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 Brain-Derived Neuromorphic Computing with Intelligent Materials, 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, the Information Directorate (AFRL/RI), and the Materials and Manufacturing Directorate (AFRL/RX).

AFOSR anticipates making at least one grant award of up to **$1,000,000** per year per award, 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/RI and AFRL/RX can ramp-up funding in beginning years or ramp-down funding in the final years to a 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 Information Directorate (AFRL/RI) and Materials and Manufacturing Directorate (AFRL/RX) leads to provide feedback to 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 is modeled on the National Science Foundation Data Management Plan[1]. This COE will focus on the interactions between several technical elements that form the foundations of brain-based neuromorphic models and architectures.

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 (COE): Brain-Derived Neuromorphic Computing with Intelligent Materials

3. ANNOUNCEMENT TYPE
Initial Announcement

4. ANNOUNCEMENT NUMBER
FOA-AFRL-AFOSR-2021-0005

5. CATALOG OF FEDERAL DOMESTIC ASSISTANCE (CFDA) NUMBER
12.800 Air Force Defense Research Sciences Program

6. KEY DATES
A Proposer's Day will be held virtually on **03 May 2021** for the purpose of facilitating teaming among prospective proposers**.** The Government is not responsible for and will not assist with team creation. **Advance registration is required** at https://community.apan.org/wg/afosr/w/researchareas/29659/2021-afrl-center-of-excellence-in-brain-derived-neuromorphic-computing-with-intelligent-materials-proposer-s-day/. If requesting a 5-minute slot for an "elevator pitch" presentation to all attendees, you must register by **28 April 2021**. Slots will be reserved on a first-come, first-served basis. Proposer's Day presentations are intended for soliciting teaming relationships, are not a prerequisite for responding to this FOA, and will not influence white paper or proposal evaluations. Presenters' slides will be made publicly accessible at the registration website following the event.

[1] https://nsf.gov/eng/general/ENG_DMP_Policy.pdf

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

White papers must be submitted electronically at **https://community.apan.org/wg/afosr/p/submitawhitepaper** by **01 June 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 8 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/RI, RX, and AFOSR.
4. The specific plans to 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 July 2021**.

Proposals must be received electronically through Grants.gov by **16 August 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 neuromorphic computing and provide opportunities for a new generation of US scientists and engineers to address United States Space Force (USSF) and United States Air Force (USAF) research needs. This is a special FOA because it explicitly calls for (a) research in the high-priority Air Force interest areas of neuroscience, neuromorphic computing, and nanomaterials; 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 B, Federal 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.

2. BACKGROUND

In DoD missions, the exponential growth of data demands advanced data analysis capabilities with higher processing performance, lower energy dissipation, and better system scalability. During the past twenty years, the amount of data to be processed has doubled every 3-4 months while performance of the processors has doubled roughly only every 3-4 years (and will

probably not continue to do so due to the end of Moore's Law). In addition, the intrinsic limitations of the von Neumann computing architecture based on CMOS technology are prohibiting our computing platforms from meeting future artificial intelligence (AI), data analytics and autonomy requirements. These limitations have motivated emerging research areas in neuromorphic computing inspired by the architecture and mechanisms of the human brain, which is widely recognized as the ultimate computing engine with extremely high energy efficiency, reliability, efficient learning and robust cognitive abilities [1][2].

The human brain's cognitive functions emerge from the collective processing capability of simple computing elements, i.e., neurons, synapses and dendrites. In such biological neural networks, spike sequences carry both spatial and temporal information for communication and processing. Moreover, neurons operate asynchronously in an event-driven manner, and biological neural networks demonstrate very energy-efficient information processing. Such biological neural networks have initially been simulated via software-only approaches. The scale of simulated networks usually is small due to high communication overhead and limited parallelizable computing with conventional hardware. The artificial neural network (ANN) approach loosely models neuron functionality and the massive connection of neurons in a biological brain but ignores a lot of essential features of biological neural networks. Such a simplification makes the training process quite subtle, inefficient and sensitive. Although ANNs have obtained substantial successes in many applications such as image and speech recognition, the incredibly high computing cost required by training and poor support of in-hardware learning emerge as key obstacles [4][5][6][7][8].

Neuromorphic models differ from their ANN counterparts in that they encode information via the temporal activation of neurons and precise emission of spikes. In recent years, many research efforts have been devoted to neuromorphic models to harness their higher computational potential [12]. These efforts have focused on developing algorithms such as supervised plasticity rules for precise temporal spike-train recognition, backpropagation approximations for powerful data-driven learning, and spike-timing-dependent plasticity (STDP) for scalable temporal learning in progressively deeper neural network architectures. CMOS-based hardware has been built to implement the neuromorphic models and shown limited architectural design perspectives [7][9][10][12]. The most visible commercial examples are IBM's TrueNorth neurosynaptic processor [10] and Intel's Loihi neuromorphic chip [11]. CMOS devices and circuits, as the building elements for these hardware systems, were not or optimized for neuromorphic computing purposes in the first place. Therefore, the existing approaches are not able to address the following deep scientific and technological gaps:

Gap 1: Methods to realize bio-realistic algorithms and models. The algorithms and models used in biological neural networks (and their co-evolution with the underlying "wetware") are likely why the brain is so efficient in performing many tasks such as learning, which cannot be efficiently realized with high fidelity using CMOS hardware. For instance, learning has not been an integral part of the existing neuromorphic architectures. The backpropagation learning in a deep neural network model requires a substantial amount of high-precision computing and memory, which are not affordable, especially for edge and IoT devices with limited resources. CMOS devices function by transporting electrons, which are volatile, and lack native learning and memory capabilities. As a result, most of the existing architectures only support inferencing

functions of pre-trained neural networks that lack the adaptability to perform well in real-world environments with dynamic data flows and characteristics. Biologically plausible algorithms and models need to be further investigated to identify key computing elements and neuromorphic dynamics that can guide novel hardware research and potentially yield novel computing architectures. Such novel hardware with the appropriate equivalent circuits can more faithfully implement neuroscience principles and thus be much more efficient. Moreover, the new hardware can serve as a testbed to verify neuroscience principles. Compared to the living tissue, which is still more or less a "black box," such bio-realistic hardware is a "white box," where every node of the network can be monitored and modeled for understanding the collective behavior of the system. This will in turn accelerate biological model development. Such bio-realistic neural networks will not only benefit from but also improve the understanding of the brain, leading to a virtuous cycle for neuromorphic computing and neuroscience discoveries to enhance and accelerate each other.

Gap 2: Next generation bio-inspired materials with neuromorphic dynamics. Bio-inspired materials that can fundamentally enable bio-realistic algorithms and models are still under-researched despite progress with metal oxides, polymer composites, photonics and biomolecules under the DARPA SyNAPSE program and recent AFOSR Multidisciplinary University Research Initiative (MURI) grants (*Brain-Inspired Networks for Multifunctional Intelligent Systems* and *Cross-disciplinary Electronic-ionic Research Enabling Biologically Realistic Autonomous Learning*). When relating these materials to CMOS devices, it is important to recognize that CMOS technologies were created for logic operation and arithmetic computation, and thus their dynamics are not well matched with the dynamics that are critical for neuromorphic computing. The dynamics of neurons, synapses and dendrites come from ion diffusion, which is not present in CMOS devices. Consequently, CMOS-based synapses and neurons require complex and bulky circuits built with transistors. Compared with the 10 μm^2 neuron area, 0.001 μm^2 synaptic area and ~2 fJ synaptic operation energy in biological systems, the CMOS-based elements are 20 times, 400 times and 2,000 times larger, respectively [11]. Novel intelligent materials, such as memristive materials providing ion diffusion dynamics, could offer such desirable dynamics to implement bio-inspired algorithms and models efficiently.

Neuromorphic photonics (application of photonic principles to the neuromorphic domain) has recently emerged as another possible solution to the shortcomings of state-of-the-art neuromorphic architectures [68]. This new field combines the advantages of photonics and neuromorphic architectures to build systems with high efficiency, high interconnectivity, and high information density and paves the way to ultrafast, power-efficient and low-cost, and complex signal processing. There is a need for research into a photonic memristor towards the goal of realizing the next generation of full-optical neuromorphic hardware [69]. However, the fabrication of custom designs with nanometric features for achieving functional neuromorphic units remains challenging, especially at the biological synapse scale. Achieving laser patterned photonic memristors with sizes comparable to those of the biological synapses (20–40 nm) will require fabrication methods that would go beyond the diffraction limit [70]. Technologies such as super-resolution photoinduction-inhibited nanofabrication (SPIN) potentially would enable rapid prototyping of two-dimensional (2D) and three-dimensional (3D) structures with a resolution well below the diffraction limit. A two-beam nanolithography technique can also be

used to achieve super-resolution patterns [71].

Gap 3: Innovative circuits to serve as required computing elements. The bio-inspired intelligent materials need to be built into new electrical and/or photonic circuits as required computing elements that can implement the bio-realistic algorithms and models. Different from the traditional linear circuits built with CMOS devices, bio-realistic circuit designs should be highly nonlinear and rich in dynamics, which present great challenges in unconventional circuit designs. There is a lack of research to take advantage of the intrinsic nonlinear dynamics in designing novel circuit elements to efficiently and faithfully emulate synapses, neurons, and dendrites.

Gap 4: Scalable computing architecture. Even with more capable and suitable devices and circuits, there is a lack of research and existing knowledge on how to construct a scalable architecture for real-world problems. It requires co-designs and co-optimizations across different system abstract layers to incorporate the desired properties of the new materials and circuits to realize an efficient, reliable, and scalable computing system. Take reliability as an example. Most of the existing neuromorphic architectures adopt the traditional design method with deterministic data representation and operations. However, the stochastic nature of spike patterns is an important dynamical feature of neuron functions. A spiking-based model without stochastic elements will have not only limited performance potential in probabilistic inference-related applications but also lower resiliency to noise and achieve less robust performance in real-world applications. The neuromorphic dynamics of the new materials would be intrinsically stochastic and could serve as the stochastic elements to solve this issue if appropriately incorporated into the new architecture designs.

This COE will investigate, discover and design revolutionary 1) biologically realistic algorithms/models, 2) enabling intelligent materials and devices, 3) more compact but capable computing elements, and 4) scalable and reliable architectures to overcome the science and technology gaps mentioned above. It shall also foster close relationships between AFRL and faculty members as well as their graduate students from top universities.

3. OBJECTIVE AND RESEARCH CONCENTRATION AREAS

This COE aims to support high-risk, high-reward basic research that will address the hardest challenges currently facing neuromorphic (brain-inspired) computing. Specifically, the basic research objectives of this COE include: (1) Explore and understand bio-realistic algorithms and models to identify key computing elements and neuromorphic dynamics; (2) Discover intelligent materials and devices with intrinsic dynamics to enable bio-realistic algorithms and models; (3) Design innovative circuits based on intelligent materials to realize computing elements required by algorithms and models; and (4) Explore and design scalable, reliable architectures for bio-realistic algorithms and models. Proposals must address all four research objectives to be considered eligible for funding.

Research Objective 1*:* It is well established that neurons communicate information via "spikes" (or action potentials). Spiking neural networks (SNNs) are increasingly common algorithms that use simulated spikes to encode and communicate information and attempt to mimic the signals

found in biological brains. The use of spikes is not only biologically-inspired but also improves the overall efficiency of the models. However, debates continue among neuroscientists regarding whether neurons use precise spike timing or frequency to encode information, the functions of noisy, probabilistic population codes, and whether every spike carries information. Effective information representation is expected to correlate with the neuromorphic dynamics and the corresponding circuit scheme based on intelligent materials. Moreover, many ANN design principles were inspired by the human brain, such as long short-term memory (LSTM) networks [59] and attention models [60][62][63]. However, redesigning and optimizing the cognitive algorithms for realizing these mechanisms in bio-inspired hardware is not straightforward, and a biologically-plausible substitute for backpropagation learning is needed. Such a substitute would ideally be a multi-layer algorithm capable of training SNNs constructed of various types of connections and data representations that supports both supervised and unsupervised learning. It is desirable that the algorithm should be not only biologically realistic but also efficient to realize in hardware. An efficient learning rule is likely to take advantage of the dynamics of the neurons and synaptic circuits implemented with new materials. Bio-inspired systems are poised to excel in continuous time, cognition-with-context tasks such as sensory information processing and navigation in real-world environments. An ultimate objective is to create information processing and learning methods that can adapt to time-varying contexts and environments by leveraging spatiotemporal information.

Research Objective 2*:* Existing research and demonstrations of computing with memristive materials and devices are mostly limited to using their steady-state (static) behaviors for learning and inference. However, dynamics of ion motion in a biological neural network play a pivotal role in implementing neuroscience principles for the brain, which represents the most efficient and intelligent computing system ever known. Such dynamic properties can naturally encode temporal information and are highly desirable for implementing bio-realistic neural networks for applications such as time sequence prediction and natural language understanding. As with the corresponding biological components, memristive materials function based on particle motion. This makes it possible for memristive materials to generate dynamics like those in biological systems, leading to materials capable of implementing advanced learning and memory functions. The emphasis of biological ion dynamics here requires new memristive materials to be different from the existing ones used for static, non-volatile memories. More specifically, both the mobile species and materials that host the mobile species need to be discovered for memristive materials with tunable activation energies and a variety of particle motion dynamics. Different from previous studies for steady-state properties, where only the static resistance states are relevant, the entire temporal switching process, i.e., the switching dynamics, should be utilized for computing and needs to be fully investigated and modeled. This imposes much greater challenges in characterizing, understanding, and modeling the memristive materials. For example, novel *in-situ* material characterization methods with very high temporal and spatial resolutions may be needed to reveal the microscopic picture of element migrations. Photonic approaches such as those mentioned above may also be relevant. These experimental observations can then help to build models for mechanism and process understanding. Such understanding will provide criteria and guidance for new material investigations.

Research Objective 3*:* The rich dynamics of memristive materials will enable different types of neuromorphic devices and circuits. For instance, the delay time and relaxation time of a volatile

memristive device are important to realize a faithful artificial neuron and synapse, respectively. Concepts from the random recurrent neural network (RNN), optical or photonic computing, and reservoir computing communities may offer alternative paths to exploit the inherent nonlinear dynamics of neuromorphic circuitry and devices. As an example, reservoir computing is a machine learning method based on RNNs that use topological diversity and nonlinearity in dynamical processes to perform computational mappings [64][65][66]. Instead of tuning the weights throughout the entire RNN to achieve a target mapping (an expensive and numerically unstable process), only the readout layer of the network is trained using inexpensive linear regression methods. In addition, the diversity requirement of the temporal network properties may inherently exploit variations in fabrication and operation of experimental systems. These advantages open the door to embedding RNN-like functionality in unconventional physics and hardware [67], allowing a neuromorphic circuit to directly serve as the sensor platform and data processor. Finally, in contrast to CMOS based architecture, memristive dynamical devices can be readily stacked to realize 3D circuit designs, which are necessary for a complex computing system with massive connectivity and computing.

Research Objective 4*:* A biological neural network is a complex system with rich dynamics that maps signals in time and space. The efficiency of such networks can be attributed to the biological mechanisms of the neurons, dendrites, and synapses dedicated to these tasks. Realizing the same dynamics in an electronic circuit is more complicated. As mentioned before, current silicon implementations of neurosynaptic dynamics involve intricate circuit topologies composed of multiple devices. However, these circuits require a large chip area and consume relatively high power, and their performance is more susceptible to noise and environmental variations. We seek circuit and architecture solutions that have a low complexity but can faithfully emulate the complex dynamics involved in biologically-plausible neurosynaptic computation and learning [47][48]. Such hardware shall take advantage of novel neuronal, dendritic and synaptic circuits that are able to capture and store temporal information as well as modulate spiking voltage inputs in a predictable way. For example, an architecture can mimic the behavior in a biological circuit, such as in some models where the timing relationships of pre-synaptic and post-synaptic spikes alter the weight of a synapse and modulate the effect of the pre-synaptic neuron on the post-synaptic neuron. Auxiliary circuits and architectures would be necessary to leverage these devices properly, enable system scaling, and virtually integrate with algorithms and applications [47][51]. For example, given a network of novel neuron and synaptic circuits, a recurrent spiking neural network architecture would require auxiliary circuits for denoising, encoding, and decoding spiking data, a methodology for storing spike times, and a pipeline or schedule for transferring the data between layers. How to incorporate innovative circuits that leverage novel materials to create revolutionary brain-derived computing architectures would be our ultimate interest. The input/output interface and networks primarily optimized for enhancing the transition of spiking signals would be necessary, too. Moreover, the reliability and robustness of such systems emerges as a major concern [52]. At the system level, predictable, replicable, and robust function and performance are expected. Close dialogue and co-design of materials, devices, circuits, architectures, and algorithms are important for achieving this goal.

4. 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.

4.1 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 four 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.

4.2 Investigator Qualifications

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 bio-inspired models and algorithms, neuromorphic computing architectures, and/or dynamic nanomaterials, nonlinear computing circuits.
2. Expertise within the academic team covering the range of computer science, neuroscience, materials science and electrical engineering with potential contributions from mathematics and/or physics.
3. Strong history of applying principled neuromorphic models, self-learning algorithms, dynamic data analytics, and/or hardware architectures for learning to real-world problem settings.
4. Willingness to collaborate on and commit resources to jointly defined projects with AFRL scientists and engineers (S&Es).

4.3 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. 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.
4. If applicable, how the COE will leverage other institutional resources to expand the participation of students and postdoctoral fellows in the COE, establish dedicated facility and office space, and/or other means of promoting research.

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, AFRL/RI, and AFRL/RX prior to proposal submission is encouraged but is not required.

5. 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 D.4.g. 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. Section C.3.a. 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, but access to DoD facilities is limited for non-US citizens, which could add coordination challenges. An objective of this COE is to establish relationships between researchers at the performing universities and the relevant AFRL Directorates. If 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 Brain-Derived Neuromorphic Computing with Intelligent Materials 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.

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.

Our authority for an award under this competition is established at 10 U.S.C. 2192(b)(1)(B) for improvement of education in technical fields, and 10 U.S.C. 2358 for basic and applied research. We discuss regulations, terms, and conditions that generally apply to our awards in Section F. Federal Award Administration Information.

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. Any entities receiving subawards must meet these same criteria. Since the intent of this FOA is to fund a research center with co-located researchers and facilities, at least 40 percent of key personnel (i.e., PIs and co-PIs) for a proposed COE must be primarily employed by the institution submitting the proposal.

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 E.1. Criteria for proposal selection.

c. Ineligible Entities

None of the following entity types are eligible to submit proposals as primary award recipients under this announcement.

(1) Federally Funded Research and Development Centers (FFRDCs)

(2) Individual persons or people

(3) Federal agencies (to include Military Educational Institutions)

2. COST SHARING OR MATCHING

Cost sharing or matching is neither required nor an evaluation criterion for proposals under this announcement. Leveraging other institutional resources to increase the participation of students and postdoctoral fellows in the COE and/or promote research and relationships with AFRL to benefit the COE would enhance the collaboration plan that will be evaluated as part of the DoD relevance 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. More specific information about this requirement is provided in section D.4.b.

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. From the "View Grant Opportunity" page, you can click on the "Application Package" tab to download the application package.

You can find the electronic application package on 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 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.1. Technical Inquires and Questions before you submit your proposal.

If you need help with general matters, you should contact the individual listed in G.2. General Announcement Questions.

Your pre-proposal inquiries and questions should be submitted not later than **11:59 PM Eastern Daylight Time on 07 May 2021.** AFOSR may not be able to answer questions received later. This is discussed more in section D.7. Submission Dates and Times.

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 D.7.d. 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.

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 D.4. Component Pieces of the Application

R&R FORM, OMB No. 4040-0001	FIELD	ATTACHMENT
SF 424 (R&R) Application for Federal Assistance, including an authorized Signature	**18.**	**Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements**
	18.	*SFLLL Disclosure of Lobbying Activities*
R&R Other Project Information Form	**7.**	**Project Summary / Abstract**
	8.	**Project Narrative**
	9.	**Bibliography & References Cited**
	10.	*Facilities and Other Resources*
R&R Other Project Information Form	***11.***	*Equipment*
	12.	*Other Attachments*
R&R Senior / Key Person Profile Form		**Biographical Sketch**

	Current & Pending Support
R&R Budget Form	**Budget Justification**
R&R Sub award Budget Attachments Form	*Sub award Budget Justification*
R&R Project / Performance Site Locations Form	**None**
R&R Personal Data (Optional)	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 upon submission. This signature is considered the signature for the application as a whole.

c. 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 – No more than twenty-five (25) single-sided pages. **The page limit pertains primarily to the technical narrative.** The cover page, table of contents, list of references, letters of support, curriculum vitae and list of on-going and pending research support are excluded from the page limitations. The pages of proposals exceeding the page limit may not be included in the evaluation.
- Attachments – Electronic Portable Document Format (PDF)
- Content – As described below

d. Proposal Length

No more than twenty-five (25) single-sided pages. 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. **Please see Section 4 COMPONENT PIECES OF THE APPLICATION to help you understand how to calculate your page count.**

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 offers a list of file convertors 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. 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. *See section F.3. Administrative and National Policy Requirements for more information and links to the full text of these items.*
18.	You must attach the completed D.3.b. Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements. You must attach the completed lobbying certification as described in section D.3.c. Lobbying Certification and SFLL Disclosure of Lobbying Activities. You may have to attach the completed SFLLL Disclosure of Lobbying Activities 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.***

FIELD INSTRUCTION
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.
7. Attach your D.3.e. Publicly Releasable Abstract
8. Attach your D.3.f. Project Narrative
9. Attach your D.3.g. Bibliography and References Cited
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.

FIELD	INSTRUCTION
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.l 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 G.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 E.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 E. Application Review Requirements.

(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 D.4.i. 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 ***not 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:

TRAVEL	Unit	Trips	Travelers	Nights	Days	Unit Cost	Total Travel
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**

(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 not 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 do 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.

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 May 2021** at 11:59 PM Daylight Time. Responses will be posted/emailed by **21 May 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 inquires or questions.

d. Proposal Submission Deadline
AFOSR must receive your white paper by **01 June 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 August 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
Grant.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 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 D.7.d. 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 will be assessed based on the merits of the proposed collaboration plan and the potential for transition to AFRL development efforts.

b. Additional Evaluation and Selection Criteria

An additional evaluation criterion is shown below. This criterion is 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.

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

If your proposal is selected for possible award, AFOSR will analyze the cost of the work for realism and reasonableness. The cost of your proposal is considered but is not an evaluation factor or criterion.

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.

4. NO GUARANTEED AWARD

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) interim implementation in 2 CFR Part 1103 [79 FR 76047, December 19, 2014] and 2 CFR Part 1125. Provisions of Chapter 1, Subchapter C of Title 32, CFR, "DoD Grant and Agreement Regulations" other than parts 32 and 33 continue to be in effect and apply as stated.

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. 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 200.333, 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 200.328 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. ANSI Standard Z39.18-2005

   Use the AFRL Scientific & Technical Reports – Preparation, Presentation and Preservations Format Guidelines (June 2010) for your final report unless your award states different requirements. You can download the AFRL standard guide from the Related Documents tab in Grants.gov for this announcement.

2. Institutional Formats for Thesis and Dissertations

   If your institution has a format for thesis and dissertations, you can use that format unless your award states different requirements.

3. Pending Federal-wide Research Progress Performance Report (RPPR) Format

   AFOSR is working on a Federal-wide Research Progress Performance Report (RPPR) for interim, annual, and final research performance reports. You do not have to use the RPPR right now. DoD plans to use the report in the future.

   AFOSR may issue an award modification that requires you to use the Government- wide RPPR after a final notice is issued in the Federal Register.

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 https://www.esd.whs.mil/Portals/54/Documents/DD/forms/dd/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 https://www.esd.whs.mil/Portals/54/Documents/DD/forms/dd/dd0882.pdf.

e. 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.

(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.

f. 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://wawf.eb.mil. 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, or the website https://wawf.eb.mil/xhtml/unauth/web/homepage/vendorCustomerSupport.xhtml.

g. 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 200.329 and further implemented by the DoD T&C REP Article III. Reporting on Property.

h. 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.

i. Electronic Submission of Reports

You must plan on submitting reports electronically. You can submit most reports through the internet application at http://afosr.reports.sgizmo.com/s3/. Some reports must be sent using electronic mail. Our award documents provide specific instructions that you must follow.

G. AGENCY CONTACTS

1. 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. HAL S. GREENWALD, AFOSR/RTA
Cognitive & Computational Neuroscience
Telephone: (703) 588-8441
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DR. SABYASACHI GANGULI, AFRL/RX
Advanced Nanoelectronics
Telephone: (937) 255-1139
Email: sabyasachi.ganguli.2@us.af.mil

2. 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.

MS. BHAWANA SHARMA
Grants Officer
Email: bhawana.sharma@us.af.mil

MS. ALEAH PARKER
Contract Specialist
Email: aleah.parker@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 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.

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