



## FUNDING OPPORTUNITY ANNOUNCEMENT OVERVIEW INFORMATION

This Funding Opportunity Announcement (FOA) describes the research objectives of the Air Force Research Laboratory's (AFRL) university Center of Excellence (COE) in **Neuroscience of Decision Making**, which addresses research objectives of the United States Space Force (USSF) and the United States Air Force (USAF). A university COE is defined as a joint effort among Air Force Office of Scientific Research (AFOSR), Air Force Research Laboratory Technology Directorates (AFRL TDs), and an outstanding university or team of universities to perform high-priority collaborative research. This center is a joint project between AFOSR and the AFRL Airman Systems Directorate (AFRL/RH).

AFOSR intends to provide in the form of a grant the awarded COE up to **\$1,000,000** per year for a maximum of five years. The base period is for three years, which the AFOSR intends to incrementally fund, followed by an option to extend an additional two years provided the COE passes a midterm "go/no-go" review at the 2.5-year point. By agreement, AFOSR and the participants AFRL/RH can ramp-up funding in beginning years or ramp-down funding in the final years to the COE. All funding decisions are at the Government's discretion and are subject to the availability of funds.

Proposers are highly encouraged to confer with the designated AFOSR program officer as soon as possible. AFOSR will evaluate proposals using a peer review panel and the criteria specified in section E: "Application Review Information." While AFOSR reserves the right to select and fund all, some, or none of the proposals, AFOSR anticipates making one grant award under this announcement. AFOSR will not provide funding for reimbursement of proposal or application costs associated with responding to this FOA.

White Papers briefly summarizing the proposing institution's ideas are highly encouraged

but not required. The AFOSR program officer will coordinate with the sponsoring AFRL Directorate (AFRL/RH) to provide feedback on white papers and will share responsibility for ensuring the success of a COE.

Proposals may choose to include a data management plan that outlines how samples and data collected in the program will be stored and managed. This includes, but is not restricted to, issues such as: standards for data and metadata collection, content and format, data archiving, database management, and data sharing within and outside the COE. This COE will focus on the interactions between several technical elements that form the foundations of **Neuroscience of Decision Making**

**Hyperlinks have been embedded within this document and appear as underlined, and or blue-colored words in the midst of paragraphs. The reader may “jump” to the linked section within this document by “clicking” (CTRL + CLICK, or CLICK).**

## SUMMARY FUNDING OPPORTUNITY INFORMATION

### **1. FEDERAL AWARDING AGENCY NAME**

Air Force Office of Scientific Research  
875 North Randolph Street, STE 325, Room 3112  
Arlington, VA 22203

### **2. FUNDING OPPORTUNITY TITLE**

CENTER OF EXCELLENCE: **Neuroscience of Decision Making**

### **3. ANNOUNCEMENT TYPE**

Initial Announcement

### **4. ANNOUNCEMENT NUMBER**

FOA-AFRL-AFOSR-2021-0009

### **5. CATALOG OF FEDERAL DOMESTIC ASSISTANCE (CFDA) NUMBER**

12.800 Air Force Defense Research Sciences Program

### **6. KEY DATES**

Pre-proposal inquiries and questions must be received in writing by electronic mail not later than **07 June 2021 at 11:59 PM Eastern Daylight Time (EDT)** to be considered.

White papers must be submitted electronically via

<https://community.apan.org/wg/afosr/p/submitwhitepaper> by **02 July 2021 at 11:59 PM Eastern Daylight Time** to be considered. White paper evaluation is meant to initially assess the capability of a proposed effort and is NOT a selection process.

White papers can be up to 7 pages in length plus references. White papers should minimally articulate:

1. An initial list of members of the proposed team.
2. The main technical components of the proposed research and how it aligns with the goals of the COE.
3. The specific proposed activities to establish a relationship with AFRL/RH and AFOSR
4. The specific plans would educate students postdoctoral fellows, expose them to research opportunities with AFRL's Technical Directorates and ultimately further the interests of the USAF/USSF.

The Government will respond to white papers before COB on **01 August 2021**.

Proposals must be received electronically through Grants.gov by **16 September 2021** at 11:59 PM Eastern Daylight Time to be considered.

## **A. Program Description**

### **1. Summary:**

This Center of Excellence is anticipated to extend the research interests of AFRL in the topical area of Neuroscience of Decision Making and provide opportunities for a new generation of US scientists and engineers to address United States Air Force (USAF) and United States Space Force (USSF) and research needs. This is a special FOA because it explicitly calls for (a) research in the high-priority Air Force interest areas of neuroscience, decision making, and (b) education of students within the US in vital technology areas with opportunities for potential recruitment of US nationals for employment at AFRL.

In conjunction with AFRL, AFOSR invites proposals for research in the areas described in detail below. The schedule for this announcement is given in Section II, Award Information. This research effort will consist of multidisciplinary teams of researchers with the skills needed to address the relevant research challenges necessary to meet the program's goals. Multi-investigator teaming is encouraged. Multi-university teams are allowed. Under no circumstances will the Government help to create teams.

The authority for an award under this competition is established at 10 U.S.C. § 2358, and 10 U.S.C. § 2192(b)(1)(B). Regulations, terms, and conditions that generally apply to AFOSR awards are discussed in Section F: "Federal Award Administration Information".

## **Neuroscience of Decision Making**

### **2. Objective:**

The goal of this Center of Excellence is to advance scientific understanding of the neuroscience foundations of Decision Making (DM) in the context of goal-directed activity and especially under stressful conditions. This Center of Excellence (COE) is intended as a collaborative research effort among university laboratories, aligned with the participation and mutual interests of scientists and engineers within Directorates of the Air Force Research Laboratory (AFRL). The Principal Investigator and Co-Investigators will be responsible to plan the collaboration, coordinate the research activity, and periodically report its accomplishments. Awards granted under this COE will have a base three-year period of performance with a possible 2-year extension to five years. Understanding the neuroscience of DM will provide insights into how human performance can be supported and maintained at high levels under conditions involving risk, uncertainty, duress, heavy workload, and other stressors. This research should focus on decision-making capabilities that have implications for warfighter performance and may include theoretical or experimental approaches involving humans, animals, and/or in vitro preparations.

### **3. Role of AFRL:**

Cognitive Neuroscience is a core research area within AFRL's 711<sup>th</sup> Human Performance Wing. (Directorate code: RH.) AFRL has identified Decision Making (DM) for dedicated research emphasis, with implications for improving both individual and team performance across combat and non-combat situations, including interactions with automated and AI systems. AFRL offers expertise in several areas of potential relevance to this COE. Capabilities include decision training, biomolecular and neurochemical systems, cognitive architecture modeling, neuromorphic computing, wearable sensors, brain-machine interface, neuromodulation, statistical signal processing, human physiology, machine learning, control theory, human-machine teaming, and human factors engineering. One goal of this COE is to develop and augment the Cognitive Neuroscience workforce, both within AFRL labs and via university-based scientific training. It is anticipated that university participants in this COE, especially graduate students and postdocs, will have opportunities to work in AFRL labs. Unique facilities within RH and other AFRL Directorates may be put to good use in support of this COE.

The COE is expected to facilitate a sustaining relationship between AFRL and academic partners that will enable long-term opportunities for advancing the science and will facilitate engagement and mutual transfer of knowledge.

#### **4. Role of AFOSR:**

The Air Force has a long legacy of interest in and support for decision-making research. Investments in this area have been part of the Air Force Office of Scientific Research (AFOSR) portfolio since its establishment as the Air Force's funding office for basic science. Support has ranged from work on formal, mathematical systems for individual choice behavior and utility theory to analyses of the social and informational networks in which team decisions are generated. It has included contexts involving specialized cognitive tasks, human-machine interactions, workload fatigue, and desynchronized circadian and sleep-wake schedules. AFOSR has supported the development of drift-diffusion models for DM, e.g., in the context of perceptual information integration. Both RH and AFOSR have had a significant role in developing cognitive system architectures, all of which invoke key DM assumptions. Although neurobiological approaches have been developed within AFOSR programs, especially in animal models, this is the first COE to invite a special focus on the neural underpinnings of human decision-making. AFOSR and RH will jointly fund and manage this COE.

#### **5. Background:**

Human Decision Making is constrained not only by “bounded rationality,” or susceptibility to the inherent limits of human memory, perception, and attention, but also by circumstances such as work and information overload, operational tempo, and fatigue. On a battlefield, the complete range of possible stressors is too wide to enumerate but may include fear, distorted perceptions, unidentified threats, equipment malfunctions, and a loss of critical information or of dependable guidance. Modern operational scenarios may introduce additional factors related to team composition, including trust (or mistrust) of AI-dependent autonomous agents. This COE has a general focus on the neurophysiology of decision-making in all contexts, not only military ones, in which human performance is required to be consequential and to function at a high level.

In the broad context of normal goal-directed human endeavors, both the outcomes of choices and the information processing considerations that lead to them tend to be multi-faceted and, in some cases, incommensurable. They are also likely to be consequential within a landscape of acquired skills, expectations, beliefs, and values. In modern occupational scenarios, including military ones, realistic decision problems tend not to be static and time-

stamped. Instead, they evolve dynamically and require sustained human engagement. This COE invites proposals on understanding human decision making that investigate this wider context of goal-oriented behavior. This context may include unique, non-repetitive decision problems that lack objective criteria for optimal solution.

## **6. Research Goals:**

This COE announcement is intended to spur ideas for fundamental scientific efforts. It does not solicit technical or management solutions for specific or unique problems (if any) that may be of concern in the Air Force's current operational arena. Instead, the intent of this COE is to deepen the general scientific understanding of the neuroscience of decision making which, in the short-term, will benefit military-relevant applications but in the long-term will benefit applications in any field of significant human endeavor. Nothing in this announcement should be construed as a request for the development of new technical devices, although such innovations could become necessary to reach scientific objectives. This COE invites research that will delve deeply into scientific explanations and transform current scientific beliefs and explanations.

### **6.1.1 Decisions and Actions:**

Recent work in robotics has highlighted that DM is embodied in relations between actions and environment. Although much past DM research has been centered on cortical processes and abstract decision problems, most cognitive behavior actually relies on highly-developed perceptual-motor skills in which DM is (often covertly) embedded. Discovering the neurophysiological underpinnings of decisions may require a deep consideration of neural systems that express human decisions in coordinated perceptual/motor action. An approach that regards sensory and motor signals merely as "inputs" to and "outputs" from an exclusively centralized cognitive process could miss the opportunity to discover how DM is embedded in sensorimotor neurobiology. Of particular interest are approaches that focus on neurophysiological activity that reflects the acquisition of DM skill via training, e.g., for effective, quick reactions in complex, stressful circumstances.

### **6.1.2 Slow and Fast DM:**

A decade ago, Daniel Kahneman posited a qualitative distinction between two modes of decision making. How well the presumed features of these systems hold up in practice is open to debate, as is the terminology that should apply to them. Can neurophysiological evidence confirm or disconfirm aspects of a "two process" hypothesis? One notion is that humans often rely on a *default mode*, with relatively quick, automated access to heuristics and other

recognition-primed, intuitive, and emotionally based responses. This mode of DM might not take full account of, for example, the difference between short-term and long-term consequences. In contrast, a second, deliberative mode posits a greater reliance on prior knowledge and beliefs (whether veridical or not), and may require an assessment of multiple alternative actions and refined estimates of their consequences. This *deliberative mode* can be error prone if, for example, the beliefs that support it are false or biased or if mental logic is faulty. Research on human judgment has uncovered a wealth of phenomena related to human mental errors, including sub-optimal statistical reasoning, non-transitive preference structures, and violations of classical probability axioms. This has spawned attempts to capture the covert logic of decision making in formal models. One class of such models includes, for example, alternative subjective probability frameworks that violate the Kolmogorov axioms – e.g., von Neumann’s formal, non-commutative framework known as quantum probability. It remains an open question how well the qualitative distinction between a (fast) default DM process and a (slow) deliberative DM process can be captured in any formal models for choice behavior, or even in computational models for general cognition. **This COE welcomes efforts on this question, as well as work to discover neural underpinnings that would validate, elaborate, or disconfirm a two-process theory.**

### 6.1.3 Belief-based DM:

Although decisions usually rely on beliefs and prior knowledge, some decision problems can greatly tax the human ability to make effective use of this background information. This is the case, for example, when multiple alternative options must be reduced to a single choice, or when every option can lead to multiple uncertain outcomes. Considerable cognitive effort may be required to assess a potentially large number of action-outcome pairs. Judgments can be vulnerable to inherent biases, distortions in beliefs, and imprecise or faulty information. Recent work suggests that the pre-frontal cortex (PFC) has several distinct roles in encoding beliefs and in guiding decisions from those beliefs, but can operate sub-optimally when it relies on “neural heuristics.” Other work suggests that noninvasive brain stimulation over parts of the PFC can enhance the quality of reflective judgment in such cases. Despite these clues to how the neural system functions, much remains unknown, including which brain networks are implicated in DM and how these networks may adapt dynamically to evolving circumstances or to decision training. Several experiments have demonstrated that non-invasive stimulation can either promote or retard cognitive functions, but the precise mechanisms of action at the cellular and molecular level are unknown. Proposals intending to make use of any of these stimulation methods (e.g., magnetic, acoustic, or electrical) should make discovery of the biophysical foundations a high priority. **The COE welcomes multidisciplinary efforts in this area, especially biophysical research to discover the fundamental**

## **basis of neuromodulation effects on human decision-making.**

### **6.1.4 Role of Stress:**

This COE does not start with the assumption that stress must necessarily degrade decision-making performance. The Yerkes-Dodson law would suggest otherwise. It is known that mild stress can improve some cognitive functions. Stress can be acute, intermittent, chronic, unavoidable, or linked only to specific situations. Past research in military contexts has emphasized acute stress: the prototypical emergency situations that demand rapid and effective responses over a short duration. This is an important category, but not the only one that could lead to productive new science in the context of this COE. Chronic stress is more common, including in military contexts. **The term ‘stress’ appears in this COE not to encourage a primary focus on it, but to ensure that any proposed work takes account of realistic, natural conditions in which human judgments are consequential.** Such conditions are never completely stress-free. An approach that considers the molecular level through neural systems approach can be adopted because brain areas affected by stress overlap those deemed essential to DM. The research literature on stress is replete with alternative points of view and inconsistent terminology, but this should not impede work on DM within this COE.

### **7. Methods and Disciplines:**

Depending on the specific research agenda proposed, a competitive response to this COE will require cutting-edge techniques in a mix of disciplines. Any of the following areas could be beneficial: molecular and cell biology, physiology, neuroscience, biomaterials, psychology, mathematics, computer science, cognitive science, and engineering. Proposals should aim to extend technical methods beyond those that appear in current research literature. For example, although neuromodulation techniques have been useful in demonstrating how some deficiencies of human DM can be mitigated, e.g., through direct transcranial stimulation, this COE invites dedicated effort to discover and study the mechanism of action of those effects at the cellular and molecular level. These mechanisms may differ for short-term and long-term effects. Understanding them in deep biophysical detail is a priority of this COE. Proposed interdisciplinary efforts will be evaluated not by how many distinct areas of scientific expertise are included, but by whether they are actually needed for an integrated, coherent program. Proposals should make clear how different threads of the effort, such as theory and experiment, biology and behavior, are knit together in productive synergy.

### **8. Anticipated Resources:**

At most one award of approximately \$1,000,000 per year is anticipated. The duration of the proposed effort will be a three-year base period with a 2-year option to bring the maximum term of the award to five years. Funds should support no more than seven faculty researchers. Exceptions warranted by specific proposal approaches should be discussed with the topic chiefs during the informal white-paper phase of the solicitation.

## **9. Research Topic Chiefs:**

Dr. Patrick O. Bradshaw, AFOSR, 703-588-8942,  
[Patrick.Bradshaw.3@us.af.mil](mailto:Patrick.Bradshaw.3@us.af.mil) .

## **10. UNIVERSITY CENTER OF EXCELLENCE**

Proposals for this COE are sought that articulate the technical details of the proposed research and the planned mechanisms to educate a new generation of professionals. Described below is what a strong proposal should provide.

### **10.1 Technical Details of Proposed Research**

A strong proposal should outline, as specifically as possible, the technical details of the proposed research. In addition, proposals should articulate how research goals align with the research objectives outlined in the previous section. Proposers can enhance or deviate from these topics if they provide reasonable technical arguments and if they are still addressing the required objectives. Efforts integrating a variety of approaches are preferred to those using a single approach, especially as these may provide increased opportunities for information and technology transfer to AFRL.

In line with the basic research vision of this COE, proposals should highlight the following qualifications of the proposed academic collaborators:

1. Strong history of published research that is both principled and foundational in the fields of neuroscience, neurotechnology, brain-machine-interfaces, decision making, psychology, AI/ML learning and training.
2. Expertise within the academic team covering the range of neuroscience, computer science, materials science and engineering with potential contributions from mathematics and/or physics.
3. Strong history of neuroscience research, development of advanced AI/ML algorithms, computational modeling, and data analytics, for real-world problem settings.

### **10.2 Interactions and Information Exchange**

Proposals should address plans for the following interactions between AFRL S&Es and academic collaborators:

1. One or more research projects, jointly defined by the academic collaborators and S&Es at AFRL that are in line with collaborators' expertise, AFRL interest, and the goals of this CoE.
2. Commitment from academic collaborators of graduate students and/or post-doctoral associates to work on the aforementioned project(s) both at the academic institutions and embedded with S&Es at AFRL, working on USAF and USSF data and learning tasks.
3. Acceptance of AFRL S&Es to be embedded at the academic institutions to work on the aforementioned research project(s). This includes making workspaces available for a small number of AFRL S&Es.
4. A yearly workshop, independent of annual meetings, where topics are jointly defined by the academic collaborators and AFRL S&Es. Such a workshop would be organized by the academic collaborators, include invited speakers, and be located at an AF/DoD facility.

Proposers are encouraged to confer with the designated points of contact as soon as possible. Their contact information can be found at the end of this announcement. Coordination with AFOSR and AFRL/RH research topic chiefs (listed in section 9) prior to proposal submission is encouraged but is not required.

## **11. ACCESS TO DOD RESOURCES**

Proposals may request access to AFRL facilities or DOD high performance computing resources in order to conduct the proposed research. Proposals should make this request in accordance with the instructions given in the Project Narrative section of this announcement. If authorized, there is no cost to the research for these resources.

Applicants are advised that routine access of educational institution researchers to AFRL/RI and AFRL/RX buildings and facilities is limited to U.S. citizens. Individuals eligible for access are subject to background checks. Research Personnel Facility Access Requirements and Restrictions provides more information.

Award(s) under this FOA are not restricted in the use of US and non-US citizens. An objective of this COE is to establish collaboration between researchers at the performing universities and the relevant AFRL Directorates.

If it is relevant, proposals may include information on US and non-US personnel, describing their roles in the research effort.

## **B. FEDERAL AWARD INFORMATION**

AFOSR anticipates making one award under this announcement, through an issued grant. Any award made under this competition will support a University Center of Excellence in Neuroscience of Decision Making and is subject to availability of funds. AFOSR executes discretionary research and development funds appropriated to the USAF and the USSF for awards. AFOSR can only make an award if sufficient funds are available.

The anticipated period of performance is a three-year base period, with one two-year option to continue performance. As a result, the total period of performance if all options are exercised is five (5) years.

AFOSR anticipates not more than \$1,000,000 per year in funding may be made available to fund one (1) award from the proposals received. This plan means proposers should plan on not more than \$5,000,000 in funding for the entire five-year duration if all options are exercised; however, the total amount of funding and resources made available to fund a successful proposal may vary based on the quality of proposals received, and funds availability.

Cost sharing or matching will be considered as an evaluation criterion. A proposer may propose voluntary committed or uncommitted cost sharing or matching, for example, for additional support for students and/or postdoctoral fellows, dedicated facility and/or office space, or other means to promote research and collaboration with AFRL.

AFOSR reserves the right to select and fund for award all, some, part, or none of the proposals received. There is no guarantee of an award.

## **C. ELIGIBILITY INFORMATION**

### **1. ELIGIBLE APPLICANTS**

#### **a. Qualified and Responsible United States Educational Institutions**

You are eligible to submit an application if you are a qualified and responsible educational institution in the United States as defined at 10 U.S.C. 2194, or an entity comprised of such educational institutions. Educational institution means a local educational agency, college, university, or any other nonprofit institution dedicated to improving science, mathematics, and engineering education. No other entities are eligible to submit applications under this competition.

AFOSR reviews your application, proposal, and Office of Management and Budget (OMB) designated repositories of government-wide public and non-public data, including comments you have made, as required by 31 U.S.C. 3321 and 41 U.S.C. 2313 and described in [2 CFR 200.205](#) and [32 CFR 22.410](#) to assess risk posed by applicants, and confirm applicants are qualified, responsible, and eligible to receive an award.

**b. HBCU/MI, Tribal College and University Applicants Encouraged**

Historically Black Colleges and Universities and Minority Serving Institutions (HBCUs/MSIs) and Tribal Colleges and Universities are encouraged to submit research proposals and join others in submitting proposals. However, no funds under this announcement are reserved or otherwise set-aside for any specific entity type. The Air Force will only use the F.1. Criteria for proposal selection.

**2. COST SHARING OR MATCHING**

Cost sharing or matching for the purpose of expanding the participation of students and postdoctoral fellows in the COE, establishing dedicated facility and office space, and/or other means of promoting research and collaboration with AFRL is an evaluation criterion for proposals under this announcement.

**3. OTHER**

**a. Research Personnel Facility Access Requirements and Restrictions**

AFRL contains facilities and equipment that could be useful to this Center. Access to these facilities will be restricted to US citizens or permanent residents.

**b. Acknowledgment of Support and Disclaimer Requirements**

You must include the F. 3.d. Acknowledgment of Research Support on all materials created or produced under our awards. The F. 3.e. Disclaimer Language must be included on materials as required. The award document may provide additional instructions about specific distribution statements to use when you provide research materials to us. You are not eligible to submit a proposal if you cannot accept these terms.

**c. Expectation of Public Dissemination of Research Results**

AFOSR expects public dissemination of research results if you receive an award. This is a basic requirement for unclassified research results.

AFOSR intends, to the fullest extent possible, to make available to the public all unclassified, unlimited peer-reviewed scholarly publications and digitally

formatted scientific data arising from research and programs funded wholly or in part by the DoD as described in the OUSD, AT&L Memorandum, [“Public Access to Department of Defense-Funded Research”](#) dated 09 Jul 2014.

AFOSR follows [DoD Directive 5230.24](#) and [DoD Instruction 5230.27](#) policies and procedures to ensure broad dissemination of unclassified research results to the public and within the Government. [The DoD Instruction 5230.27](#) policy and procedures allowing publication and public presentation of unclassified fundamental research results will apply to all research proposed under this competition unless the Program Officer gives you an explicit, written exclusion to these policies with the Grants Officer’s advice and consent. All exclusions must be authorized or required by law and must cite a valid legal authority.

**d. Representation for Tax Delinquency, Felony Conviction and Internal Confidentiality Agreements**

**You must complete the** “Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements” provided with the Grants.gov package.

**Your eligibility for funding cannot be determined unless this form is received.**

**e. Conflict of Interest**

(1) General Requirement for Disclosure

You and your organization must disclose any potential or actual scientific or non-scientific conflict of interest(s) to us. You must also disclose any potential or actual conflict(s) of interest for any sub recipient you include in your proposal. You must provide enough information for AFOSR to evaluate your disclosure. AFOSR may have to ask you more questions if more information is needed.

At AFOSR’s sole discretion, you may be asked for a conflict of interest mitigation plan after you submit your proposal. Your plan is subject to AFOSR approval.

(2) Scientific Conflict of Interest

Scientific collaborations on research and development projects are generally the result of close collaboration prior to the submission of applications for support. Accordingly, virtually all of these collaborations might be considered to include a potential conflict of interest. The potential conflict is mitigated by the disclosure of these collaborations, and the list of current and pending support you provide for senior and key researchers.

**You must provide a copy of all peer-reviewed publications developed or**

**produced from research conducted with Air Force funds to the AFOSR Program Officer.**

*You are not eligible to submit a proposal if you cannot accept these terms.*

## **D. APPLICATION AND SUBMISSION INFORMATION**

### **1. ADDRESS TO REQUEST APPLICATION PACKAGE**

All the application forms you need are available electronically on [Grants.gov](https://www.Grants.gov). From the home page, click on the “Applicants” tab on the top navigation bar. Then under the “Apply for Grants” section, click on the “Apply for a Grant Opportunity Today”, then the “Search for Opportunity Package.” Enter the Announcement Number in the field provided.

You can find the electronic application package on [Grants.gov](https://www.Grants.gov) by searching for the announcement number shown on page one. Paper copies of this announcement will not be issued.

*Please contact us at [afosr.baa@us.af.mil](mailto:afosr.baa@us.af.mil) to request a reasonable accommodation for any accessibility requirements you may have.*

### **2. CONTENT AND FORM OF APPLICATION SUBMISSION**

#### **a. Pre-proposal Inquiries and Questions**

You are encouraged to contact the Program Officer listed in section G.3 for Technical Inquires and Questions before you submit your proposal.

If you need help with general matters, you should contact the individual listed in G.4 General Announcement Questions.

Your pre-proposal inquiries and questions should be submitted via email no later than **11:59 PM Eastern Daylight Time on on 07 June 2021**. AFOSR will not answer any questions received after the question and answer period has closed.

Responses to technical questions will not be posted on Grants.gov. All pre-proposal inquiries and questions can be submitted to [Biosystems@us.af.mil](mailto:Biosystems@us.af.mil).

The Government will respond to pre-proposal inquiries and questions before COB on **21 June 2021**.

*The Program Officer does not have the authority to make commitments for the government. Grants and Contracting Officers acting within their warranted capacity are the only people authorized to make commitments for the Government.*

**b. The Application as a Whole**

You must submit your proposal electronically through Grants.gov. AFOSR will not accept or evaluate any proposal submitted by any means other than through Grants.gov. AFOSR must receive your proposal before the Proposal Submission Deadline.

You must use the electronic Standard Form (SF) 424 Research and Related (R&R) Form Family, OMB Number 4040-0001. The SF 424 (R&R) Application for Federal assistance form must be your cover page. No pages may precede the SF 424 (R&R).

You must mark your application with the announcement number.

**c. A summary of what is required for a complete proposal is summarized below:**

- The forms and attachments in bold text are required with all applications
- *Some applications* require the attachments in *italic*
- More instructions are provided in Component Pieces of the Application

<b>R&amp;R FORM, OMB No. 4040-0001</b>	<b>FIELD</b>	<b>ATTACHMENT</b>
<b>SF 424 (R&amp;R) Application for Federal Assistance, including an authorized Signature</b>	<b>18.</b>	<b>Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements</b>
	<b>18.</b>	<i>SFLLL Disclosure of Lobbying Activities</i>
<b>R&amp;R Other Project Information Form</b>	<b>7.</b>	<b>Project Summary / Abstract</b>
	<b>8.</b>	<b>Project Narrative</b>
	<b>9.</b>	<b>Bibliography &amp; References Cited</b>
	<b>10.</b>	<i>Facilities and Other Resources</i>
<b>R&amp;R Other Project Information Form</b>	<b>11.</b>	<i>Equipment</i>
	<b>12.</b>	<i>Other Attachments</i>
<b>R&amp;R Senior / Key Person Profile Form</b>		<b>Biographical Sketch Current &amp; Pending Support</b>
<b>R&amp;R Budget Form</b>		<b>Budget Justification</b>
<i>R&amp;R Sub award Budget Attachments Form</i>		<i>Sub award Budget Justification</i>
<b>R&amp;R Project / Performance Site Locations Form</b>		<b>None</b>
<i>R&amp;R Personal Data (Optional)</i>		None

The SF 424 (R&R) must include the signature of an authorized representative from your organization. The signature is affixed electronically by [Grants.gov](https://www.Grants.gov) upon submission. This signature is considered the signature for the application as a whole.

### **Proposal Format**

- Paper Size – 8.5 x 11-inch paper
- Margins – 1 inch
- Spacing – Single, 1.5, or 2.0-line spacing
- Font – Times New Roman or Garamond, 12 point
- Page Limitation – 25. However, unnecessarily elaborate or lengthy proposals are not desirable.
- Attachments – Electronic Portable Document Format (PDF)
- Content – As described below

### **d. Proposal Length**

Your proposal shall not exceed more than 25 single sided pages; lengthy proposals are not desired. You must not include elaborate brochures, reprints, or presentations beyond those sufficient to present a complete and effective proposal.

AFOSR will not consider more than the maximum number of pages in its evaluation; however, not all pages are counted. This list below is intended to help you understand how to calculate your page count.

### **INCLUDED IN PAGE COUNT**

- SF 424 (R&R) Application for Federal Assistance and all attachments except field 18 representations or disclosures
- R&R Budget and Budget Justification attachments, R&R Other Project Information Form, and all attachments
- R&R Sub award and Budget Justification attachments, R&R Senior / Key Person Profile Form, and all attachments for the personnel
- Documents that support the budget or particular items of cost R&R Project / Performance Site Locations Form
- Optional R&R Personal Data Form

### **NOT INCLUDED IN PAGE COUNT**

- Budget related information is not included in the page count because AFOSR cannot make an award unless it can determine the cost of your proposal is reasonable and realistic and complies with 2 CFR 200 Subpart E - Cost Principles.

*Not having enough information in your proposal to understand if your costs are reasonable and realistic is the most common reason awards are delayed.*

**e. No Confidential or Proprietary Information**

You must not include confidential or proprietary information in your proposal. This was also discussed earlier in section A. Program Description.

AFOSR will not consider your proposal if you include confidential or proprietary information or place restrictive markings on any part of your proposal.

**f. Electronic Form and Proposal Attachments**

Your application and proposal attachments must be in electronic file formats. You should use the Portable Document Format (PDF) for your attachments.

**DO NOT password protect any attachments.**

The website [http://www.grants.gov/help/download\\_software.jsp](http://www.grants.gov/help/download_software.jsp) offers a list of file converters available to convert your documents to the PDF format.

**3. GRANTS.GOV APPLICATION SUBMISSION AND RECEIPT PROCEDURES**

*This section provides the application submission and receipt instructions for AFOSR program applications. Please read the following instructions carefully and completely.*

**a. Electronic Delivery**

AFOSR is participating in the Grants.gov initiative to provide the grant community with a single site to find and apply for grant funding opportunities. AFOSR encourages applicants to submit their applications online through Grants.gov.

**b. How to Register to Apply through Grants.gov**

**Instructions:** Read the instructions below about registering to apply for AFOSR funds. Applicants should read the registration instructions carefully and prepare the information requested before beginning the registration process. Reviewing and assembling the required information before beginning the registration process will alleviate last-minute searches for required information.

The registration process can take up to four weeks to complete. Therefore, registration should be done in sufficient time to ensure it does not impact your ability to meet required application submission deadlines.

If individual applicants are eligible to apply for this grant funding opportunity, refer to:

<https://www.grants.gov/web/grants/applicants/individual-registration.html>

Organization applicants can find complete instructions here:

<https://www.grants.gov/web/grants/applicants/organization-registration.html>

1) **Obtain a DUNS Number:** All entities applying for funding, including renewal funding, must have a Data Universal Numbering System (DUNS) number from Dun & Bradstreet (D&B). Applicants must enter the DUNS number in the data entry field labeled "Organizational DUNS" on the SF-424 form.

For more detailed instructions for obtaining a DUNS number, refer to:

<https://www.grants.gov/web/grants/applicants/organization-registration/step-1-obtain-duns-number.html>

2) **Register with SAM:** In addition to having a DUNS number, organizations applying online through Grants.gov must register with the System for Award Management (SAM). All organizations must register with SAM in order to apply online. Failure to register with SAM will prevent your organization from applying through Grants.gov.

For more detailed instructions for registering with SAM, refer to:

<https://www.grants.gov/web/grants/applicants/organization-registration/step-2-register-with-sam.html>

3) **Create a Grants.gov Account:** The next step in the registration process is to create an account with Grants.gov. Applicants must know their organization's DUNS number to complete this process. Completing this process automatically triggers an email request for applicant roles to the organization's E-Business Point of Contact (EBiz POC) for review. The EBiz POC is a representative from your organization who is the contact listed for SAM. To apply for grants on behalf of your organization, you will need the Authorized Organizational Representative (AOR) role.

For more detailed instructions about creating a profile on Grants.gov, refer to:

<https://www.grants.gov/web/grants/applicants/organization-registration/step-3-username-password.html>

4) **Authorize Grants.gov Roles:** After creating an account on Grants.gov, the EBiz POC receives an email notifying them of your registration and request for roles. The EBiz POC will then log in to Grants.gov and authorize the appropriate roles, which may include the AOR role, thereby giving you permission to complete and submit applications on behalf of the organization. You will be able to submit your application online any time after you have been approved as an AOR.

For more detailed instructions about creating a profile on Grants.gov, refer to:  
<https://www.grants.gov/web/grants/applicants/organization-registration/step-4-aor-authorization.html>

5) **Track Role Status:** To track your role request, refer to:  
<https://www.grants.gov/web/grants/applicants/organization-registration/step-5-track-aor-status.html>

6) **Electronic Signature:** When applications are submitted through Grants.gov, the name of the organization's AOR that submitted the application is inserted into the signature line of the application, serving as the electronic signature. The EBiz POC **must** authorize individuals who are able to make legally binding commitments on behalf of the organization as an AOR; **this step is often missed and it is crucial for valid and timely submissions.**

### c. How to Submit an Application to AFOSR via Grants.gov

Grants.gov applicants can apply online using Workspace. Workspace is a shared, online environment where members of a grant team may simultaneously access and edit different web forms within an application. For each funding opportunity announcement (FOA), you can create individual instances of a workspace.

Below is an overview of applying on Grants.gov. For access to complete instructions on how to apply for opportunities, refer to:

<https://www.grants.gov/web/grants/applicants/apply-for-grants.html>

#### **Create a Workspace**

Creating a workspace allows you to complete it online and route it through your organization for review before submitting.

#### **Complete a Workspace**

Add participants to the workspace, complete all the required forms, and check for errors before submission.

(1) Adobe Reader: If you decide not to apply by filling out web forms you can download individual PDF forms in Workspace so that they will appear similar to other Standard or administering agency forms. The individual PDF forms can be downloaded and saved to your local device storage, network drive(s), or external drives, then accessed through Adobe Reader.

NOTE: Visit the Adobe Software Compatibility page on Grants.gov to download the appropriate version of the software at:

<https://www.grants.gov/web/grants/applicants/adobe-software-compatibility.html>

- (2) **Mandatory Fields in Forms:** In the forms, you will note fields marked with an asterisk and a different background color. These fields are mandatory fields that must be completed to successfully submit your application.
- (3) **Complete SF-424 Fields First:** The forms are designed to fill in common required fields across other forms, such as the applicant name, address, and DUNS number. To trigger this feature, an applicant must complete the SF-424 information first. Once it is completed, the information will transfer to the other forms.

### **Submit a Workspace**

An application may be submitted through workspace by clicking the Sign and Submit button on the Manage Workspace page, under the Forms tab. Grants.gov recommends submitting your application package at least 24-48 hours prior to the close date to provide you with time to correct any potential technical issues that may disrupt the application submission.

### **Track a Workspace**

After successfully submitting a workspace package, a Grants.gov Tracking Number (GRANTXXXXXXXX) is automatically assigned to the package. The number will be listed on the Confirmation page that is generated after submission.

For additional training resources, including video tutorials, refer to:

<https://www.grants.gov/web/grants/applicants/applicant-training.html>

Applicant Support: Grants.gov provides applicants 24/7 support via the toll-free number 1-800-518-4726 and email at [support@grants.gov](mailto:support@grants.gov). For questions related to the specific grant opportunity, contact the number listed in the application package of the grant you are applying for.

If you are experiencing difficulties with your submission, it is best to call the Grants.gov Support Center and get a ticket number. The Support Center ticket number will assist the administering agency with tracking your issue and understanding background information on the issue.

## **4. COMPONENT PIECES OF THE APPLICATION**

### **a. SF 424 (R&R) Application for Federal Assistance**

The SF 424 (R&R) Application for Federal assistance form must be your cover page. No pages may precede the SF 424 (R&R).

Complete all required fields in accordance with the “pop-up” instructions on the SF 424 (R&R) form. The completion of most fields is self-explanatory. You can turn on Grants.gov “Help Mode” to provide additional instructions for forms. “Help Mode” is turned on by the icon with the pointer and question mark at the top of the form.

Below are AFOSR special instructions for completion of several SF 424 (R&R) form fields in your application:

FIELD	INSTRUCTION
2.	You may leave “Applicant Identifier” blank
3.	You may leave “Date Received by State” and “State Application Identifier” blank
9.	You must list Air Force Office of Scientific Research as the reviewing agency if Grants.gov has not pre-populated this answer
16.	You should check “No.” and “Program is Not Covered by Executive Order 12372”
17.	Select “I Agree” to certify that all statements in the proposal, your Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements are true, complete, and accurate to the best of your knowledge. <i>See section F.3. Administrative and National Policy Requirements for more information and links to the full text of these items.</i>
18.	You must attach the completed <u>D.3.b. Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements</u> . You must attach the completed lobbying certification as described in section <u>D.3.c. Lobbying Certification and SFLD Disclosure of Lobbying Activities</u> . You may have to attach the completed <u>SFLLD Disclosure of Lobbying Activities</u> if you have lobbying activity that you must disclose.

**b. Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements**

*You must attach this representation to field 18 of the SF 424 (R&R). This attachment is not included in your page count.*

You must complete and attach the “Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements” provided with the Grants.gov package. AFOSR cannot make an award if this information is not provided.

- (1) If you answer “is” a corporation with a felony conviction and/or “is” a corporation with a felony conviction on this representation, you may not be eligible for an award if your proposal is selected. You should contact us right away to discuss your situation to find out if you can submit your application.
- (2) If you do not attach this form to the SF 424, AFOSR may request the representation after you submit your application, but we are not required to do so. AFOSR may deem your application ineligible for selection by citing an

authority listed or referenced in DoD Class Deviation (CD) 2016-O0002 or CD 2015-O0005 and make an award to someone else.

**c. SFLLL Disclosure of Lobbying Activities Form**

*When required, attach this disclosure to field 18 of the R&R Other Project Information Form. This attachment is not included in your page count.*

If you have lobbying activity that you must disclose under [31 U.S.C. 1352](#) as implemented by the DoD at 32 CFR Part 28, you must attach the completed SFLLL Disclosure of Lobbying Activities.

You can find instructions for completing this form at <https://www.gsa.gov/forms-library/disclosure-lobbying-activities>

**d. Certification Regarding Lobbying Form**

Grant awards require a certification of compliance with a national policy mandate concerning lobbying. Grant applicants shall provide this certification by electronic submission of SF424 (R&R) as a part of the electronic proposal.

**e. R&R Other Project Information Form**

*Complete this form as indicated. You must include all necessary attachments described below. This form is included in your page count.*

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**FIELD INSTRUCTION**

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- 1, 1a. You must address all prospective human subject involvement by answering these questions. Additional documentation pursuant to National Policy and U.S. Air Force standards is required for all proposals with human research or involvement.
- 2, 2a. You must address all prospective animal subject and/or recombinant deoxyribonucleic acid (rDNA) involvement by answering these questions. Additional documentation pursuant to National Policy and U.S. Air Force standards is required for all proposals with animal or rDNA research or involvement.
- 4a. For any proposal that has an actual or potential impact on the environment, answer yes and provide the answers and attachments required for fields 4b, 4c, and 4d. Additional documentation in accordance with

National Policy and U.S. Air Force standards is required for any proposal with an actual or potential impact on the environment.

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7. Attach your [D.3.e. Publicly Releasable Abstract](#)

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8. Attach your [D.3.f. Project Narrative](#)

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9. Attach your [D.3.g. Bibliography and References Cited](#)

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10. Attach a Facilities and Other Resources description document here if you need to supplement your [D.3.f. Proposal Narrative](#) facilities and resources section.

11. You may supplement your [D.3.j. Budget Justification](#) by attaching an Equipment Justification here. Do not duplicate information included on your budget justification. If you attach an Equipment Justification, make sure you reference the attachment in your budget justification.

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**FIELD INSTRUCTION**

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12. Attach the D.3.k R&R Subaward Budget Attachments Form if applicable and not attached elsewhere. You should have budgets for all subawards proposed attached within this form before attachment.

Attach all D.3.1 Subaward Budget Justifications as applicable Attach your D.3.o Data Management Plan here if applicable

#### **f. R&R Publicly Releasable Project Summary / Abstract**

*You must attach the Project Summary / Abstract to field 7 of the R&R Other Project Information form. This attachment is included in your page count.*

- (1) You must provide a concise abstract of 300 words or less with your proposal. You must mark this abstract **publicly releasable**. Your abstract should use terms the public can understand to describe the research objective, technical approach, anticipated outcome, and potential impact of the specific research.
- (2) Your abstract header should include the Program Officer's name and office symbol from section H.1. Technical Inquiries and Questions below.
- (3) If you receive an award, AFOSR must publish your abstract to a searchable website available to the general public in accordance with Public Law 113-235. The website address is <https://dodgrantawards.dtic.mil/grants>.

#### **g. Project Narrative**

*You must attach the Project Narrative to field 8 of the R&R Other Project Information Form. The narrative must be complete and self-contained to qualify for review. This attachment is included in your page count.*

You must clearly describe the research, including the research objective and approach. Your project narrative will be evaluated using the criteria listed in section F.1. Criteria. You should show strength in as many of the evaluation and selection areas as practicable to demonstrate maximum competitiveness.

You shall describe any environmental impacts of your research outside the laboratory in any appropriate narrative section, including how you will ensure compliance with environmental statutes and regulations.

Your narrative shall include the following elements:

##### **(1) Statement of Objectives**

You must your proposed research on a single page titled “Statement of Objectives.” AFOSR may decide to incorporate your statement of objectives into the award instead of incorporating the whole technical proposal.

You should use active verbs when you prepare the statement of objectives, e.g., “conduct” research in a subject area, “investigate” a problem, “determine” to test a hypothesis.

**(2) Research Effort**

- (a) You should describe the research you plan in detail. State the research objectives and approach, and the relationship and comparable objectives to research progress elsewhere. Describe your research team’s knowledge in the field and provide a bibliography and list of literature citations. Discuss the nature of the expected results.
- (b) The adequacy of this information will influence the overall evaluation in accordance with the criteria and procedures specified in section F. Application Review Information below.

**(3) Principal Investigator (PI) and Senior Personnel Time**

- (a) You must provide estimate of time the principal investigator and other senior professional personnel will devote to the research. Your estimate must include information pertaining to the proportion of time anticipated devoted to this research, to other research, and to other commitments of time such as sabbatical, extended leave, and teaching duties.
- (b) State the number of graduate students for whom each senior staff member is responsible.
- (c) If your principal investigator or other key personnel have current, pending, or expected research supported by other sponsors or agencies during the period you seek our support, state the title of the other research, the proportion of time to be devoted to it, the amount of support, name of agency, dates, etc.

You must attach a list of Current and Pending Support for each person listed on the E.3.h. R&R Senior / Key Person Profile Form. Each abstract should include research title, objectives, approach, and budget for both present and pending research projects.

Send any changes to this information to us as those changes become known.

**(4) Your Facilities**

- (a) Describe the facilities available for performing the proposed

research, and any additional facilities or equipment the organization proposes to acquire at its own expense for the work.

(b) Indicate any government-owned facilities that will be used. Indicate any government-owned equipment possessed presently that will be used. The facilities contract number, or in absence of a facilities contract, the specifics of the facilities or equipment, and the number of the award under which they are accountable are required.

#### **(5) Government Furnished Equipment**

You may list any special Government-owned property or test equipment required to complete the research. When possible and practicable, give a description or title for each item, the current location, and an estimated cost as applicable. If you do not have information about individual items, group items you require by class and provide an estimate of values.

#### **(6) High-Performance Computing Requirements**

You may be eligible to use DOD high-performance computing resources at no cost to your research. You should address utilization of this program if you need high-performance computing cycles to meet the needs of your research. This program provides access to a range of state-of-the-art high-performance computing assets and user training opportunities that can be used in some of our awards; special terms and conditions apply. You can review the details, capabilities, and requirements of the program at <http://www.hpc.mil>.

AFOSR Program Officers will help you establish an account if your proposal is selected for an award and can answer questions before you submit your proposal.

#### **(7) Disclosure of Foreign National and Dual Citizenship Personnel**

As described in section C.3.a. Research Personnel Facility Access Requirements and Restrictions, you must identify any planned foreign national personnel, including information to support permanent resident status with work authorization. The following foreign national personal data must be included:

- (1) Full name and any other names used;
- (2) Country or countries of citizenship;
- (3) Date and place of birth;
- (4) Permanent Resident Card (Green Card) type; and
- (5) Green Card issue and expiration date.

## **h. Bibliography and References Cited**

*You must attach your narrative Bibliography and References to field 9 of the R&R Other Project Information Form. This attachment is included in your page count.*

## **i. R&R Senior / Key Person Profile Form**

*You must attach a short biographical sketch and list of significant publications (vitae) for each Senior / Key Person. You must also attach a list of current and pending support as discussed in Principal Investigator (PI) and Senior Personnel Time. This form is not included in your page count.*

You must list all key persons proposed for the research on the R&R Senior/Key Person Profile Form. Key persons are generally the PI, any Co-PIs, and senior staff. This information is used to evaluate the qualifications of you and your research team.

To evaluate compliance with Title IX of the Education Amendments of 1972 (20 U.S.C. A subsection 1681 Et. Seq.), the DoD is collecting certain demographic and career information to be able to assess the success rates of women who are proposed for key roles in applications in STEM disciplines. To enable this assessment, each applicant must include this form completed as indicated.

The Degree Type and Degree Year Fields will be used by DoD as the source for career information. In addition to the required fields on the form, applicants must complete these two fields for all individuals that are identified as having the project role of PD/PI or Co- PD/PI on the form. Additional senior/key persons can be added by selecting the "Next Person" button.

## **j. R&R Budget Form**

*This form is not included in your page count.*

You shall provide all information requested. You must estimate the total research project cost.

You must categorize funds by year and provide separate annual budgets for projects lasting more than one year.

A budget justification must be attached.

You must include enough budget related information in your proposal to support your costs as reasonable and realistic, and in compliance with 2 CFR 200 Subpart E - Cost Principles.

*Not having enough information in your proposal to understand if your costs are reasonable and realistic is the most common reason awards are delayed.*

**k. R&R Sub award Budget Form**

*This form is not included in your page count. Attachments to this form are not included in your page count.*

If you plan any sub award(s), you must provide a budget and budget justification using the same requirements established for your prime budget and budget justification.

AFOSR cannot make an award to you unless we can determine the sub award cost is reasonable and realistic and complies with 2 CFR 200 Subpart E – Cost Principles.

Not having enough information in your sub award budget(s) or budget justification(s) can cause significant delays for awards.

**l. Budget Justification**

*This attachment is not included in your page count.*

**You must provide a detailed budget justification for each year that clearly explains the need for each item.** The entire budget justification and supporting documentation must be combined into a single file and attached to field K of the R&R Budget Form.

(1) You should itemize travel. State the purpose of each trip proposed, the number of trips, the number of travelers, the destination, the duration, and the basis for calculating costs such as airlines and hotels.

Below is a sample of the travel portion:

<b>TRAVEL</b>	<b>Unit</b>	<b>Trips</b>	<b>Travelers</b>	<b>Nights</b>	<b>Days</b>	<b>Unit Cost</b>	<b>Total Travel</b>
Airfare	roundtrip	1	1			\$900.00	\$900.00
Lodging	day	1	1	3		\$75.00	\$225.00
Per Diem	day	1	1		3	\$40.00	\$120.00
Automobile Rental	day	1	1		3	\$45.00	\$135.00

Subtotal Travel		4	4	3		\$1,060	\$1,380.00
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- (2) You should itemize materials, supplies, and equipment. List all material/equipment by type and kind with associated costs. Indicate what your costs are based on, such as vendor quotes, historical data and/or engineering estimates. **You should include vendor quotes and/or catalog pricing data.**
- (3) If you have any sub award(s), you should describe how you determined sub award costs were determined fair and reasonable. Your business office usually makes this determination.

**DHHS/ONR Rate Agreement:**

- (4) If you use a Government rate agreement to propose indirect cost rates and/or fringe benefit rates, you should attach a copy of the agreement you used.
- (5) Helpful Cost Principle Reference Information
  - (a) [2 CFR 200, Subpart E – Cost Principles](#)
  - (b) General Provisions for Selected Items of Cost in [2 CFR 200.420 through 2 CFR 200.475](#)

**m. R&R Project / Performance Site Locations Form**

*This form is included in your page count.*

You shall complete all information as requested. You must include the ZIP+4 for each performance location you list.

**n. Data Management Plan (Optional)**

*You can decide if you want to include a Data Management Plan with your application. If you do, attach your Data Management Plan to field 12 of the R&R Other Project Information Form.*

Your “Data Management Plan” should be two (2) pages or less in length and discuss:

- (a) The types of data, software, and other materials to be produced in the course of the project, and include a notation marking items that are publicly releasable;
- (b) How the data will be acquired;
- (c) Time and location of data acquisition if they are scientifically pertinent;
- (d) How the data will be processed;
- (e) The file formats and the naming conventions that will be used;

- (f) A description of the quality assurance and quality control measures during collection, analysis, and processing;
- (g) If existing data are to be used, a description of their origins;
- (h) A description of the standards to be used for data and metadata format and content;
- (i) Plans and justifications for archiving the data;
- (j) The timeframe for preservation; and
- (k) If for legitimate reasons the data cannot be preserved, the plan must include a justification citing such reasons.

**o. R&R Personal Data Form**

*This attachment is not included in your page count.*

To evaluate compliance with Title IX of the Education Amendments of 1972 (20 U.S.C. A subsection 1681 Et. Seq.), The DoD is collecting certain demographic and career information to be able to assess the success rates of women who are proposed for key roles in applications in STEM disciplines. To enable this assessment, each applicant must include this form completed as indicated.

This form will be used by DoD as the source of demographic information, such as gender, race, ethnicity, and disability information for the Project Director/Principal Investigator and all other persons identified as Co-Project Director(s)/Co-Principal Investigator(s). Each application must include this form with the name fields of the Project Director/Principal Investigator and any Co-Project Director(s)/Co-Principal Investigator(s) completed; however, provisions of the demographic information in the form is voluntary. If completing the form for multiple individuals, each Co-Project Director/Co-Principal Investigator can be added by selecting the “Next Person” button. The demographic information, if provided, will be used for statistical purposes only and will not be made available to merit reviewers. Applicants who do not wish to provide some or all of this information should check or select the “Do not wish to provide” option.

**5. INFORMATION YOU MUST SUBMIT IF SELECTED FOR POSSIBLE AWARD**

The AFOSR Grants Officer may request additional necessary information from you during negotiations, or as required to inform their consideration for award.

***“You must respond promptly”.***

If you not fully comply with our information requests by the time AFOSR is ready to make an award, AFOSR may determine that you are not qualified to

receive an award and use that determination as a basis for making an award to another applicant.

Foreign national personnel may be asked to provide a copy of the front and back of their green card by secure means such as <https://safe.amrdec.army.mil/safe/>.

If your proposal includes human, animal, or rDNA use or involvement, you must submit all documentation requested during negotiations or you may not receive an award.

## **6. DUNS UNIQUE ENTITY IDENTIFIER, CAGE, AND SYSTEM FOR AWARD MANAGEMENT (SAM)**

### **a. SAM Registration Required**

As required in [2 CFR 25.110](#) all applicants, unless exempted, must:

- (1) Be registered in [SAM.gov](#) before submitting its application;
- (2) Provide a valid DUNS unique entity identifier; and
- (3) Continue to maintain an active SAM registration with current information at all times any Federal award is active, or any application is under consideration by a Federal awarding agency.

A Commercial and Government Entity (CAGE) code is obtained or specified as part of the SAM registration process. A CAGE code is required.

### **b. SAM Exemption or Exceptions Not Available Under This Announcement**

AFOSR will not issue an Agency level exemption to SAM registration under 2 CFR 25.110(d)(1) for applicants under this announcement.

You must comply with SAM registration requirements and include a DUNS and CAGE code on your application or AFOSR cannot make an award.

### **c. Questions about SAM Registrations and Updates**

You can get questions about SAM registration and entity updates answered by live chat at <https://www.fsd.gov/fsd-gov/home.do> and telephone at (866) 606-8220 or (324) 206-7828. Top help topics for SAM.gov are available at [https://www.fsd.gov/fsd-gov/learning-center-system.do?sysparm\\_system=SAM](https://www.fsd.gov/fsd-gov/learning-center-system.do?sysparm_system=SAM).

### **d. Consequences of Non-Compliance with SAM Registration Requirements**

AFOSR cannot make an award to you unless you comply with SAM

requirements. If you are non-compliant, AFOSR may determine you are not qualified to receive an award and use that determination to make an award to someone else as authorized by 2 CFR 25.205(b). You cannot receive payments without an active SAM record and CAGE code.

## **7. SUBMISSION DATES AND TIMES**

### **a. Pre-Proposal Inquiries and Questions Deadline**

You must submit all pre-proposal inquiries and questions not later than **07 June 2021** at 11:59 PM Daylight Time. Responses will be emailed by **21 June 2021** at 11:59 PM.

### **b. How Submission Time for Pre-Proposal Inquiries and Questions is Determined**

AFOSR uses the date and time stamp on your email to determine when you submitted pre-proposal correspondence.

### **c. Effect of Missing Pre-Proposal Inquiries and Questions Deadline**

AFOSR may not be able to provide responses or answers to late inquiries or questions.

### **d. Proposal Submission Deadline**

AFOSR must receive your **white paper** by **02 July 2021** at 11:59 PM Eastern time for it to be considered.

AFOSR must receive your **proposal** electronically through Grants.gov not later than **16 September 2021** at 11:59 PM Eastern time to be considered for selection. This is the final due date. AFOSR recommends that you submit applications early.

You are responsible for making sure your application is submitted, received, and validated by Grants.gov before the application deadline. If you submit your application late, your proposal is not eligible for consideration.

### **e. How Proposal Submission Time is Determined**

AFOSR uses the system-generated Grants.gov time stamp to determine when you submitted your successfully validated proposal. Grants.gov policies and procedures for application submission and processing apply. ***AFOSR will only accept applications submitted electronically through Grants.gov.***

### **f. Grants.gov Tracking Number is Application Receipt**

Grants.gov generates a confirmation page when you submit your application. A second confirmation is provided by email when your application has passed Grants.gov validations and the status is updated from received to validated.

The confirmation page includes a system-generated Grants.gov tracking number; this serves as your receipt. You should keep a copy of all confirmations.

You can verify the submission time and application status with your tracking number through Grants.gov at <https://www.grants.gov/applicants/track-my-application.html>

**g. Effect of Missing the Proposal Submission Deadline**

Grants.gov will not accept your proposal after the submission deadline. AFOSR will not accept proposals submitted other than electronically through Grants.gov.

**8. INTERGOVERNMENTAL REVIEW**

N/A - This program is excluded from coverage under Executive Order (E.O.) 12372.

**9. FUNDING RESTRICTIONS**

**a. Proposal Preparation Costs**

AFOSR will not reimburse proposal or application costs under this FOA. Your proposal or application preparation costs are not considered an allowable direct charge to any award under this announcement.

**b. Air Force Office of Scientific Research No-cost Extension (NCE) Policy**

AFOSR grants NCE's only in situations in which the extension is truly warranted and properly documented. AFOSR requires prior written approval to extend the period of performance, without additional funds, beyond the expiration date of the grant. For an extension to be granted recipients are to provide notice in writing, and with the supporting reasons, and revised expiration date, at least thirty (30) days prior to the expiration of the award, and Standard Form (SF) 425 Federal Financial Report with amount of remaining funds. In no event will the period of performance be extended merely for the purpose of using unobligated balances. Institutions should make every effort to ensure work is completed on time. If an institution deems an NCE is truly warranted, it should submit its request for an extension and supporting reasons to the relevant Program Officer. You should make every effort to ensure work is completed on time.

**c. Prohibition on Contracting with Entities that Require Certain Internal Confidentiality Agreements or Statements--Representation**

(a) *Definition.* As used in this provision--

“Internal confidentiality agreement or statement”, “subcontract”, and “subcontractor”, are defined in the clause at [52.203-19](#), Prohibition on Requiring Certain Internal Confidentiality Agreements or Statements.

(b) In accordance with section 743 of Division E, Title VII, of the Consolidated and Further Continuing Appropriations Act, 2015 (Pub. L. 113-235) and its successor provisions in subsequent appropriations acts (and as extended in continuing resolutions), Government agencies are not permitted to use funds appropriated (or otherwise made available) for agreements with an entity that requires employees or sub recipients of such entity seeking to report waste, fraud,

or abuse to sign internal confidentiality agreements or statements prohibiting or otherwise restricting such employees or sub recipients from lawfully reporting such waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information.

(c) The prohibition in paragraph (b) of this provision does not contravene requirements applicable to Standard Form 312, (Classified Information Nondisclosure Agreement), Form 4414 (Sensitive Compartmented Information Nondisclosure Agreement), or any other form issued by a Federal department or agency governing the nondisclosure of classified information.

(d) Representation. By submission of its offer, the Grantor represents that it will not require its employees or sub recipients to sign or comply with internal confidentiality agreements or statements prohibiting or otherwise restricting such employees or sub recipients from lawfully reporting waste, fraud, or abuse related to the performance of a Government agreement to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information (e.g., agency Office of the Inspector General).

(e) Agreement with the representation above will be affirmed by checking the “I agree” box in block 17 of the SF424 as part of the electronic proposal submitted via Grants.gov.

#### **d. Other Submission Requirements**

If Grants.gov rejects your electronic application submission for any reason, you must correct all errors and resubmit your application before the Proposal submission deadline.

### **E. APPLICATION REVIEW INFORMATION**

#### **1. CRITERIA**

You should show strength in as many of the evaluation and selection areas as practicable to demonstrate maximum competitiveness.

##### **a. Principal Evaluation and Selection Criteria**

The two (2) principal selection criteria are specified in 32 CFR 22.315(c). The principal selection criteria are of equal importance to each other. The combined principal selection criteria are more important than the additional evaluation and selection criterion. The principal selection criteria are:

- (1) The technical merits of the proposed research.
- (2) Potential relationship of the proposed research and development to

Department of Defense missions. This includes the potential for transition to AFRL development efforts, which will be assessed based on the merits of the proposed transition/collaboration plan.

#### **b. Additional Evaluation and Selection Criteria**

Two additional evaluation criteria are shown below. These criteria are less important than the combined principal selection criteria.

- (1) The applicant, principal investigator, team leader, and key personnel qualifications, capabilities, related experience, facilities, and research techniques considered individually and in combination that are integral to achieving DoD objectives for this program.
- (2) Cost sharing to maximize the number(s) of US students and/or postdoctoral fellows involved in the research, promote research and collaboration with AFRL.

**No further criteria or criterion will be used for proposal selection**

## **2. REVIEW AND SELECTION PROCESS**

### **a. Merit-based, Competitive Procedures**

Proposals will be subjected to a peer or programmatic review. The peer review will use internal and external reviewers to assess technical merit and Air Force relevance of the proposal.

The programmatic review assesses the technical quality of the proposal, relevance of the proposed research to the portfolio descriptions in this FOA, relevance of the work to Air Force and DoD needs, and the potential of the research balanced against the available funding resources of a given portfolio. Selection for award consideration will be made based on the outcome of these reviews.

AFOSR anticipates selecting one proposal for possible funding on a competitive basis according to 10 USC 2361, and 10 USC 2374 using the merit-based, competitive procedures described in 32 CFR 22.315, incorporated here by reference.

You should show strength in as many of the evaluation and selection areas as practicable to demonstrate maximum competitiveness.

### **b. Cost Analysis for Reasonableness and Realism**

AFOSR must make sure the costs you propose are reasonable, realistic, and allocable to this work before AFOSR can make an award. All costs must be allowable to be reasonable. AFOSR may analyze your technical and cost information at the same time.

## **3. DISCLOSURE OF ADMINISTRATIVE PROCESSING BY CONTRACTOR**

## PERSONNEL

AFOSR use support contractor personnel to help it with administrative proposal processing. The contractor personnel are employees of commercial firms that have a contract with AFOSR. AFOSR makes sure all of its support contracts include nondisclosure agreements that prohibit disclosure of any information you submit to other parties.

AFOSR does not guarantee that any award will be made under this competition.

## F. FEDERAL AWARD ADMINISTRATION INFORMATION

### 1. SELECTION NOTICES

#### a. Electronic Notification

If your proposal is selected for possible award, an email will be sent to the principal investigator.

#### b. Selection for Possible Award Does Not Authorize Work

Our selection notice **is not** an authorization to start work and **is not** an award guarantee. AFOSR will contact your business office to get answers to any questions it has about your proposal and negotiate specific award terms. Negotiations may result in funding levels that are less than those in the proposal.

### 2. AWARD NOTICIES

#### a. Federal Award Document

A grant or contract signed by a warranted Grants or Contracting Officer is the only official notice that an award has been made.

#### b. Electronic Federal Award Distribution

AFOSR sends award documents to your business office by email. This is called award distribution. AFOSR always ask your business office to forward the award to the Principal Investigator indicated on the award document.

### 3. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

#### a. Reporting of Matters Related to Recipient Integrity and Performance

You must report recipient integrity and performance information as required by [Appendix XII to 2 CFR Part 200](#) – Award Term and Condition for Recipient Integrity and Performance Matters, incorporated here by reference. You should read the full text of this award term now using the link above to make sure you understand our requirements. You can also find this term at <http://www.ecfr.gov>.

#### b. Agency Review of Risk Posed by Applicants

(1) AFOSR must review information available about you and entities included in your proposal through the Office of Management and Budget (OMB) designated repositories of government- wide eligibility qualification and financial integrity information. Our risk review is required by 31 U.S.C. 3321 and 41 U.S.C. 2313 and includes both public and non-public information. You must be qualified as described at 32 CFR 22.415 Standards to receive an award.

(2) AFOSR must consider the non-public segment of the [Federal Awardee Performance and Integrity Information System \(FAPIIS\)](#) for all awards exceeding the current simplified acquisition threshold of \$250,000.

(3) At a minimum, the information in the system for a prior Federal award recipient must demonstrate a satisfactory record of executing programs or activities under Federal grants, cooperative agreements, or procurement awards; and integrity and business ethics. We will consider any comments you provide, in addition to the other information in the designated integrity and performance system, when making our risk judgment about your integrity, business ethics, and record of performance under Federal awards.

(a) AFOSR may make an award to a recipient who does not fully meet our standards as described at 2 CFR 200.205(a)(2) if it is determined that the information is not relevant to the current Federal award under consideration or there are specific conditions that can appropriately mitigate the effects of the non- Federal entity's risk in accordance with 2 CFR 200.207 Specific conditions.

(4) AFOSR must comply with the guidelines on government-wide suspension and debarment described in 2 CFR 200.213, and must require you to comply with these provisions for all work AFOSR funds.

These provisions restrict Federal awards, sub-awards and contracts with certain parties that are debarred, suspended or otherwise excluded from or ineligible for participation in Federal programs or activities.

### **c. Cross-Cutting National Policy Requirements**

You must comply with all applicable national policy requirements as a condition of award. Key national policy requirements may be found in the [DoD Research and Development General Terms and Conditions, January 2021](#); and [Appendix B to 32 CFR Part 22 – “Suggested Award Provisions for National Policy Requirements that Often Apply”](#), incorporated here by reference.

### **d. Acknowledgment of Research Support**

You must acknowledge support provided by the Government in all materials based on or developed under our awards. The requirement extends to copyrighted and non- copyrighted materials published or displayed in any medium.

The following language must be used unless the award document provides different instructions:

*“This material is based upon work supported by the Air Force Office of Scientific Research under award number FAXXXX-XX-X-XXXX”.*

You must require any sub-recipients or subcontractors under your award to include this acknowledgment, too.

**e. Disclaimer Language for Research Materials and Publications**

Some materials based on or developed under our awards must include special disclaimer language. You must include this language in all materials except scientific articles or papers published in scientific journals unless your award document provides different instructions: *“Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the U.S. Department of Defense.”*

**f. Uniform Administrative Requirements, Cost Principles, and Audit Requirements**

Our grants are governed by the guidance in [Title 2, Code of Federal Regulations \(CFR\) Part 200](#), “Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards” as modified and supplemented by the Department of Defense’s (DoD) implementation in 2 CFR Chapter XI, [and](#) provisions of [Chapter 1, Subchapter C of Title 32, CFR](#), “DoD Grant and Agreement Regulations”.

These regulations are incorporated by reference into this announcement.

**g. DoD Research and Development General Terms and Conditions**

The “DoD Research and Development General Terms and Conditions, January 2021” (DoD T&C) found at <https://www.onr.navy.mil/-/media/Files/Contracts-Grants/docs/DoD-Research-General-Terms-and-Conditions-January-2021.ashx?la=en> will apply to any award made under this announcement. These terms and conditions are incorporated by reference into this announcement. If AFOSR publishes updated terms and conditions, the updated terms and conditions may apply to any award under this announcement.

**h. Conditions of Award for Recipients Other Than Individuals**

You must agree to comply with the requirements at [2 CFR Part 182, Subpart B “Requirements for Recipients Other Than Individuals”](#) as a condition of award.

**i. DoD Class Deviations Incorporated by Reference to this Announcement**

- 252.203-7996 Prohibition on Contracting with Entities That Require Certain Internal Confidentiality Agreements – Representation (Deviation 2016-O0003) (Oct 2015)
- 252.203-7997 Prohibition on Contracting with Entities That Require Certain Internal Confidentiality Agreements (Deviation 2016-O0003) (Jan 2015)
- 252.203-7998 Prohibition on Contracting with Entities That Require Certain Internal Confidentiality Agreements – Representation (Deviation 2015-O0010) (Feb 2015)
- 252.203-7999 Prohibition on Contracting with Entities That Require Certain Internal Confidentiality Agreements (Deviation 2015-O0010) (Feb 2015)

**j. Minimum Record Retention Requirements**

You must keep records related to our awards for at least three years after completion and the final Federal Financial Report is submitted. This requirement is described further in [2 CFR 200.334\(c\)](#), incorporated here by reference. The DoD T&C [OAR Article II. Records retention and access](#) describes additional requirements.

Sometimes records must be retained for more than three years.

**4. REPORTING**

**a. Monitoring and Reporting Program Performance**

All of our awards require at least annual and final technical performance reports as required in [2 CFR 200.329](#) as further implemented by DoD T&C REP Article I. Performance reporting. Some of our awards require more frequent technical reports.

You must provide your reports on time. Our awards include a schedule specifying the latest date for submission of each required report.

**b. Standard Form (SF) 298 Report Documentation Page**

(1) SF 298 Optional for Interim and Annual Technical Reports

You may use a SF 298 Report Documentation Page for interim progress reports.

(2) SF 298 Required for Final Technical Reports

You must use a completed SF 298 Report Documentation Page as the first page of

the final report. You can download an electronic SF 298 from <http://www.gsa.gov/portal/forms/download/116146>.

### **c. Technical Performance Report Format**

#### 1. Federal-wide Research Progress Performance Report (RPPR) Format

Interim and final RPPRs are to be submitted in accordance with reporting requirements identified on the grant document. Typically interim RPPRs are due annually, however the report due dates can vary. A link to the report submission site will be included on the grant award document.

### **d. Department of Defense (DD) Form 882 Report of Inventions and Subcontracts**

#### 1. Invention Reports

- a. You must provide at least a final invention report on DD Form 882. AFOSR may ask for annual reports. Our award documents specify the due date. You can get the form at <http://www.dtic.mil/whs/directives/forms/eforms/dd0882.pdf>.
- b. You must submit invention reports even if you do not have a patent to report.

#### 2. Sub-Award and Subcontract Reporting

You must use the DD Form 882 to tell us about any subawards or subcontracts. Your award will provide specific instructions. You can get the form at <http://www.dtic.mil/whs/directives/forms/eforms/dd0882.pdf>.

### **i. Standard Form (SF) 425 Federal Financial Report**

Our awards require a final SF 425 Federal Financial Report. You can get the form at [http://www.whitehouse.gov/sites/default/files/omb/assets/grants\\_forms/SF-425.pdf](http://www.whitehouse.gov/sites/default/files/omb/assets/grants_forms/SF-425.pdf).

- (1) If you request any advance payment(s) under your award, you must submit quarterly SF 425 reports for the life of the grant. Our awards include specific instructions.
- (2) You do not have to submit quarterly SF 425 reports if you only request payments by reimbursement.

### **ii. Electronic Payment Requests and Electronic Payment**

You must submit payment requests electronically using the Invoicing, Receipt, Acceptance, and Property Transfer (iRAPT) application unless your award specifies different instructions. Domestic grant payments must be made using the electronic funds transfer (EFT).

To submit electronic payment requests you must register to use iRAPT in the Wide Area Workflow (WAWF) e-Business Suite at <https://piee.eb.mil/piee-landing/>. The website includes registration instructions.

If you have WAWF or iRAPT questions or problems, you can get help by telephone at (866) 618-5988 or (801) 605-7095, by electronic mail at [disa.ogden.esd.mbx.cscassig@mail.mil](mailto:disa.ogden.esd.mbx.cscassig@mail.mil), or the website <https://wawf.eb.mil/xhtml/unauth/web/homepage/vendorCustomerSupport.xhtml>.

### **iii. Property Reports**

If AFOSR furnishes any property owned by the Government under an award, you must submit periodic property status reports as described in [2 CFR 200.330](#) and further implemented by the DoD T&C REP Article III. Reporting on Property.

### **iv. Other Reports**

Our Program Officers may ask for informal technical reports as needed. AFOSR uses these informal reports for program purposes, such as preparation for meetings and other technical purposes. AFOSR highly recommends you provide this information in a timely manner by electronic mail directly to the Program Officer.

### **v. Electronic Submission of Reports**

You must plan on submitting reports electronically. You can submit most reports through the internet application at <https://community.apan.org/wg/afosr/p/deliverables>. Some reports must be sent using electronic mail. Our award documents provide specific instructions that you must follow.

## **G. AGENCY CONTACTS**

### **3. TECHNICAL INQUIRES AND QUESTIONS**

You should submit all questions in writing by electronic mail. You should include the **FOA NUMBER IN THE SUBJECT LINE**.

*If you submit a question by telephone call, fax message, or other means, you may not receive a response.*

**You should include the announcement number in the subject line.**

DR. PATRICK BRADSHAW, AFOSR/RTB

Program Officer  
Telephone: (703) 588-8492  
Email : [Patrick.Bradshaw.3@us.af.mil](mailto:Patrick.Bradshaw.3@us.af.mil)

DR. GAURAV SHARMA  
Program Officer  
Email: [gaurav.sharma@us.af.mil](mailto:gaurav.sharma@us.af.mil)

#### **4. GENERAL INQUIRIES AND QUESTIONS**

You must send all general questions about this announcement to us by email. Your questions will generally be consolidated with other questions and posted on Grants.gov so everyone gets the same information. AFOSR may provide an individual response by email if your question does not apply to anyone else.

DAVID FRANKLIN  
Contract Specialist  
Email: [david.franklin.25@us.af.mil](mailto:david.franklin.25@us.af.mil)

ELEANOR ZACHARY  
Grants Officer  
Email: [eleanor.zachery@us.af.mil](mailto:eleanor.zachery@us.af.mil)

## **H. OTHER INFORMATION**

### **1. OMBUDSMAN**

- (a) An ombudsman has been appointed to hear and facilitate the resolution of concerns from offerors, potential offerors, and others for this acquisition. When requested, the ombudsman will maintain strict confidentiality as to the source of the concern. The existence of the ombudsman does not affect the authority of the program officer, grants officer, contracting officer, or source selection official. Further, the ombudsman does not participate in the evaluation of proposals, the source selection process, or the adjudication of protests or formal grant or contract disputes. The ombudsman may refer the party to another official who can resolve the concern.
- (b) Before consulting with an ombudsman, interested parties must first address their concerns, issues, disagreements, and/or recommendations to the grants or contracting officer for resolution. Consulting an ombudsman does not alter or postpone the timelines for any other processes (e.g., agency level bid protests, GAO bid protests, requests for debriefings, employee-employer actions, contests of OMB Circular A-76 competition performance decisions).
- (c) If resolution cannot be made by the GO, concerned parties may contact the AFRL Ombudsman, Director of Contracting, HQ AFRL/PK. The AFRL

Alternate Ombudsman is the Deputy Director of Contracting, HQ AFRL/PK. Please send an email to [afrl.pk.workflow@us.af.mil](mailto:afrl.pk.workflow@us.af.mil) with the subject of "Ombudsman".

- (d) The ombudsman has no authority to render a decision that binds the agency.
- (e) Do not contact the ombudsman to request copies of the solicitation, verify offer due date, or clarify technical requirements. Such inquiries shall be directed to the grants or contracting officer.

## **2. GRANTS AND CONTRACTING OFFICERS AUTHORITY**

Grants and Contracting Officers acting within their warranted capacity are the only individuals legally authorized to make commitments or bind the Government.

No other individuals are authorized to make commitments or otherwise bind us.

## **3. ADDITIONAL FUNDING OPPORTUNITIES**

AFOSR posts new funding opportunities throughout the year looking for today's breakthrough science for tomorrow's Air Force. You can find more information about Air Force Office of Scientific Research interests and funding opportunities on our website at <http://www.wpafb.af.mil/afrl/afosr>.

Thank you for your interest in this announcement.