AFRL

AIR FORCE OFFICE OF SCIENTIFIC RESEARCH
SCIENCE AND ENGINEERING COLLABORATION (RTC) BRANCH OVERVIEW

JULIE MOSES

PROGRAM OFFICER

25 JUNE 2025

RTC Mission Statement

WE FUND DIVERSE RESEARCH PROGRAMS THAT DRIVE THE SCIENCE OF TOMORROW

Our branch provides initiatives and resources to applicants dedicated to innovation

Science and Engineering Collaboration Branch Programs

AFRL

Transfer & Transition

- *Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Program*
- *Office of Research and Technology Applications Liaison*

Basic Research Grants

All qualified, responsible organizational applicants from academia, the non-profit sector, and industry are eligible to submit research proposals.

Strengthening Academic Research Capabilities

- *Multidisciplinary University Research Initiative (MURI) Program*
- *Defense University Research Instrumentation Program (DURIP)*
- *Presidential Early Career Award for Scientists and Engineers (PECASE)*
- *Defense Established Program to Stimulate Competitive Research (DEPSCoR)*

Strengthening Air & Space Force Research Capabilities

- *US Air Force Academy Program (USAFA)*
- *Summer Faculty Fellowship Program (SFFP)*
- *Science & Technology Fellowship Program (STFP)*
- *Air Force Institute of Technology (AFIT)*

Workforce Development

- *Awards to Stimulate and Support Undergraduate Research Experiences (ASSURE)*
- *National Defense Science and Engineering Graduate Fellowship Program (NDSEG)*
- *K-12 STEM & LEGACY*
- *AFRL Scholars*

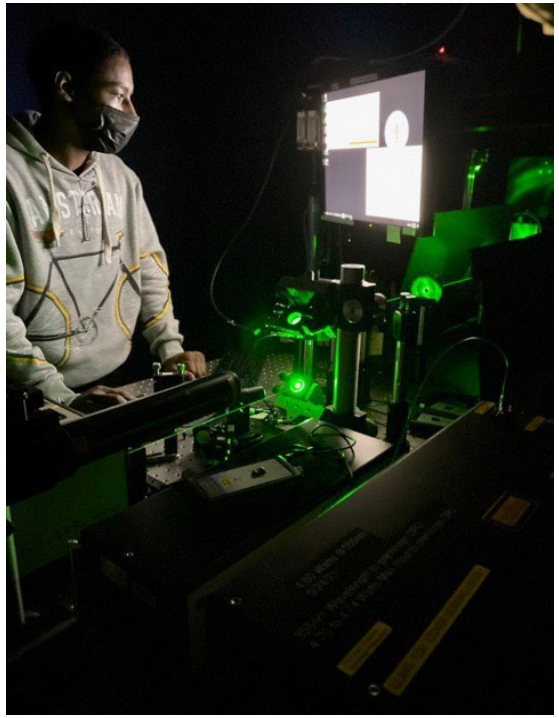
Expanding Air & Space Force Academic Reach

- *Young Investigator Program (YIP)*
- *Historically Black Colleges & Universities/Minority Serving Institutes (HBCU/MSI) Program*
- *National Science Portal Program (NSP)*
- *Government University Industry Research Roundtable (GUIRR)*
- *Gordon Research Conference (GRC) Bundle*

Opportunities to Partner

Air Force Research Laboratory (AFRL) Scholars

The Air Force Research Laboratory (AFRL) Scholars Program offers **stipend-paid internship** opportunities for undergraduate and graduate-level university students pursuing STEM degrees. The selected interns gain valuable hands-on experiences working with full-time AFRL scientists and engineers on cutting-edge research and technology and can contribute to unique, research-based projects.



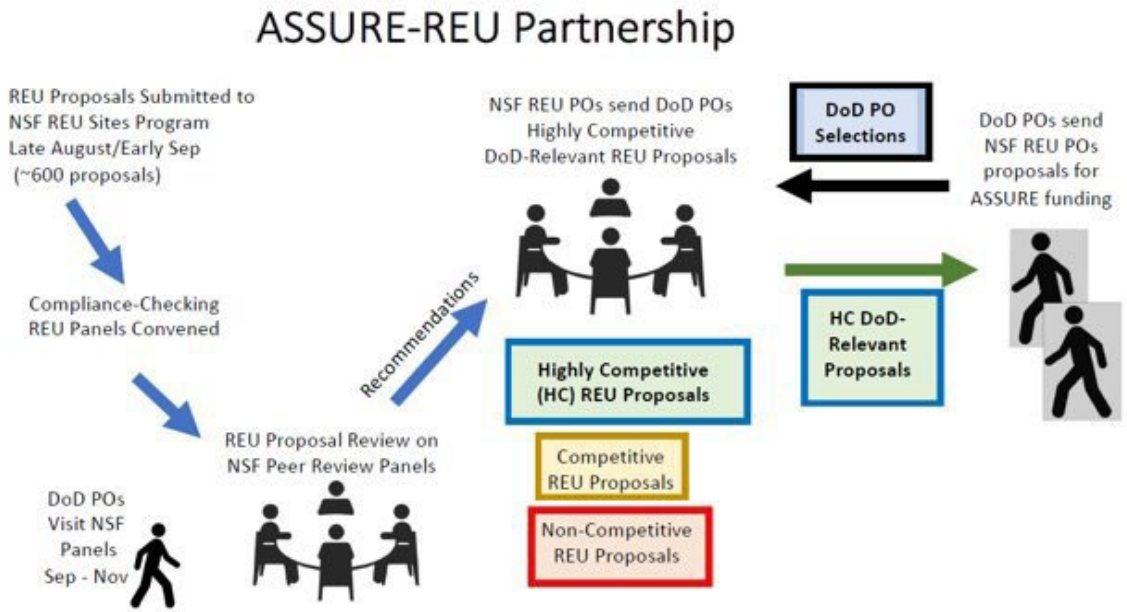
AFOSR supports RD-managed program in partnership with TDs

For more information or to apply, please visit https://afrlscholars.usra.edu/

Awards to Stimulate and Support Undergraduate Research Experiences ASSURE Program

The National Science Foundation (NSF) in partnership with the U.S. Department of Defense (DoD) supports undergraduate research in DoD relevant disciplines. Since 2003 the DoD has contributed several million dollars per year to support particular REU Sites that focus on research relevant to DoD's interests.

For more information or to apply, please visit:
https://www.nsf.gov/crssprgm/reu/list_result.jsp?unitid=10023



Summer Faculty Fellowship Program

The U.S. Department of the Air Force Research Faculty Fellowship Program offers hands-on exposure to Department of the Air Force (DAF) research challenges through 8- to 12-week research residencies at participating DAF research facilities for full-time science, mathematics, and engineering faculty at U.S. colleges and universities.

For more information or to apply, please visit https://afsffp.sysplus.com/

STEM Fellowships for Post-doc and Senior Researchers

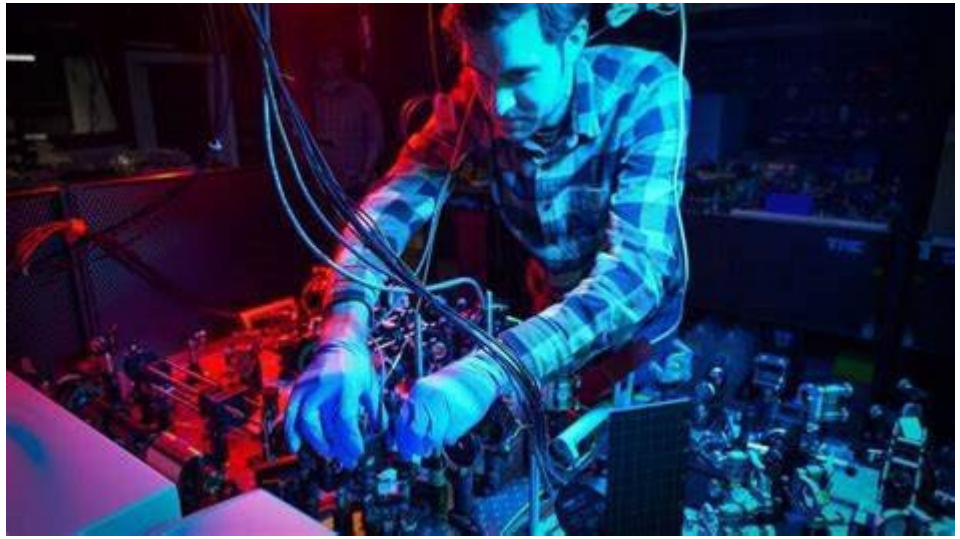
AFRL Science and Technology Fellowship Program (STFP)

The STFP is the premiere AFRL research associate program. Since 1966, the National Academies of Science has managed and awarded over 2,000 fellowships. STFP annually sponsors up to 100 early career and senior researchers' opportunities to perform *"in residence"* research at sponsoring DAF laboratory sites. Aligns research with over 300+ DAF laboratory basic research opportunities. Open to *US citizens only.* The award tenure time is for two-years with limited three-year in specific cases

- Solves DAF critical needs research problems largely of their own choice
  - Applicants develop research proposal with mentor/research advisor

Base Salary

- EC < 5 years PhD: $95,000
- SR > 5 years PhD: $112,000



Other Benefits

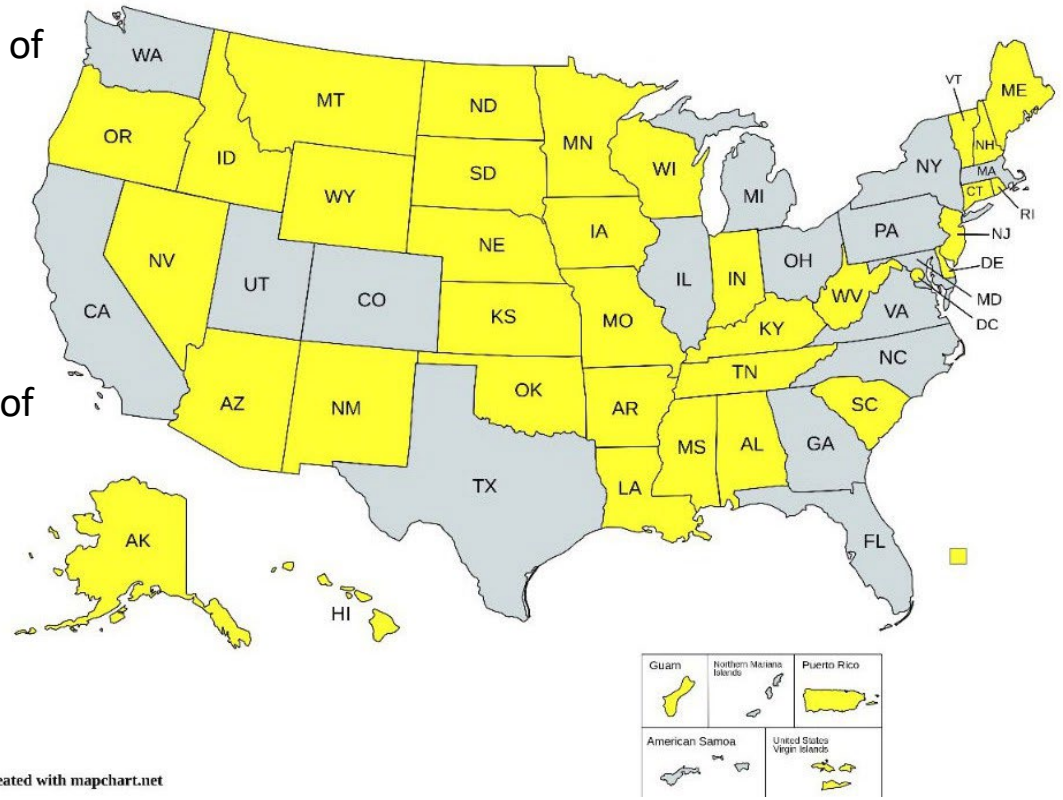
- Travel budget: $5,000
- Healthcare (self/family)
- Relocation up to $10,000

For more information or to apply, please visit: AFRL Science and Technology Fellowship Program

Defense Established Program to Stimulate Competitive Research (DEPSCoR)

The Defense Established Program to Stimulate Competitive Research, Congress reauthorized the program in FY18 to build the national infrastructure by improving the capacity of institutions of higher education to conduct sustainable and national competitive defense-related basic research in historically-underrepresented 37 states and territories.

- Enhance the capabilities of institutions in eligible states and territories
- Increase the number of university researchers
- Increase the probability of long-term grown in the competitively awarded eligible states and territories

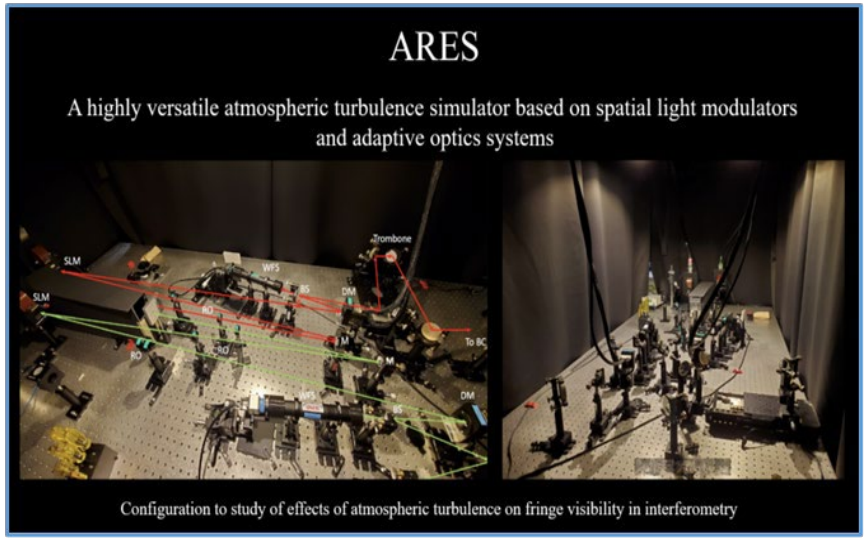


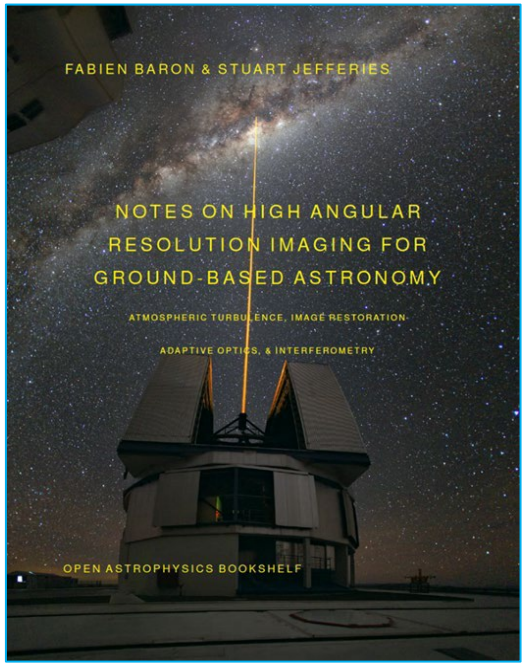
- Authorized by Congress for states and territories
- Build the national infrastructure by improving the capacity of institutions of higher education.
- 36-month efforts at $600K
- Focused on states and territories to enhance research capabilities and to grow long-term competitiveness

Defense University Research Instrumentation Program (DURIP)

DURIP is an Office of the Under Secretary of Defense, Research and Engineering (OUSDR&E) sponsored tri-service program designed to improve the capabilities of accredited United States (US) institutions of higher education to *conduct research and to educate scientists and engineers* in areas important to national defense by providing funds for the acquisition of *basic research equipment or instrumentation*. Each DURIP award is 12 months in length with an optional 12-month extension upon request.

- No citizenship requirements
- No past, current, or future DoD funding required
- Budget range: $50,000 to $3,000,000



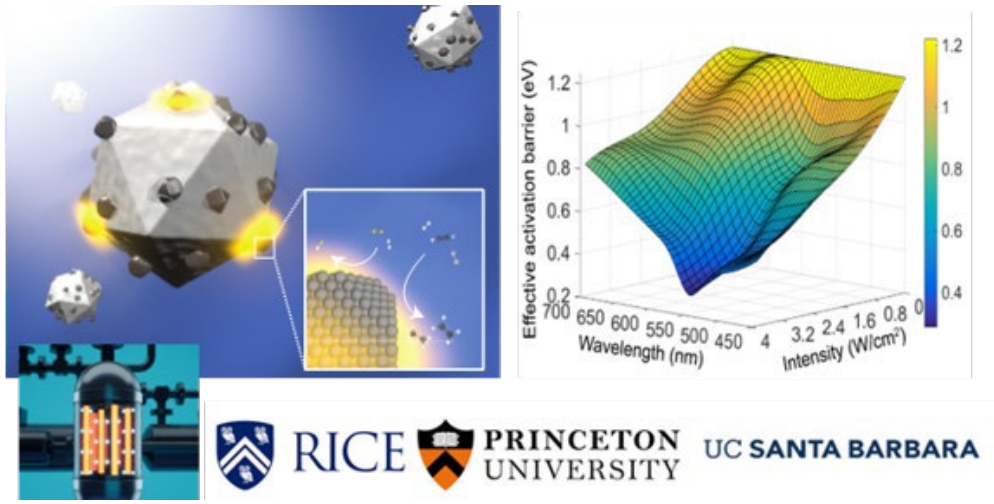


Collaborative High-Risk Basic Research

Multidisciplinary University Research Initiative (MURI)

The MURI is an OUSDR&E sponsored tri-service program that supports academic research teams in conducting ground-breaking, field-changing basic research addressing problems that span multiple disciplines. MURIs are extremely competitive awards for high-risk and innovative research that cannot be accomplished via single investigator grants. MURI aims to make the impossible possible.

- No citizenship requirements
- International collaboration possible
- Budget: $1,500,000 per year for 3 years, plus an optional two years



- Open to all not-for-profit US institutions of higher education including DoD-affiliated schools
- Multidisciplinary team research, does not have to be more than one institution

STEM Fellowships for PhD Scholars

National Defense Science and Engineering Graduate (NDSEG) Program

This congressionally mandated program under the direction of the Office of the Under Secretary of Defense for Research and Engineering, OUSD (R&E), is a quad - service fellowship program sponsored by the Air Force Research Laboratory (AFRL), the Army Research Office (ARO), the Office of Naval Research (ONR), and the United States Space Force (USSF) designed to ***increase*** the number of US citizens receiving doctorates in research discipline areas of military importance at US institutions.

- Open to US citizens or nationals only

- Three-year fellowships offer:
  - Full tuition/fees
  - Monthly stipend: $3,600
  - Travel budget: $5,000
  - Healthcare: $1,600 (up to)
- Mentoring Program
  - Assign DoD mentor
  - Advise fellow on research
  - Establish DoD relationship

- DoD National Conference
  - Present fellowship research
  - Attend DoD senior level basic research and policy presentations
  - Tour DoD funded laboratories and facilities
  - Participate in DoD career fair

For more information or to apply, please visit: https://ndseg.sysplus.com/

Capacity Building

National Science Portal (NSP) Program

The AFRL Basic Research National Science Portal Program was launched in March 2023. The Department of the Air Force (DAF) faces *unprecedented scientific and technological challenges* that require better *leveraging* of the nation's *defense ecosystem to develop innovative solutions*. The National Science Portal provides the strategic opportunity to accelerate science in areas critical to the future DAF and build research capacity in HBCU/MSIs to further the first goal. The FY24 FOA is in draft and coming soon to grants.gov.

Applicants are encouraged to view the DURIP FOA to compete for relevant instrumentation to further build capacity

Awards are expected to be between $750K - $1.5M per year per award for a maximum of three years

DoD Early Career Award

Presidential Early Career Awards for Scientist and Engineers (PECASE)

The DoD PECASE is awarded to early career S&Es who have fostered innovative and far-reaching S&T breakthrough developments in DoD critical research areas under the direction of the Office of Science Technology and Policy.

Highest DoD award for early career S&Es.

- Five-year research grant totaling $1,000,000
  - Up to $200,000 annually
- **Must** be nominated by an AF program officer

- Open to U.S. citizens, nationals, or permanent residents
  - Active or past AFOSR grant recipient or former NDSEG fellow
  - Early career faculty member (PhD< 5 years)

Technology Transfer

DAF Small Business Innovation Development (SBIR) and Small Business Technology Transfer (STTR) Programs

The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) program expands funding opportunities in the federal innovation research and development (R&D) arena. Central to the program is expansion of the public/private sector partnership to include the joint venture opportunities for small businesses and nonprofit research institutions. The unique feature of the SBIR/STTR program is the requirement for the small business to formally collaborate with a research institution in Phase I and Phase II. SBIR/STTR's most important role is to bridge the gap between performance of basic science and commercialization of resulting innovations.

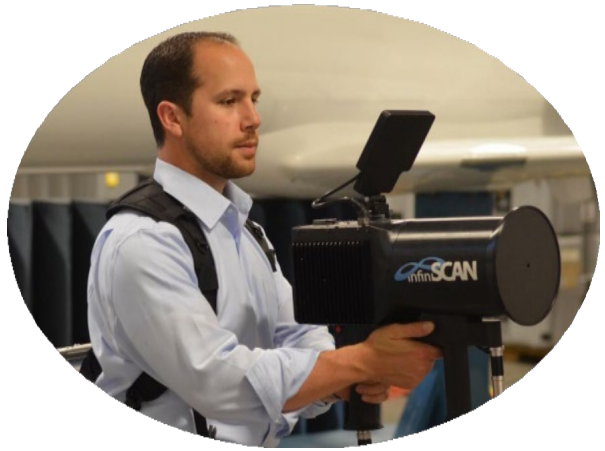


Photo from: https://media.defense.gov/2015/Feb/27/2001018551/-1/-1/0/150223-F-S0991-001.JPG

- Highly competitive programs that encourage domestic small businesses to engage in DAF Research/Research and Development (R/R&D) with the potential for commercialization
- Competitive awards-based programs that enable small businesses to explore their technological and commercialization potential
- Stimulate high-tech innovation to catalyze US entrepreneurial spirit while addressing DAF's specific R&D needs
- Central to the STTR program is the partnership between small businesses and nonprofit research institutions and universities

Additional information available at: https://www.dodsbirsttr.mil/submissions/login

For more information or to apply please visit: https://www.sbir.gov/

Young Investigator Program (YIP)

The YIP is awarded to outstanding early career S&Es who show innovative and *"high risk, high reward"* basic research directly related to AFOSR portfolios in promising and potential groundbreaking topics resulting in "high" reward.

Highest DoD award for early career S&Es.

- Three-year research grant totaling $450,000
  - Up to $150,000 annually
- Supports early career scientists and engineers who show exceptional ability and promise for conducting basic research
- Fosters creative basic research in science and engineering

- *Vested with institution* not PI
- Open to U.S. citizens, nationals, or permanent residents
  - Employed by an U.S. institution, for profit, not for profit business, or industrial lab
  - Early career faculty member (PhD< 7 years)

For more information visit the YIP APAN page.









Workforce Development	Strengthening Air & Space Force Research Capabilities	Expanding Air & Space Force Academic Reach	Strengthening Academic Research Capabilities	Technology Transition
STEM/LEGACY AFRL Scholars ASSURE NDSEG STFP DURIP NSP	USAFA SFFP STFP AFIT DURIP NDSEG	STEM YIP HBCU NSP GUIRR GRC NDSEG	MURI DURIP PECASE DEPSCoR NDSEG NSP AFRL Scholars	SBIR/STTR ORTA STFP SFFP MURI NDSEG

CUI

Connect with AFRL

Student & Faculty Opportunities

Grants.Gov

AFResearchLab

AFresearchlab

Air Force Research Laboratory - AFRL

AFResearchLab

Connect with AFRL/AFOSR

Website
Doing Business with AFRL/AFOSR
Announcements and Highlights

- https://www.afrl.af.mil/AFOSR/

Events
Find our BAA and Events Calendar
Learn about Program Reviews

- https://community.apan.org/wg/afosr/
- https://www.grants.gov/web/grants/view-opportunity.html?oppId=345653

Twitter
Follow us
Mention @AFOSR
#BasicResearch

Facebook
Be Our Friend
Follow us
#BasicResearch

LinkedIn
Connect With Us
Search: AFOSR

Instagram
Follow us
Mention @_AFOSR_
#BasicResearch

Presenter Notes
2024-06-26 13:23:31
Connect with AFRL and AFOSR As we reviewed, there are a multitude of paths you can take to partner and engage with us, so I encourage you to check out our website and social media, all listed More importantly, we 'd love to continue our engagement with you all.

Questions?

Tips and Tricks: How to Do Business with DAF / AFOSR

Review Broad Agency Announcements

- Find research opportunities that match interests. Search by:
  - Keyword
  - Eligibility
  - Category
  - Agency, etc.
- Study and keep current with BAAs
- Attend virtual or live program reviews to understand the directions and needs of program
- Researchers should visit www.grants.gov – the official source for finding and applying to US Air Force and US Space Force grants

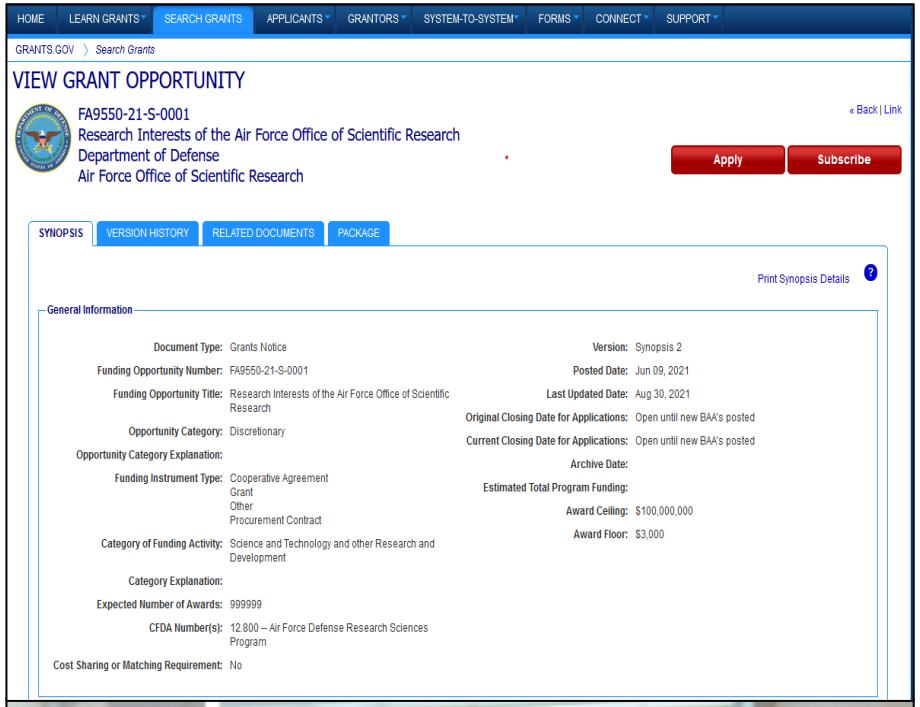


Photo: Credit: AFOSR-PA-QZX

If an AFOSR BAA Topic Interests You, First Scope and Draft an Idea Statement

- Statement doesn't have to be all-inclusive, but should address the unique value proposition of the research
- Statement needs to be specific enough that it catches the interest of the Program Officer

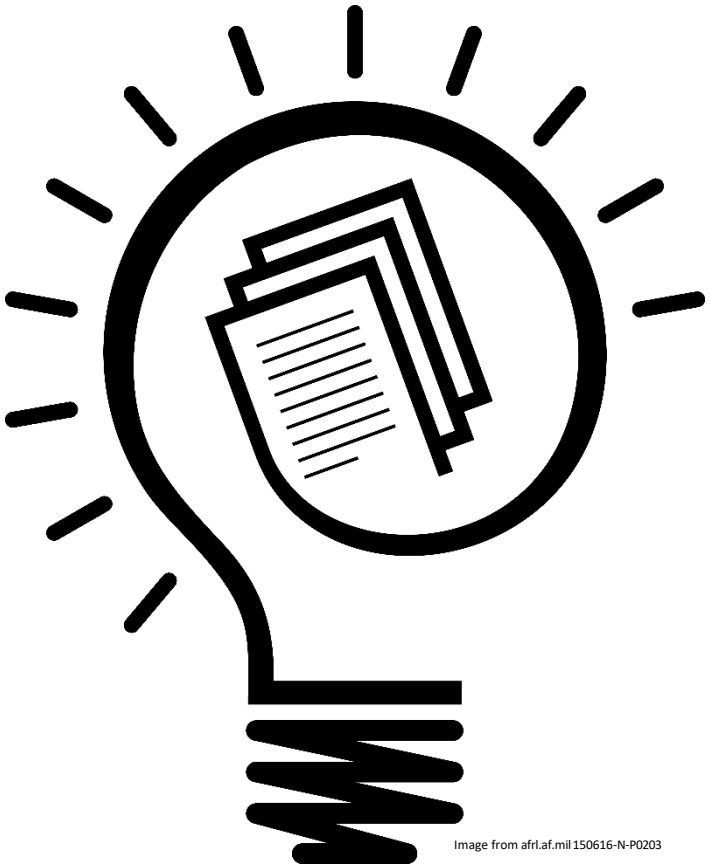


Image from afrl.af.mil 150616-N-P0203

Connect with Program Officer

- At this point, some Program Officers will want a specifically formatted white paper
- Others will want to have a conversation
  - In person
  - Over the phone
  - Via email
- If the idea seems promising, Program Officer will initiate an ongoing dialogue setting expectations and explaining the process for full proposal submission.

AFOSR Program Officer Roles

- Topical / Program Expert
- Educator / Communicator
- Team Builder
- Advocate
- Evaluator
- Administrator
- Active Member of AFRL, DoD & Scientific Communities

https://www.engagedmarriage.com/how-many-hats-can-we-wear/

Program Officers' empowerment is a key component of our success

The definition and history of a white paper!

White papers are intended to provide the contracting agency with a concise yet detailed overview of an applicant's proposed research, allowing the agency to select the projects that are the best aligned with their mission and capability gaps.

The term originated when government **papers** were coded by color to indicate distribution, with **white** designated for public access. Thus, **white papers** are used in politics and business, as well as in technical fields, to educate readers and help people make decisions.

Essential Elements of an Effective White Paper

The white paper must be written with a specific goal in mind for the Program Officer. Think about the major question being asked in the BAA and write your response towards that goal.

Your white paper should match your universities strength. Be knowledgeable of the research area of interest of the organization – Air Force.

Make sure you identify and address a particular problem. The white paper can focus on issues or common problems, new trends or changing techniques but look to provide the solution or recommendation to fix the problem.

Preparation of the White Paper - Research

The topic must be researched. Do your homework and include references and documents if necessary.

Your white paper must be data focused and be supported by significant research. There is no specific format but include cited references or recent publications from reputable journals.

Become a peer reviewer within a DoD agency to be knowledgeable of gaps and opportunities within your university structure. Your ability will increase on what is novel and what has been repeated.

Writing the White Paper

There is no specific format, but this is just a guide.

Start with an abstract of what problem you identified in the BAA. This will assure the Program Officer you are in the correct portfolio.

A problem statement will help set up the proper flow of what you propose to do if/when asked to write a full proposal. You may want to state explicitly what basic research questions you want to address and why they are important.

Many Program Officers want a white paper to contain a notional budget. Its presence can help them frame their thinking and responses.

Provide a background on your experience and what your specific experience levels bring to the table.

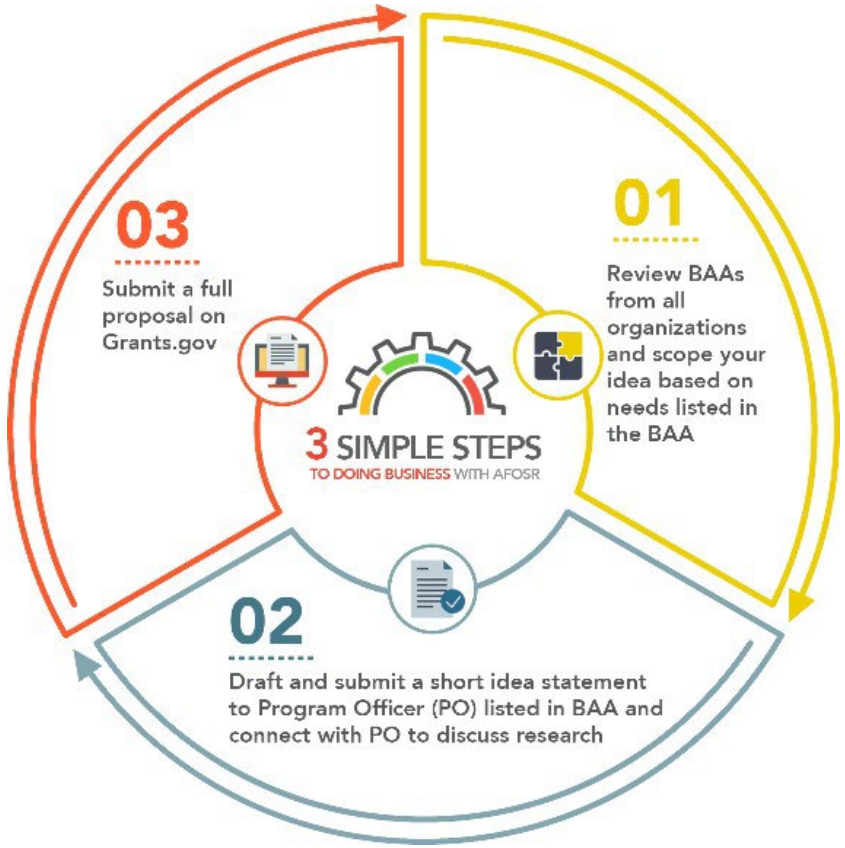
Present the solution based on gathered evidence and expertise in that particular research area and summarize your based on solutions to the problem stated earlier.

Improving Your Competitiveness for Winning a Grant

Engage with AFOSR Program Officer's (PO) to discuss your idea before writing a white paper; most prefer Email

- **Promising ideas may begin an ongoing dialogue leading to full proposal submission**

- **Throughout your working relationship with AFOSR, you can expect an AFOSR PO to take on a number of roles:**
  - **Subject Matter Expert**
  - **Educator / Communicator**
  - **Team Builder**
  - **Evaluator**
  - **Administrator**
  - **Active Member of AFRL, DoD & Scientific Communities**



Improving Your Competitiveness for Winning a Grant

Attend grant writing courses

- **In general, a good proposal is one that includes:**
  - **Strong technical merit**
  - **Air Force relevance**
  - **Solid budget justification**
  - **Consideration given to every requirement stated in the BAA**

Understand funding considerations

- **AFOSR receives far more good proposals than it is able to fund every year**
- **POs must factor many other considerations into funding decisions. Those include, but aren't limited to:**
  - **Overlap with program interests and connecting to DoD labs**
  - **Potential for scientific breakthroughs**
  - **Strategic directions**
  - **Budget realities**
  - **Peer review recommendations**

Improving Your Competitiveness for Winning a Grant

Look for opportunities to forge partnerships

- **Once funded, remain engaged and continue with the process by**
  - **Reviewing BAAs;**
  - **Attending program reviews, held annually**
  - **Collaborating with other PIs in the program**

- **Seek out Center of Excellence BAAs**
  - **University-led efforts, sponsored by 1+ AFRL Technology Directorate and AFOSR**
  - **Prime opportunity for academic engagement and student pipeline**
  - **Nominal three-year arrangement, with two-year renewal option**
  - **AFRL and University share costs (with AF investment up to $500K/year)**

Determine the Correct Funding Mechanism

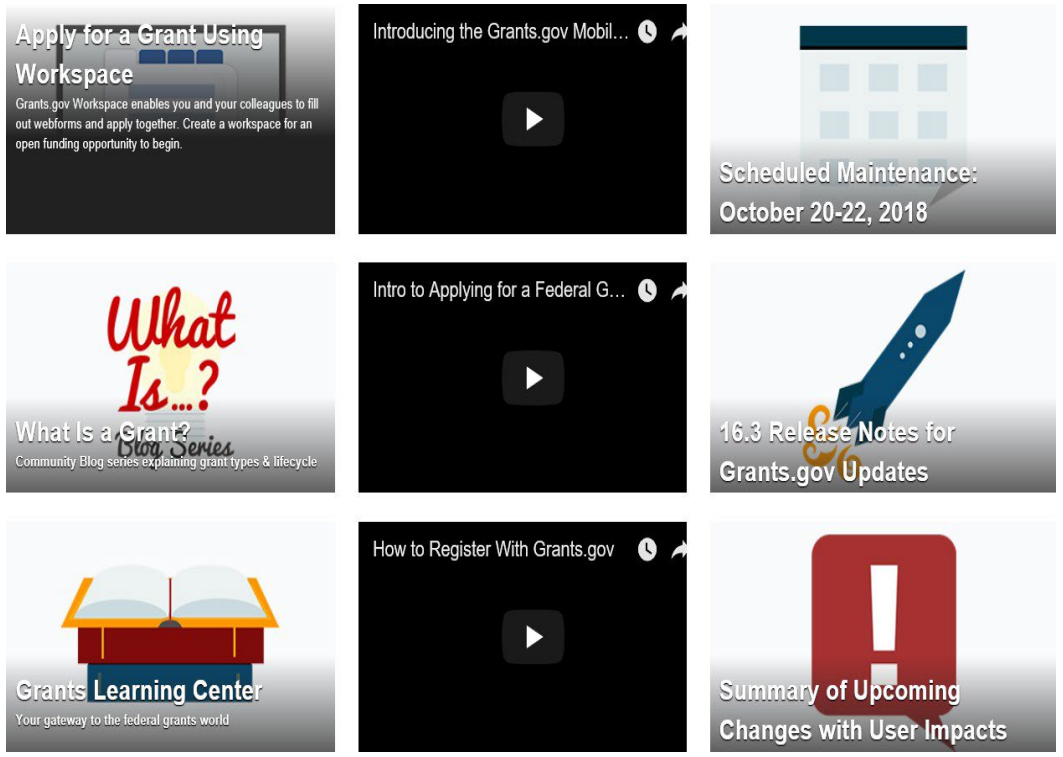
- There are many different mechanisms for universities to obtain basic research grant funding:
  - Traditional grants
  - University Research Initiatives (i.e. Multidisciplinary University Research Initiative (MURI), Defense University Research Instrumentation Program (DURIP)
  - Special Programs such as Young Investigator Program (YIP), National Defense Science and Engineering Graduate Fellowship Program (NDSEG)
- Traditional grants can be awarded year-round from the general Broad Agency Announcement
- Other opportunities have specific deadlines

Submit Full Proposal

- Full proposals should include
  - Strong technical merit
  - U.S. Air Force or U.S. Space Force relevance
  - Solid budget justifications
- Full details can be found in the Broad

Agency Announcement

- Grants.gov also provides a number of tutorials for using the site



Peer Review

TECHNICAL:

Proposal subject area is appropriately addressed in the AFOSR Broad Agency Announcement.

- What will be the results of this work and how novel are they?
- How will the results advance the state of the art and how significant will the advancement be?
- Will the proposed approach produce the desired results? What are its strengths and weaknesses?
- Comment on the key personnel's qualifications, capabilities, related experience, and past performance.
- Additional comments and relevant issues?

RELEVANCE & RELATION OF USAF or USSF

OTHER CRITERIA:

- Comment of the adequacy and/or availability of the facilities, equipment, hardware, simulation tools and techniques integral to the objectives of the proposed research.
- Comment on the realism and reasonableness of the proposed project cost.

IS THERE AN ASPECT OF THE PROPOSED RESEARCH THAT WILL LEAD TO A SIGNIFICANT TRANSFORMATION IN OUR UNDERSTANDING OF THE STATE-OF-THE-ART? IF SO, PLEASE BRIEFLY DESCRIBE THE TRANSFORMATIONAL ASPECT OF THE WORK.

Budget Justification

- **For Personnel Management:**
  Discuss realism and reasonableness of the (a) number of personnel, (b) labor mix, (c) level of effort etc.

- **For Permanent Equipment (>$5,000/unit and useful life > 1 year)**
  Are all the permanent equipment items special purpose and/or test equipment, interconnected and interdependent, reasonable and acceptable for the work to be performed and of significant value to the project.

- **Consumables and facility Chargers:**
  Provide JUSTIFICATION and explanation with respect to proposed research. Provide quotations and/or links to the price structure of consumables, materials supplies, and facility charges.

- **Other Direct Costs**
  Provide Justification for direct costs

- **Travel:**
  For travel or quantity of trips, (a) rationale for travel, (b) the amount of travel or quantity of trips, and (a) the number of personnel traveling in terms of realism and reasonableness for the work

- **Subcontract:**
  Discuss (a) rationale for these costs, (b) why it is necessary, (c) what does it add to the research, and (d) why can it not be accomplished by the awardee/grantee.

Get Funded! Get started and stay involved

- POs weigh several factors in selecting proposals for funding:
  - Identify overlap with program interests, and connection to DOD's labs
  - Potential for scientific breakthroughs
  - Strategic directions
  - Budget realities
  - Peer review to gauge scientific merit
- Once funded, remain engaged and continue with the process.
  - Continue reviewing BAAs
  - Request invitations to program reviews of interest
  - Collaborate with other PIs in the program

Workshops and Reviews