378)
AF SBIR/STTR Program Structure

**Phase 0**
- **Pre**
  - Up to $150K
  - 9-mo. award
- **Concept**

**Phase I**
- **Year 1**
  - Up to $750K
  - 2-yr. award
- **Demos and Prototype**

**Phase II**
- **Year 2**
- **Year 3**
- **Phase II+**
  - Year 4 - 8
  - $750K to $1.5M
  - Time varies
- **Commercialization and Technology Transition**

**Phase III** (Non-SBIR/STTR Money)

**Commercialization Readiness Program**
AF SBIR/STTR “Special Initiatives”

Provide an opportunity for small businesses with an Air Force research and development contract, in particular SBIR/STTR contracts, to TEST, EXPERIMENT, CONDUCT DATA COLLECTION, INSERT, and/or otherwise SHOWCASE and DEMONSTRATE state-of-the-art warfighting technologies in a realistic operational environment.
“INVENTORS MAKE STUFF....BUT INNOVATORS MAKE HISTORY”

— D. Shahady
Contact Us

• Contact the Air Force SBIR/STTR Program Office at 1-800-222-0336 - info@afsbirsttr.com
• Visit our website for SBIR POCs, topic info, newsletter, etc.:

www.afsbirsttr.com
SBIR Road Tour
SEEDING AMERICA'S FUTURE INNOVATIONS™

U.S. Navy
Primary Program Goals:
- Use small business to develop innovative R&D that addresses DON need
- Commercialize (Phase III) SBIR-developed technology into a DON platform or weapons/communication system, or for facilities use in expeditionary bases in new “pivot” locales in Africa and Asia

About the Program:
- Acquisition Driven Process with Strong Technology Pull
- $400 M+ annual funding supporting small business innovation/research
- Wide range of SBIR/STTR topics driven by PEO/PM/FNC specific needs
- Making a great program better through the use of pilot efforts
Why Participate in SBIR/STTR?

• Largest source of early stage R&D funds for small businesses

• Builds credibility of company’s research

• Data Rights retained for 5 years
  - STTR: small business must have data rights agreement with research institution

• Small business can maintain ownership of equipment purchased under Phase I and Phase II

• Better alternative than mortgaging the house...again!
What is part of DON SBIR/STTR?

We need YOUR solutions
Broad Agency Announcement (BAA) Schedule

- DoD BAAs are released 3 times per year. The FY19 schedule is listed below.
- The .1/A BAA typically has the most Agency participation and the largest number of topics.

<table>
<thead>
<tr>
<th>2019 BAA Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BAA</strong></td>
</tr>
<tr>
<td>FY19.1/A</td>
</tr>
<tr>
<td>FY19.3/C</td>
</tr>
</tbody>
</table>
SBIR Road Tour
SEEDING AMERICA’S FUTURE INNOVATIONS™

U.S. Department of Homeland Security
(DHS)
DHS Small Business Innovation Research (SBIR) Programs Overview

2019 SBIR Road Tour
Seeding America's Future Innovations™

SBIR-STTR Central Plains
May 20-24, 2019

John Pucci
DHS SBIR Program Director
Science and Technology Directorate
Homeland Security Missions

- Prevent Terrorism and Enhance Security
- Secure and Manage Our Borders
- Enforce and Administer Our Immigration Laws
- Safeguard and Secure Cyberspace
- Strengthen National Preparedness and Resilience
DHS SBIR Supports.....

- Federal Emergency Management Agency (FEMA)
- Customs and Border Protection (CBP)
- U.S. Coast Guard (USCG)
- Transportation Security Administration (TSA)
- Immigration and Customs Enforcement (ICE)
- Cybersecurity and Infrastructure Security Agency (CISA)
- U.S. Secret Service (USSS)
- Countering Weapons of Mass Destruction Office (CWMD)
- First Responders
Today DHS will...

- **U.S. Immigration and Customs Enforcement**: Remove 645 criminals, seize $1.4M in illicit currency and assets.
- **U.S. Citizenship and Immigration Services**: Naturalize 2,000 new U.S. citizens, grant 1,723 people permanent residence, asylum, and refugee status.
- **Federal Law Enforcement Training Centers**: Train 2,800 federal, state, local, tribal, and international law enforcement personnel.
- **Federal Protective Service**: Protect 1.4 million federal employees and visitors in 9,000 facilities across the country.
- **U.S. Customs and Border Protection**: Process 282,000 privately owned vehicles, 72,000 truck, rail, and sea containers. Seize 9,400 lbs of illicit drugs and $356,000 in currency.
- **Screening**: Screen 2 million passengers and 1 million pieces of luggage.
- **Federal Emergency Management Agency**: Support local communities with $4.4 million in homeland security assistance.
- **U.S. Coast Guard**: Save 10 lives in more than 45 search and rescue operations. Seize and remove 874 lbs of cocaine and 214 lbs of marijuana with a wholesale value of $11.8 million.

www.dhs.gov
S&T’s Visionary Goals

**SCREENING AT SPEED:**
Security that Matches the Pace of Life

**A TRUSTED CYBER FUTURE:**
Protecting Privacy, Commerce, and Community

**ENABLE THE DECISION MAKER:**
Actionable Information at the Speed of Thought

**RESPONDER OF THE FUTURE:**
Protected, Connected, and Fully Aware

**RESILIENT COMMUNITIES:**
Disaster-Proofing Society
FY18 and 19 Topics

S&T

- Reach-Back Capability for Fielded Rapid DNA Systems
- ICAM On-the-Fly
- On Body Power Module for First Responders
- Modeling-based Design of Sensors for Chemical Detection in Complex Environment
- Synthetic Training Data for Explosive Detection Machine Learning Algorithms
- Cybersecurity Peer-to-Peer Knowledge/Lessons Learned Tool
- Network Modeling for Risk Assessment
- Blockchain Applications for Homeland Security Forensic Analytics
- Development of a Wearable Fentanyl Analog Sensor
- Cell Phone Location Finder for Maritime and Remote Search and Rescue
- Device to Detect Interference of Communications Systems
- Deterministic Augmentation of RF Transmissions for PNT

S&T continued

- LMR-P25 and LTE Mission Critical Push to Talk Interface Service
- Improved Human Systems for Computed Tomography
- Automated & Scalable Analysis of Mobile & IoT Device Firmware

CWMD

- Detector Integration with Current and Emerging Networked Systems
- Unmanned Aerial System Autonomous Search of Limited Area for Radiological Threats
- Ground-Based Autonomous Robotic Inspection of General Aviation for Radiological Threats
- Exploitation of Security Networks and Video Management Systems for Nuclear Threat Identification and Tracking
- Semiconductor-Based Thermal Neutron Detector Module for Incorporation into Radiation Detector Systems
- Inorganic Microscopy Standardization and Training for Image Analysis

Details available under “Past Solicitations” at https://sbir2.st.dhs.gov/
DHS SBIR Program Specifics

- Two Directorates in DHS manage SBIR
  - Science & Technology (S&T) Directorate
  - Countering Weapons of Mass Destruction Office (CWMD)*

- FY2018 Budgets:
  - S&T Directorate’s SBIR: $15.7M
  - CWMD’s SBIR: $2.0M

- Topics determined by the government in response to component and HSE needs
  - Solicitation released in early December each year
  - 7-14 topics per year
  - 10 topics in December 2018 solicitation

- Phase I contracts: $150,000
- Phase II contracts $1,000,000

* - CWMD Office data includes Domestic Nuclear Detection Office data through FY17
DHS SBIR Points of Contact

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roger.gima@associates.hq.dhs.gov
202-254-7033

DNDO SBIR Program email
dndosbir@hq.dhs.gov

SBIR Portal Help Desk
Email: dhssbir@reisystems.com
Phone: 703-480-7676

To report DHS SBIR fraud, waste and abuse:
- Anonymous Hotline: 1-800-323-8603
- Fax: 202-254-4297
- Mail: DHS Office of Inspector General/Mail Stop 0305
  Attn: Office of Investigations - Hotline
  245 Murray Drive SW
  Washington, DC  20528-0305
I asked for dedicated staff that knew DHS operational needs and this is what they gave me!
U.S. Department of Energy (DOE)
WHAT DO WE FUND?

• Mission
  • Leadership in clean energy technologies
  • Leadership in basic science and engineering in the physical sciences
  • Enhancement of nuclear security

• SBIR/STTR Research Areas
  • Renewable energy, energy efficiency, grid modernization, advanced fossil fuel technologies, nuclear energy, fusion energy
  • Advanced scientific instrumentation in the physical sciences, advanced computing, atmospheric and environmental monitoring, accelerator technology
  • Nuclear nonproliferation, environmental remediation and clean up
  • More details: https://science.osti.gov/sbir/Research-Areas-and-Impact
HOW DO WE OPERATE?

• Phase I
  • *Issue two Funding Opportunities Announcements annually—DOE issues grants*
  • *Typically very focused topics areas, approximately 70 topics per year*
  • *Awards up to $200,000, 6-12 months duration, ~400 per year*

• Phase II
  • *Phase I awardees compete for Phase II Awards the following year*
  • *Awards up to $1,100,000 or $1,600,000 (varies by topic), up to 2 years duration, ~180 per year*

• Second & Third Phase II
  • *These award focus on follow-on R&D to achieve commercialization. Third Phase II requires investor matching funds.*
  • *Awards up to $1,100,000, up to 2 years duration*

• Schedule: [https://science.osti.gov/sbir/Funding-Opportunities](https://science.osti.gov/sbir/Funding-Opportunities)
TAKE ADVANTAGE OF . . .

• Applicants
  • Phase 0 Application Assistance program for first time applicants
  • Online application tutorials (www.doesbirlearning.com)
  • Partnership with DOE National Labs (https://science.osti.gov/sbir/Applicant-Resources/National-Labs-Profiles-and-Contacts and https://www.labpartnering.org/partnering)

• Awardees
  • Select your own commercialization assistance provider or utilize the DOE Commercialization Assistance Program (http://www.larta.org/doecap). Up to $6,500 available for Phase I and $50,000 available for Phase II.
CONTACT US

• DOE SBIR/STTR Website: https://science.osti.gov/sbir
  • You can join our mailing list on our homepage (near the page bottom)
• Telephone: 301-903-5707
• Email: sbir-sttr@science.doe.gov
America’s Seed Fund at NSF

https://seedfund.nsf.gov/
@NSFSBIR
sbir@nsf.gov

Spring 2019
NSF: Key takeaways

• Phase I submission windows: March-June and June-December (2019)
• Topics: essentially unlimited (other than drug development)
• Motivation: commercialization → broader impacts
• Focus: early-stage start-ups + commercially disruptive, unproven technology
• Mechanism: Highly flexible grant with the ability to pivot
• Structure: Decision-making Program Directors with deep technical and commercial/entrepreneurial experience + external merit review
• Post-award: Ongoing PD engagement throughout the award + Beat-the-Odds Boot Camp offered free to all Phase I awardees
What we are looking for

**Intellectual Merit**
- Innovative (i.e. novel and differentiable new approach that will solve a problem)
- High-technical-risk requiring R&D to prove out

**Broader Impacts**
- Potential to benefit society and contribute to the achievement of specific societal outcomes

**Commercial Potential**
- Customer/market traction and engagement
- Company/team suited to aggressive commercialization
- Competitive advantage, business model
- NSF funding will “move the needle”
By the data

- Budget: ~$200 million (300-350 Phase I awards/year)

- Recent Phase I awardee stats (NSF Award Search):
  - 95% have never had a Phase II award (any agency)
  - 80% have four or fewer employees
  - 56% founded in past two years
  - 63% awarded based on firm’s first NSF submission

- Strong commercial outcomes for portfolio companies (all based on public data only, 2014-present):
  - $6.5 billion in follow-on institutional (equity) financing
  - 90 successful exits (acquisitions, mergers, IPOs)
Some stories

AMO to buy IntraLase for $808 million

Spider silk startup Bolt Threads closes on $123 million in Series D funding

After scrapping Monsanto deal, Deere agrees to buy precision farming startup Blue River for $305M

Boston Scientific Nabs Apama Medical in $300 Million Deal
Deal calls for $175 million in cash plus $125 million based on milestones

Ginkgo Bioworks secures $275 million in Series D, valuing the company at over $1 billion

Google Capital Leads $75 Million Investment in Phone Fraud Startup

ClearMotion Secures $100 Million Investment Led By J.P. Morgan Asset Management To Commercialize World's First Digital Chassis
SBIR Road Tour
SEEDING AMERICA’S FUTURE INNOVATIONS™

National Institutes of Health (NIH)
Why NIH SBIR/STTR?
2019 SBIR Road Tour

SBIR.NIH.GOV
SBIR@od.nih.gov

Omnibus AND Targeted Funding Opportunity Announcements (FOAs)
Includes Clinical Trial NOT Allowed + Clinical Trial REQUIRED FOAs

Apply Electronically using Forms OR use NIH ASSIST (Application Submission System & Interface for Submission Tracking)

NIH-ONLY Options:
Fast-Track Application Direct to Phase II

NIH Technical Assistance Programs: Niche, CAP, I-Corps (NCI), Technical and Business Assistance (TABA)

National SBIR/STTR Conference (SBA)
SBIR Road Tours
NIH Regional Seminars
Free Webinars

21st Annual HHS SBIR/STTR Conference
Virginia Beach, VA
October 28-30, 2019

Women Owned & Socially/Economically Disadvantaged Small Businesses IDeA States

Application Assistance Program (AAP)
Administrative Diversity Supplement

Niche Assessment Program
- Phase I Awardees
- Provides market insight and customer analysis

Why NIH SBIR/STTR?
2019 SBIR Road Tour

SBIR.NIH.GOV
SBIR@od.nih.gov

24 Different Funding NIH Institutes and Centers And CDC, FDA, and ACL (NIDILRR)

Application Assistance Program (AAP)
Administrative Diversity Supplement

Three Grant Receipt Dates
(Sep 5, Jan 5, Apr 5)
One Contract Receipt Date (October) Annually

Commercialization Accelerator Program (CAP)
- Phase 2 Awardees
- Offers support toward commercialization

NIH 2019 SBIR/STTR Budget $1.1 billion:
SBIR - $1 billion
STTR - $140 million

NIH 2019 SBIR/STTR
Budget $1.1 billion:
SBIR - $1 billion
STTR - $140 million

NIH 2019 SBIR/STTR
Budget $1.1 billion:
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Budget $1.1 billion:
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NIH 2019 SBIR/STTR
Budget $1.1 billion:
SBIR - $1 billion
STTR - $140 million
U.S. Department of Agriculture (USDA)
U.S. Department of Agriculture Small Business Innovation Research Program

Elden Hawkes
Program Specialist
USDA SBIR Program

- Annual Budget ~$24 M
- Funding Opportunities for Grants – SBIR only
  - Phase I Grants = 8 Months/$100,000
  - Phase II Grants = 2 Years/$600,000
- Commercialization Assistance Programs for Phase I Winners
- Phase II Winners can request additional funds for commercialization.
- Research can be done with existing ARS patents via ARS CRADAs
- FY 2018: Phase I
  - 533 Phase I applications submitted
  - 79 Phase I awards
- Phase II
  - 67 Phase II applications submitted
  - 35 Phase II awards
SBIR Topic Areas

- Air, Water, and Soil
- Animal Production and Protection
- Aquaculture
- Biofuels and Biobased Products
- Food Science and Nutrition
- Forests and Related Resources
- Small and Mid-Sized Farms
- Rural and Community Development
- Plant Production and Protection - Engineering
- Plant Production and Protection - Biology
- Off the Shelf technologies allowed in these two topic areas
- Research can be done with existing ARS patents via ARS CRADAs
FY 2020 Timeline

Phase I

- RFA Released: July 2019
- Proposal Deadline: Oct 2019
- Panels: Jan & Feb 2020
- Notifications: March 2020
- Awards*: June – Aug 2020

Phase II – Only open to Phase I awardees, no straight to Phase II program

- RFA Released: Dec 2019
- Proposal Deadline: Feb 2020
- Panels: May 2020
- Notifications: June 2020
- Awards*: Sep 2020
Freund`s Farm, Inc.
Stony Creek Colors

Bio-based Dyes. With a whole system seed to closet approach

**INDIGO PLANTS**
We’ve tested a variety of indigo plants so that we grow the right ones for the southeast climate and ecology.

**FARMERS AND FARMS**
Working with farmers, we develop techniques to farm our indigo that bring profitability and nourish ecosystems.

**CONSUMERS**
Our colors empower people to purchase clothing that fully aligns with their desire to be a force for positive change.

**STONY CREEK COLORS**
With our mindful innovation approach, we develop the processes and chemistry to create bio-based dyes.

**BRANDS**
Partnering with pioneering brands, we develop bio-based dyes that bring full integrity to their clothing.

**MILLS**
We work with mills to ensure our bio-based dyes meet the highest quality specifications and work flawlessly with their systems.

Featured in Forbes, NPR, Huffington Post

2016 American Made Honoree Unites States of Innovation 2017
# Altaeros Energies

## Technology Developed
- Altaeros Buoyant Airborne Turbine (BAT) leverages proven aerospace technology to lift a wind turbine into the strong, consistent winds beyond the reach of traditional towers.

## SBIR History
- Phase I – 2011 ($150K)
- Phase II – 2012 ($450K)
- 8.6 Rural Development

## Commercialization Success
- First commercial products sold in 2015.
- Telecoms group SoftBank has invested $7m in Altaeros Energies for future deployment of the BAT technology in Japan.
USDA SBIR
Contact with SBIR Program Available Anytime

Elden Hawkes – Program Specialist
Elden.Hawkes@usda.gov

Web Site: https://nifa.usda.gov/sbir
VISION
Empower small businesses to deliver technological innovation that contributes to NASA's missions, provides societal benefit, and grows the US economy.

MISSION
Create opportunities through SBIR/STTR awards to leverage small business knowledge and technology development for maximum impact and contribution.

NASA's SBIR and STTR programs have awarded more than $3.75 billion to research-intensive American small businesses.

Engineers and scientists from more than 3,100 firms in all 50 States, DC, and Puerto Rico have participated across the two programs.

Approximately 15,000 total awards have been made to-date.
SBIR/STTR Program Structure

Go to sbir.nasa.gov/guide for details
Focus Areas

NASA’s research subtopics are organized by “Focus Areas” that group interests and related technologies.

• **Identify** the Area(s) closest to your innovation/idea

• **Go** to our website to research

• **Prepare to write** a proposal tailored to NASA’s needs

https://sbir.nasa.gov/solicitations

<table>
<thead>
<tr>
<th>2019 Focus Areas (FA)</th>
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</thead>
<tbody>
<tr>
<td>FA 1: In-Space Propulsion Technologies</td>
</tr>
<tr>
<td>FA 2: Power Energy and Storage</td>
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<tr>
<td>FA 3: Autonomous Systems for Space Exploration</td>
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<tr>
<td>FA 4: Robotic Systems for Space Exploration</td>
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<tr>
<td>FA 5: Communications and Navigation</td>
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<tr>
<td>FA 6: Life Support and Habitation Systems</td>
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<td>FA 8: In-Situ Resource Utilization</td>
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<td>FA 9: Sensors, Detectors and Instruments</td>
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<td>FA 10: Advanced Telescope Technologies</td>
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<tr>
<td>FA 11: Spacecraft and Platform Subsystems</td>
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<td>FA 12: Entry, Descent and Landing Systems</td>
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NSF Space Topic

• NSF is including a Space topic in its SBIR/STTR Program

• Given different program goals and criteria, it’s likely that one agency would be a much better fit for any specific project.

• Learn more about the differences between the NSF SBIR/STTR and NASA SBIR/STTR Programs at:

  https://sbir.gsfc.nasa.gov/content/nsf-sbirsttr-space-topic-what-you-need-know
SPECIAL MIRRORS HELP NASA DETECT PLANETS

IRIS AO, Inc., Berkley, CA

Challenge
Starlight can lower the contrast in images sent back to Earth from a telescope traveling in space, making it harder to detect planets light years away.

Innovation
IRIS AO, Inc. helped NASA to develop deformable mirror (DM) technology that can filter out direct light from stars that limit the visibility of exoplanets. The technology is a key component of starlight blocking instruments on telescopes. The DM is used to correct optical aberrations that otherwise reduce the resolution of an image.

PHASE III SUCCESS
IRIS AO products derived from SBIR funding are available for world-wide distribution by Edmund Optics - approximately $2 million revenue generated annually from the technology developed from NASA SBIR. NASA's SBIR program invested $875,000.

SNAPSHOT
Since the first exoplanet discovery in 1995, NASA has dedicated resources to develop deformable mirrors for powerful telescopes to determine if there are signs of life beyond Earth on planets outside our solar system.

https://sbir.nasa.gov/success-stories
Contact us and let’s innovate together

Website
www.sbir.nasa.gov

Sign up for our Newsletter
https://sbir.nasa.gov/info

NASA Help Desk
301.937.0888
Flexible Funding Opportunities:
The Granting Agencies
Flexible Funding Opportunities:
The Granting Agencies

Moderator: SBA
Small Business Administration

Ben Schrag
National Science Foundation (NSF)

Elden Hawkes
Department of Agriculture (USDA)

Manny Oliver
U.S. Department of Energy (DOE)

Dr. Ming Zhao
National Institutes of Health – National Cancer Institute (NIH - NCI)
SBIR Road Tour
SEEDING AMERICA'S FUTURE INNOVATIONS™

U.S. Patent and Trademark Office
(USPTO)
Resources for Small Business Owners, Entrepreneurs, and Independent Inventors

David Le
Rocky Mountain Regional Office
USPTO offices

- Silicon Valley West Coast Regional Office
- Rocky Mountain Regional Office
- Texas Regional Office
- Midwest Regional Office
- USPTO HQ
What is intellectual property?

“Real” property

Intellectual property
Types of intellectual property

- Patent:
  New, inventive ideas

- Trademark:
  Identifies the origin of goods or services

- Copyright:
  Creative expression stored in a tangible form

- Trade secret:
  Any information that is valuable & kept confidential
Startup Resources

Many startup businesses face unique IP-related challenges, such as IP portfolio requirements to secure funding, and the possibility of costly patent infringement demand letters and lawsuits. We have tailored this area of our website to suit the specific needs of startup businesses, a segment of our stakeholders that continues to be recognized as an essential engine of job creation, economic growth, and unparalleled innovation in the United States.

This portal is part of our Startup Partnership Initiative—putting key resources and critical information for startups in a single place so it’s easier to find what you may need when you need it.

Patents for Startups
The patent process can be challenging if you are not familiar with it. Here is basic information on the patent process:
- Patent Process Overview
- Inventors Assistance Center
- Patent FAQs
- Patent Homepage
- Search for Patents
- Official Gazette for Patents

Trademarks for Startups
The trademark process can be confusing for a beginner, so here is basic information on registering a trademark:
- Trademark Basics
- Search for Trademarks
- Filing online
- Trademark Homepage

Startup Assistance
The Inventors Assistance Center and Trademark Assistance Center provide information and services to the public. Center staff can answer questions on patent and trademark processes, but cannot provide specific legal advice.
- Inventors Assistance Center
- Trademark Assistance Center
- Patents Ombudsman Program
- BusinessUSA (link is external)

Current Events
Information about conferences, conventions and other opportunities to engage.
- Upcoming Events
- Investors Eye | Events & Announcements

www.uspto.gov/startups
Small entity
- Must be an individual or
- A small business (less than 500 employees) or
- A non-profit organization

Independent micro-entity
- Qualify as a small entity
- Filed no more than four previous applications
- Income not greater than 3x median income
  - January 2019: $184,116
- Not assigned to other than a micro-entity
- Inventions assigned to employer don’t count against you
- A 75% reduction in fees
Trademark Assistance Center

- Provides general information about the registration process
- Responds to status inquiries
- 8:30 a.m.-8:00 p.m. ET, Monday through Friday
- 571-272-9250 or 800-786-9199
- TrademarkAssistanceCenter@uspto.gov
Inventors Assistance Center

- Provides general information about the patent examination policy and procedure
- Assists with identifying necessary forms and completion
- 8:30 a.m. - 8:00 p.m. ET, Monday through Friday
- 571-272-1000 or 800-877-8339

The Inventors Assistance Center (IAC) provides information and services to the public. The IAC is staffed by former supervisory patent examiners, experienced primary patent examiners, various intellectual property specialists, and attorneys who can answer general questions concerning patent examining policy and procedure.

What IAC can do for you
- Answer general questions regarding patent examining policy.
- Answer questions concerning necessary formats and items needed for your patent application.
- Assist you with forms needed and with filling out the forms.
- Direct your calls to appropriate USPTO personnel or www.USPTO.gov web pages, as necessary.
- Provide you with general information concerning patent examining rules, procedures, and fees.
- Send you patenting information and forms via USPS mail or facsimile.
IP Awareness Assessment Tool

- Measure and increase your knowledge of IP and the IP protections available.

- ipassessment.uspto.gov
Patent and Trademark Resource Centers (PTRC)

Nationwide network of public, state and academic libraries that are designated by the USPTO to disseminate patent and trademark information and to support intellectual property needs of the public.

www.uspto.gov/ptrc
Law School Clinic Certification Program

lawschoolinformation@uspto.gov
571-272-4097
Patent Pro Bono Program

• Gateway Venture Mentoring Service
  – Serves Arkansas, Kansas, Missouri, Oklahoma, and Nebraska
  – www.gatewayvms.org
  – 314-862-4867

• LegalCORPS Inventor Assistance Program
  – Serves Minnesota, North Dakota, South Dakota, Iowa, and Wisconsin
  – Legalcorps.org/inventors
  – iap@legalcorps.org
Patents Ombudsman Office

• Assists applicants throughout the application process including initial filing, patent examination, and post examination.
• Helps applicants get their applications back on track.
• Telephone (M-F from 8:30am – 8:00pm ET)
  – 571-272-5555 or 855-559-8589

• Website:
  – www.uspto.gov/patent/ombudsman-program
Surprising Opportunities with DoD and NASA
Surprising Opportunities with DoD and NASA

Moderator: SBA
Small Business Administration

Dr. Maxwell Briggs
National Aeronautics and Space Administration (NASA)

Susan Celis
Defense Advanced Research Projects Agency (DARPA)

Bob Renner
Marine Corps Systems Command (MARCOR)

Michael Williams
U.S. Air Force (USAF)
Inside the Head of an Evaluator: Common Mistakes
Inside the Head of an Evaluator: Common Mistakes

Moderator: SBA
Small Business Administration

John Pucci
Department of Homeland Security (DHS)

Ben Schrag
National Science Foundation (NSF)

Scott Dockum
U.S. Department of Agriculture (USDA)