Atmospheric and Geospace Sciences Postdoctoral Research Fellowships (AGS-PRF)

PROGRAM SOLICITATION
NSF 22-639

REPLACES DOCUMENT(S):
NSF 19-574

Full Proposal Deadline(s):
Proposals Accepted Anytime

IMPORTANT INFORMATION AND REVISION NOTES

Innovating and migrating proposal preparation and submission capabilities from FastLane to Research.gov is part of the ongoing NSF information technology modernization efforts, as described in Important Notice No. 147. In support of these efforts, research proposals submitted in response to this program solicitation must be prepared and submitted via Research.gov or via Grants.gov, and may not be prepared or submitted via FastLane. Proposal preparation and submission through Research.gov is strongly encouraged because these Fellowships contain unique requirements.

The total Fellowship amount in this AGS-PRF solicitation increased to $202,000, including an increase in stipend and allowances.

Any proposal submitted in response to this solicitation should be submitted in accordance with the NSF Proposal & Award Policies & Procedures Guide (PAPPG).

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:
Atmospheric and Geospace Sciences Postdoctoral Research Fellowships (AGS-PRF)

Synopsis of Program:

The Division of Atmospheric and Geospace Sciences (AGS), awards Postdoctoral Research Fellowships (PRF) to highly qualified early career investigators to carry out an independent research program. The research plan of each Fellowship must address scientific questions within the scope of AGS disciplines. These disciplines include Atmospheric Chemistry (ATC), Climate and Large-Scale Dynamics (CLD), Paleoclimate (PC), and Physical and Dynamic Meteorology (PDM) in the Atmospheric Sciences, and Aeronomy (AER), Magnetospheric Physics (MAG), Solar Terrestrial (ST), and Space Weather Research (SWR) in the Geospace Sciences.

The AGS-PRF program supports researchers (also known as Fellows) for a period of up to 24 months with Fellowships that can be taken to the institution of their choice. The program is intended to recognize beginning investigators of significant potential and provide them with experiences in research that will broaden perspectives, facilitate interdisciplinary interactions, and help establish them in leadership positions within the Atmospheric and Geospace Sciences community. Fellowships are awarded to individual Fellows, not institutions, and are administered by the Fellows.

AGS has made it a priority to address challenges in creating an inclusive geoscience discipline through activities that increase belonging, accessibility, justice, equity, diversity, and inclusion (BAJEDI). Proposers are encouraged to explicitly address this priority in their proposed activities. Proposers who are women, veterans, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM), or who have attended two-year colleges and minority-serving institutions for undergraduate or graduate school, or plan to conduct their Fellowship activities at one of these institutions (e.g. Historically Black Colleges and Universities, Tribal Colleges and Universities, Hispanic Serving Institutions, Alaska Native Serving Institutions, and Hawaiian Native and Pacific Islander Serving Institutions) are especially encouraged to apply.
Cognizant Program Officer(s):

Please note that the following information is current at the time of publishing. See program website for any updates to the points of contact.

- Soumaya Belmecheri, telephone: (703) 292-8527, email: sbelmech@nsf.gov
- Chia-Lin Huang, telephone: (703) 292-7544, email: chihuang@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.050 --- Geosciences

**Award Information**

**Anticipated Type of Award:** Fellowship

**Estimated Number of Awards:** 10

Up to ten Fellowships each year contingent upon availability of funds.

**Anticipated Funding Amount:** $2,000,000

The expected annual budget for the AGS-PRF program is $2 M, for up to 10 awards per year, subject to availability of funds. Year one budget of the Fellowship will be $100,000, and that will increase to $102,000 in year two.

**Eligibility Information**

**Who May Submit Proposals:**

Proposals may only be submitted by the following:

- AGS Postdoctoral Research Fellowship proposals are submitted to NSF directly by individuals who meet the eligibility criteria described below. Each individual (also referred to as proposer) must identify one or more scientific mentor(s) and host institution(s) in the proposal. Activities supported by the AGS Fellowship program may be conducted at any appropriate U.S. host institution as defined in the Program Description.

**Who May Serve as PI:**

An individual is eligible to submit a proposal to the NSF AGS Postdoctoral Research Fellowship program if all the following criteria are met:

**Individual eligibility criteria:**

- Be U.S. citizens (or nationals) or legally admitted permanent residents of the United States (i.e., have a "green card") at the time the proposal is submitted.
- Present research and professional development plans that fall within the purview of the Atmospheric and Geospace Science Sections within the Division of Atmospheric and Geospace Sciences at NSF (https://www.nsf.gov/div/index.jsp?div=ags).
- Meet one of the following criteria:
  - be currently a graduate student;
  - have held a PhD degree in a scientific or engineering field for no more than 2 years at time of submission;
  - have less than the equivalent of 18 months full time employment at time of submission if more than 2 years have elapsed since the PhD degree was conferred. To affirm eligibility under this criterion, the proposer must include specific language in the Biographical Sketch.

**Fellowship location criteria:**

- Proposers are encouraged to expand the network of collaborators and implement the Fellowship at an institution new to the proposer. However, proposers who choose to carry out the postdoctoral Fellowship at the institution where they received their PhD or their current institution at the time of submission must meet these three conditions: (1) have been at this institution for at least 12 months at the time of submission; (2) present a strong justification and clearly explain the benefits of this choice to their research and professional development goals; and (3) have two scientific mentors, one at the hosting institution and a second mentor at a different institution and/or department who is a new collaborator with the proposer.
- National centers, facilities or institutes funded by other federal agencies, such as NASA, NOAA, EPA or the U.S. Department of Energy, are ineligible as host institutions.

If a proposer fails to meet any eligibility criterion, their proposal will be returned without review. Proposers uncertain about the eligibility requirements are strongly encouraged to contact a cognizant NSF Program Officer listed in this solicitation.

**Awardees must begin the Fellowship within 6 months of notification of an award.** NSF review typically takes 3-6 months. If you are a current graduate student, please consider the review timeframe in your decision when to apply. Awardees who have not received their PhD at the time of proposal submission must present a form certifying their PhD prior to starting a Fellowship.
Proposals that fail to meet the above eligibility requirements will be returned without review.

By signing and submitting the proposal, the fellowship candidate is certifying that they meet the eligibility criteria specified in this program solicitation. Willful provision of false information in this request and its supporting documents or in reports required under an ensuing award is a criminal offense (U.S. Code, Title 18, Section 1001).

Limit on Number of Proposals per Organization:

Only individuals may submit proposals. There is no limit on the number of Fellows that an institution may host.

Limit on Number of Proposals per PI or co-PI: 1

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not required
- **Preliminary Proposal Submission:** Not required
- **Full Proposals:**

B. Budgetary Information

- **Cost Sharing Requirements:**
  
  Inclusion of voluntary committed cost sharing is prohibited.

- **Indirect Cost (F&A) Limitations:**
  
  Not applicable.

- **Other Budgetary Limitations:**
  
  Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

- **Full Proposal Deadline(s):**
  
  Proposals Accepted Anytime

Proposal Review Information Criteria

**Merit Review Criteria:**

National Science Board approved criteria. Additional merit review criteria apply. Please see the full text of this solicitation for further information.

Award Administration Information

**Award Conditions:**

Additional award conditions apply. Please see the full text of this solicitation for further information.

**Reporting Requirements:**

Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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II. Program Description
I. INTRODUCTION

The Division of Atmospheric and Geospace Sciences (AGS) offers 2-year Postdoctoral Research Fellowships (PRFs) to provide opportunities for scientists early in their careers to obtain training beyond their graduate education. The AGS-PRF is intended to recognize beginning investigators of significant potential and provide them with research experiences that will broaden perspectives, facilitate interdisciplinary interactions, and establish them in positions of leadership within the scientific community.

During the tenure of the Fellowships, principal investigators (also known as Fellows) must conduct research on topics supported by AGS programs. Projects may employ any combination of field, laboratory, and computational studies with observational, theoretical, or experimental approaches.

Fellows must affiliate with appropriate research institutions and are expected to devote themselves full time to the Fellowship activities during its term.

II. PROGRAM DESCRIPTION

A. Appropriateness for AGS priorities

Any research plan whose focus falls within the scope of any of the AGS disciplines is eligible for support. AGS supports research to add new understanding of the behavior of Earth's atmosphere and near-Earth space as described below.

Sciences that align with the following programs within the Atmospheric Sciences section:

- The Atmospheric Chemistry (ATC) program supports research on gases and aerosols in the atmosphere, including their concentration, distribution, sources/sinks, transport, and reactivity.
- The Climate and Large-scale Dynamics (CLD) program supports research to advance knowledge about the processes that force and regulate the atmosphere's synoptic and planetary circulation, weather, and climate.
- The Paleoclimate program (PC) supports research on the natural evolution of Earth's climate with the goal of providing a baseline for present variability and future trends through improved understanding of the physical, chemical, and biological processes that influence climate over the long-term.
- The Physical and Dynamic Meteorology (PDM) program supports research on sub-synoptic meteorological phenomena, including severe and hazardous weather, cloud physics, atmospheric electricity, and boundary layer research.

Sciences that align with the following programs within the Geospace Sciences section:

- The Aeronomy program supports research on the mesosphere, thermosphere and ionosphere of the Earth, with a focus on momentum within and between these regions, ionization, recombination, chemical reaction, photo-emission, and the transport of energy.
- The Magnetospheric Physics program supports research on the magnetized plasma envelope of the outer atmosphere, including energization by the solar wind; the origin of geomagnetic storms and sub-storms; the population by solar and ionospheric sources; the origin of electric fields; the coupling among the magnetosphere, ionosphere, and atmosphere; and waves and instabilities in the natural plasma.
- The Solar Terrestrial program supports research on the processes by which energy in diverse forms is generated by the Sun, transported to the Earth, and ultimately deposited in the terrestrial environment. Proposers interested in the topic of space weather should select from the most relevant one of the three disciplinary programs above in Geospace Sciences when submitting proposals. The Space Weather Research supports fundamental research on, and predictive capabilities for, the state of the connected Sun-Earth system as well as space weather impacts on our technological society.

Proposers are strongly encouraged to contact the cognizant Program Officer in their area of science (see https://www.nsf.gov/div/index.jsp?div=ags) to discuss the appropriateness of their research for funding.

B. Host Organizations
The Fellow must affiliate with a primary host organization. The justification of the choice of institution must be made clearly and compellingly in the proposal. Appropriate primary organizations include U.S. Institutions of Higher Education (IHEs), non-profit, non-academic organizations, or for-profit research organizations that are eligible to receive NSF funding.

National centers, facilities or institutes funded by other federal agencies, such as NASA, NOAA, EPA or the U.S. Department of Energy, are ineligible as host institutions. Federally Funded Research and Development Centers (FFRDCs) including the National Center for Atmospheric Research (NCAR) are ineligible as primary host organizations. Individuals wishing to be hosted at NCAR should apply directly to NCAR as part of the AGS-funded Advanced Study Program (ASP).

Multiple host organizations are permitted, and may be particularly appropriate to pursue interdisciplinary work, collaborative opportunities, and activities related to broadening participation. Regardless of the number of host organizations proposed, a primary host organization must be identified. The Fellow may propose to take the Fellowship to more than one host institution. Normally changes of institution would be sequential, moving from one institution to another during the duration of the Fellowship, but holding the Fellowship at two institutions simultaneously, is also possible.

Because the objectives of the Fellowships include broadening the perspectives and experiences of the Fellows and promoting interdisciplinary research careers, careful consideration should be given to the selection of the scientific mentor(s) and host institution(s). Documentation required from host organizations is described in Section V below.

C. The Scientific Mentor(s)

The Fellow must affiliate with a host institution(s) at all times during the entire tenure of the Fellowship. The proposer is responsible for making prior arrangements with the host institution(s) and scientific mentor(s). If the location of work is the PhD granting institution or current institution at time of submission, the Fellow must list two scientific mentors: a host mentor and an external mentor. The host mentor, at the location of work, will provide mentoring and guidance with research and professional development activities; and must design a mentoring plan for the Fellow. The external mentor and new collaborator, at a different institution or department, is expected to also provide guidance with the activities and to facilitate the amplification of scientific perspectives of the Fellow beyond those provided by the host mentor.

An important basis for judging the suitability of the host institution(s) is the degree to which the institutional letter(s) of collaboration describes and offers a research, professional development, and mentoring plan that could not be provided without Fellowship support.

III. AWARD INFORMATION

A. Duration and Tenure:

Up to 24 full-time-equivalent months of support may be requested. Awardees must begin the Fellowship within 6 months of notification of an award and tenure begins on the first day of the month.

Interruptions in tenure or extensions without additional cost to NSF are permitted only for extenuating circumstances and require NSF approval.

Within the Fellowship period, two total months of Fellowship duration may be used for paid leave, including parental or family leave. The paid leave cannot be used to increase the level of NSF support beyond the duration of the Fellowship. A no-cost extension may be requested to extend the Fellowship award in order to complete the goals of the Fellowship plans, but no supplemental funds will be provided for this purpose.

Fellowships are not renewable.

Those individuals selected to receive Fellowships will be contacted by NSF and asked to provide additional information, such as completing acceptance forms and starting certificates.

Successful proposers who have not completed the PhD at the time of proposal submission must provide certification of the receipt of the PhD before receiving their Fellowship award. Normally Fellowships will be held at institutions specified in the proposal, but under certain circumstances and with suitable justification, Fellows may transfer during the tenure of the Fellowship to a new institution upon approval by the cognizant NSF Program Officer. If a Fellow chooses to accept employment (e.g., a tenure-track position) during a Fellowship year, the Fellow stipend will be terminated upon the start of the new position and a prorated portion of the Fellowship allowance must be returned to NSF.

B. Stipend and Allowances:

The total Fellowship amount is $100,000 in year one and $102,000 in year two consisting of two components:

1. A stipend of $70,000 in year one and $72,000 in year two will be available to the Fellow to draw down in monthly increments;
2. A Fellowship allowance of $30,000 per year is paid as a lump sum to the Fellow at the beginning of the first and second years of the Fellowship to support Fellowship activities such as:
   - expenses directly related to the conduct of the proposed research and broadening participation activities, including but not limited to materials and supplies, use or purchase of equipment, computing resources, publication charges, subscription fees, and travel;
   - expenses in support of the Fellow, such as office space, general purpose supplies and use of equipment, facilities and other institutional resources;
   - expenses in support of fringe benefits, including health insurance provided through either a group plan offered by the host organization, or an individual plan secured by the Fellow, dental and/or vision insurance, disability insurance, retirement, dependent care, and moving expenses.

No additional appointment or Fellowship may be held during the period of the Fellowship. No other remuneration from any source may be accepted during the period of the Fellowship except in rare circumstances and with the permission of the cognizant Program Officer.
IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- AGS Postdoctoral Research Fellowship proposals are submitted to NSF directly by individuals who meet the eligibility criteria described below. Each individual (also referred to as proposer) must identify one or more scientific mentor(s) and host institution(s) in the proposal. Activities supported by the AGS Fellowship program may be conducted at any appropriate U.S. host institution as defined in the Program Description.

Who May Serve as PI:

An individual is eligible to submit a proposal to the NSF AGS Postdoctoral Research Fellowship program if all the following criteria are met:

Individual eligibility criteria:

- Be U.S. citizens (or nationals) or legally admitted permanent residents of the United States (i.e., have a "green card") at the time the proposal is submitted.
- Present research and professional development plans that fall within the purview of the Atmospheric and Geospace Science Sections within the Division of Atmospheric and Geospace Sciences at NSF (https://www.nsf.gov/div/index.jsp?div=ags).
- Meet one of the following criteria:
  - be currently a graduate student;
  - have held a PhD degree in a scientific or engineering field for no more than 2 years at time of submission;
  - have less than the equivalent of 18 months full time employment at time of submission if more than 2 years have elapsed since the PhD degree was conferred. To affirm eligibility under this criterion, the proposer must include specific language in the Biographical Sketch.

Fellowship location criteria:

- Proposers are encouraged to expand the network of collaborators and implement the Fellowship at an institution new to the proposer. However, proposers who choose to carry out the postdoctoral Fellowship at the institution where they received their PhD or their current institution at the time of submission must meet these three conditions: (1) have been at this institution for at least 12 months at the time of submission; (2) present a strong justification and clearly explain the benefits of this choice to their research and professional development goals; and (3) have two scientific mentors, one at the hosting institution and a second mentor at a different institution and/or department who is a new collaborator with the proposer.
- National centers, facilities or institutes funded by other federal agencies, such as NASA, NOAA, EPA or the U.S. Department of Energy, are ineligible as host institutions.

If a proposer fails to meet any eligibility criterion, their proposal will be returned without review. Proposers uncertain about the eligibility requirements are strongly encouraged to contact a cognizant NSF Program Officer listed in this solicitation.

Awardees must begin the Fellowship within 6 months of notification of an award. NSF review typically takes 3-6 months. If you are a current graduate student, please consider the review timeframe in your decision when to apply. Awardees who have not received their PhD at the time of proposal submission must present a form certifying their PhD prior to starting a Fellowship.

Proposals that fail to meet the above eligibility requirements will be returned without review.

By signing and submitting the proposal, the fellowship candidate is certifying that they meet the eligibility criteria specified in this program solicitation. Willful provision of false information in this request and its supporting documents or in reports required under an ensuing award is a criminal offense (U.S. Code, Title 18, Section 1001).

Limit on Number of Proposals per Organization:

Only individuals may submit proposals. There is no limit on the number of Fellows that an institution may host.

Limit on Number of Proposals per PI or co-PI: 1

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Preparation Instructions: Proposers may opt to submit proposals in response to this Program Solicitation via Research.gov or Grants.gov.

- Full Proposals submitted via Research.gov: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Proposal and Award Policies and Procedures Guide (PAPPG). The complete text of the PAPPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg. Paper copies of the PAPPG
may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov. The Prepare New Proposal setup will prompt you for the program solicitation number.

- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at (https://www.nsf.gov/pubs/pub_summ.jsp?ods_key=grantsgovuide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.

See PAPPG Chapter II.C.2 for guidance on the required sections of a full research proposal submitted to NSF. Please note that the proposal preparation instructions provided in this program solicitation may deviate from the PAPPG instructions.

Proposal Preparation Instructions for Fellowships

Proposals submitted to the AGS Postdoctoral Research Fellowships (AGS-PRF) program must be submitted electronically through either Research.gov or Grants.gov. Only one proposal is permitted per individual per year. A full proposal consists of many parts and requires input from the Fellowship candidate, the proposed scientific mentor, and the proposed host institution(s). Partially completed proposals may be saved for future completion and submission.

Proposal preparation and submission through Research.gov is strongly encouraged because these Fellowships contain unique requirements. If the proposer elects to submit through Grants.gov, confirmation that ALL required documents have been successfully uploaded into NSF systems by the deadline date is recommended. Otherwise, the proposal will be considered incomplete or late and will be returned without review.

Before starting proposal preparation, the proposer must be registered as an individual. To register as a new individual in Research.gov, access the Research.gov New Account Management System. To register as a new individual in Grants.gov, access Grants.gov Applicant Registration. Please note that if submitting via Grants.gov, you must also obtain an NSF ID in Research.gov.

Fellowship proposals must be submitted by the Fellowship candidate, not by the Fellowship candidate’s current or proposed organizational Sponsored Projects Office (SPO). The Fellowship candidate serves as their own SPO and Authorized Organizational Representative (AOR) for the purposes of any research administration functions in Research.gov or Grants.gov.

Proposals must include all of the required sections of a full research proposal submitted to NSF as specified in Chapter II.C.2 of the PAPPG. In cases where requirements given in this document supplement or deviate from the instructions provided in the PAPPG or the NSF Grants.gov Application Guide, this solicitation takes precedence. All page limitations include pictures, figures, tables, graphics, etc. Proposers are urged to take special care to strictly adhere to page limitations. Proposals that do not conform to the requirements will not be accepted or will be returned without review.

Proposal Set-Up: Select “Prepare New Full Proposal” in Research.gov. The Fellowship Candidate/PI must select the “I am a Postdoctoral Scholar (Postdoctoral Fellowship Proposals)” option to initiate a postdoctoral fellowship proposal.

Search for and select this solicitation title in Step 1 of the Full Proposal wizard. The information in Steps 2 and 3 is pre-populated by the system. In Step 4, add a descriptive title of the research following the prepended text “Postdoctoral Fellowship: AGS-PRF:”

Personnel Documents: The fellowship candidate is automatically designated as the PI in Research.gov. When preparing the Current and Pending Support section, include current and planned proposals/applications to other research or fellowship programs.

The scientific mentor(s) must be identified on the proposal. If using Research.gov, this is done by going to the Personnel Documents section, clicking on the "Add Mentor/Advisor" tab and entering the individual’s NSF ID or Email or Personnel name and Organization. Collaborators and Other Affiliations Information is required to be included for the scientific mentor(s).

The following instructions supplement or deviate from the guidance in the NSF PAPPG or the NSF Grants.gov Application Guide:

Cover Sheet: A requested start date must be entered. The proposed duration for a postdoctoral Fellowship proposal is pre-populated, read-only (i.e., not editable), and aligns with the program solicitation selected when initiating the proposal in Research.gov.

In the Primary Place of Performance section enter host institution information. Complete any other sections as appropriate/applicable.

Grants.gov Users: The program solicitation number will be pre-populated by Grants.gov on the NSF Grant Proposer Cover Sheet. The title must start with "Postdoctoral Fellowship: AGS-PRF:” followed by the descriptive title of the research.

Project Summary: Not more than one (1) page in length, the project summary must include an overview of the project and separate statements that clearly address the intellectual merit and broader impacts of the proposed research activity. If the overview or either merit review criteria is not included in the project summary, the proposal will not be accepted or will be returned without review. In addition, the Project Summary must also identify (in the overview section):

- Proposed scientific mentor(s)
- Proposed host organization(s)

Project Description: not to exceed ten (10) single-spaced pages (including figures, pictures, and tables), the project description must include the following information: (1) a detailed plan for research activities including clearly delineated sections for the Intellectual Merit and Broader Impacts; (2) a detailed justification for the choice of the host institution(s) and scientific mentor(s), identifying collaborating scientist(s), relating the proposed work to current research and educational efforts at the host institution(s), and describing available facilities and resources; (3) a description of the proposer’s long-term career goals and the role of this postdoctoral experience in achieving them. Please note this section must include a separate section header labeled Broader Impacts and the heading must be on its own line with no other text on that line.

Budget: In Research.gov, the budget section includes the pre-populated stipend and Fellowship allowance based on the requirements of this solicitation. The budget section does not display on the proposal main page after the proposal has been created but can be viewed by clicking Print Proposal. When the Fellowship Candidate/PI submits the proposal, the budget will display as read-only and will be accessible from the proposal main page. The budget section is editable during a proposal file update/budget revision.

Grants.gov users: The stipend and fellowship allowance should be entered in Participant Support Costs (enter the $70,000 in Year 1 and $72,000 in Year 2
stipend on line E.2 and the $30,000 Fellowship allowance on line E.5). Enter (1) as the total number of participants. No other budget lines should be used for Fellowship proposals. An annual budget must be submitted for each of the two years of the Fellowship support. A budget justification must be included and must include the spending plan for the Fellowship allowance.

**Data Management Plan**: As specified in the PAPPG, all proposals must include a supplementary document of no more than two pages labeled “Data Management Plan”. Describing plans for data management and sharing of data, the letter(s) of collaboration must follow the guidance in the PAPPG and adhere to the language allowed by the PAPPG, noted below.

**Host institution Letter(s)** from the proposed scientific mentor(s) (one letter per institution), as described below, should be uploaded into the Host Institution Letter(s) section of the proposal:

- The letter of collaboration from the proposed scientific mentor(s) (one letter per institution) should be signed by both the department chair (or equivalent) and the proposed scientific mentor(s);
- The letter(s) should certify that the proposer's proposal has been read and approved by the proposed scientific mentor(s);
- The letter(s) should certify that adequate facilities and support will be provided for the Fellow;
- The letter(s) should include a mentoring plan that discusses the role the proposed scientific mentor(s) will play in the professional development of the fellow, and of the opportunities for training and research at the host institution(s) that will be of particular benefit to the Fellow;
- Should the proposer propose to hold the Fellowship at more than one institution through the 2-year tenure, a host institution letter must be provided for all institutions involved;
- Since this program relies on reviewed proposals rather than applications, letters of recommendation will not be considered. Thus, the host institution letter should not constitute a letter of recommendation.

Any additional Letter(s) of Collaboration must follow the guidance in the PAPPG and adhere to the language allowed by the PAPPG, noted below.

"If the proposal submitted by Dr. [insert the full name of the Principal Investigator] entitled [insert the proposal title] is selected for funding by NSF, it is my intent to collaborate and/or commit resources as detailed in the Project Description or the Facilities, Equipment and Other Resources section of the proposal."

**Facilities and Equipment**: Please note that this section is a required part of the proposal. The proposer should upload a document that states “See the Project Description” in the Facilities, Equipment, and Other Resources section of the proposal.

Some proposals may require other documentation before the final decision can be made (e.g., environmental compliance, government permits). Their existence should be noted in the project description, but they should not be included in the proposal. NSF may request them later.

### B. Budgetary Information

**Cost Sharing:**

Inclusion of voluntary committed cost sharing is prohibited.

**Indirect Cost (F&A) Limitations**: Not applicable.

**Other Budgetary Limitations:**

Other budgetary limitations apply. Please see the full text of this solicitation for further information.

### C. Due Dates

- **Full Proposal Deadline(s):**
  - Proposals Accepted Anytime

### D. Research.gov/Grants.gov Requirements

**For Proposals Submitted Via Research.gov:**

Before starting proposal preparation, the proposer must be registered as an individual. To register as a new individual in Research.gov, access the Research.gov New Account Management System. To prepare and submit a proposal via Research.gov, see detailed technical instructions available at: https://www.research.gov/research-web/. For Research.gov user support, call the Research.gov Help Desk at 1-800-673-6188 or e-mail rgov@nsf.gov. The Research.gov Help Desk answers general technical questions related to the use of the Research.gov system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

**Submitting the Proposal**: Fellowship proposals must be submitted by the Fellowship candidate, not by the Fellowship candidate's current or proposed organizational Sponsored Projects Office (SPO). The Fellowship candidate serves as his/her own SPO and Authorized Organizational Representative (AOR) for the purposes of any research administration functions in Research.gov. As such, the Fellowship candidate, serving as the SPO/AOR must electronically sign and submit the proposal using the Sign and Submit button in Research.gov. The Fellowship candidate is signing on his/her own behalf and by signing the proposal NSF is in no way inferring that the proposer has assumed organizational status. Further instructions regarding this process are available on the Research.gov website: https://www.research.gov/research-web/.

**For Proposals Submitted Via Grants.gov:**

Before starting proposal preparation, the proposer must register as a new individual in Research.gov and Grants.gov. To register as a new individual in Research.gov go to: https://www.research.gov/accountmgmt/assets/welcomeunaffiliated.html and to register in Grants.gov go to: https://www.grants.gov/web/grants/applicants/registration.html. Once registered, the proposer can then apply for grant opportunities which indicate "Individual"
eligibility on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: https://www.grants.gov/web/grants/applicants.html. In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

**Submitting the Proposal:** Fellowship proposals must be submitted by the Fellowship applicant, not by the applicant’s current or proposed organizational Sponsored Projects Office (SPO). Once all documents have been completed, the applicant must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The applicant must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

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### VI. NSF Proposal Processing and Review Procedures

Proposals received by NSF are assigned to the appropriate NSF program for acknowledgment and, if they meet NSF requirements, for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF either as ad hoc reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not to review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer’s discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal. In addition, Program Officers may obtain comments from site visits before recommending final action on proposals. Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in PAPPG Exhibit III-1.

A comprehensive description of the Foundation’s merit review process is available on the NSF website at: https://www.nsf.gov/bfa/dias/policy/merit_review/.

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF’s mission, as articulated in Leading the World in Discovery and Innovation, STEM Talent Development and the Delivery of Benefits from Research - NSF Strategic Plan for Fiscal Years (FY) 2022 - 2026. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF’s mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

One of the strategic objectives in support of NSF’s mission is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions must recruit, train, and prepare a diverse STEM workforce to advance the frontiers of science and participate in the U.S. technology-based economy. NSF’s contribution to the national innovation ecosystem is to provide cutting-edge research under the guidance of the Nation’s most creative scientists and engineers. NSF also supports development of a strong science, technology, engineering, and mathematics (STEM) workforce by investing in building the knowledge that informs improvements in STEM teaching and learning.

NSF’s mission calls for the broadening of opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

### A. Merit Review Principles and Criteria

The National Science Foundation strives to invest in a robust and diverse portfolio of projects that creates new knowledge and enables breakthroughs in understanding across all areas of science and engineering research and education. To identify which projects to support, NSF relies on a merit review process that incorporates consideration of both the technical aspects of a proposed project and its potential to contribute more broadly to advancing NSF’s mission “to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes.” NSF makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.

#### 1. Merit Review Principles

These principles are to be given due diligence by PIs and organizations when preparing proposals and managing projects, by reviewers when reading and evaluating proposals, and by NSF program staff when determining whether or not to recommend proposals for funding and while overseeing awards. Given that NSF is the primary federal agency charged with nurturing and supporting excellence in basic research and education, the following three principles apply:

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These “Broader Impacts” may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

With respect to the third principle, even if assessment of Broader Impacts outcomes for particular projects is done at an aggregated level, PIs are expected to be accountable for carrying out the activities described in the funded project. Thus, individual projects should include clearly stated goals, specific descriptions of the activities that the PI intends to do, and a plan in place to document the outputs of those activities.

These three merit review principles provide the basis for the merit review criteria, as well as a context within which the users of the criteria can better understand their intent.

#### 2. Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board approved merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.
The two merit review criteria are listed below. Both criteria are to be given full consideration during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. (PAPPG Chapter II.C.2.d(i). contains additional information for use by proposers in development of the Project Description section of the proposal). Reviewers are strongly encouraged to review the criteria, including PAPPG Chapter II.C.2.d(i)., prior to the review of a proposal.

When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two criteria:

- **Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to
   a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
   b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, are complementary to, the project. NSF values the advancement of scientific knowledge and activities that contribute to achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

Proposers are reminded that reviewers will also be asked to review the Data Management Plan and the Postdoctoral Researcher Mentoring Plan, as appropriate.

**Additional Solicitation Specific Review Criteria**

In addition to the above criteria, the following factors will be used in the evaluation process:

- Qualifications of the proposer and their potential for continued professional growth and leadership in the field. Leadership in the field would be assessed based on: (1) how the proposed project expands the scientific expertise of the proposer; (2) placement of the proposed project within the context of what is known on the subject; and (3) science communication track record;
- Qualifications and suitability of the proposed host institution and the scientific and educational collaborations proposed;
- Prospective benefits to the proposer and the scientific discipline; and
- If a second scientific mentor is included, the proposed plan for interactions among the proposer, host mentor and second scientific mentor will be evaluated based on its clarity and design to promote the professional development of the fellow.

**B. Review and Selection Process**

Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review.

Reviewers will be asked to evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional program specific criteria. A summary rating and accompanying narrative will generally be completed and submitted by each reviewer and/or panel. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF strives to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new awardees may require additional review and processing time. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director acts upon the Program Officer's recommendation.

After programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements or the Division of Acquisition and Cooperative Support for review of business, financial, and policy implications. After an administrative review has occurred, Grants and Agreements Officers perform the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

Once an award or declination decision has been made, Principal Investigators are provided feedback about their proposals. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers or any reviewer-identifying information, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.
A. Notification of the Award

Notification of the award is made to the individual by a Grants Officer in the Division of Grants and Agreements. Individuals whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the proposer. (See Section VI.B. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award notice, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award notice; (4) the applicable award conditions, such as Grant General Conditions (GC-1)* or Research Terms and Conditions* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award notice. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the individual via e-mail.

*These documents may be accessed electronically on NSF’s Website at https://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.


Special Award Conditions:

The fellowship award is made to the individual, not the institution. Payments are made to the individual. Awards cannot be extended without prior NSF approval.

By accepting a fellowship award made pursuant to this solicitation, the fellow agrees to abide by the affiliated institution’s policies or codes of conduct. The fellow further agrees to notify NSF’s Office of Equity and Civil Rights (OECR) if, pursuant to a complaint made under federal or state law or the institution’s policies or codes of conduct relating to sexual harassment, other forms of harassment, or sexual assault, the fellow is subjected to any “administrative leave/administrative action,” (defined below) or is the subject of any “finding/determination” (defined below). Failure to so notify NSF may result in termination of the fellowship.

“Administrative leave/administrative action” is defined as any temporary/interim suspension or permanent removal of the fellow, or any administrative action imposed on the fellow by the institution under its policies or codes of conduct, federal or state statutes, regulations, or executive orders, relating to activities, including but not limited to the following: teaching, advising, mentoring, research, management/administrative duties, or presence on campus.

“Finding/determination” is defined as the final disposition of a matter involving sexual harassment or other form of harassment under the institution’s policies and processes, to include the exhaustion of permissible appeals exercised by the fellow, or a conviction of a sexual offense in a criminal court of law.

Candidates selected to receive fellowships will be contacted by NSF and asked to provide additional information, such as acceptance forms and starting certificates, before starting their fellowships. Successful candidates who have not completed their doctoral degrees at the time of proposal submission must provide certifications of the receipt of the PhD before receiving a fellowship award.

Normally fellowships will be held at the host institution(s) specified in the proposal; however, under certain circumstances and with suitable justification, fellowships may be transferred to a new organization upon approval by NSF.

No additional appointment or fellowship may be held during the period of the fellowship. No other remuneration from any source may be accepted during the period of the fellowship without permission of the cognizant NSF program officer.

Candidates are encouraged to discuss institutional policies on intellectual property rights with the scientific mentor(s) before submitting the proposal. Candidates should also discuss the policies of the scientific mentor(s) regarding which materials will remain with the host organization(s) and which can be released to the Fellow at the conclusion of the fellowship.

Fellows are required to adhere to the AGS Data Policy available on the AGS website (https://www.nsf.gov/geo/geo-data-policies/ags/index.jsp).

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer no later than 90 days prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). No later than 120 days following expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report, will delay NSF review and processing of any future funding increments as well as any pending proposals for all identified PIs and co-PIs on a given award. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF’s electronic project-reporting system, available through Research.gov, for preparation and submission of annual and final project reports. Such reports provide information on accomplishments, project participants (individual and organizational), publications, and other specific products and impacts of the project. Submission of the report via Research.gov constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report also must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

In addition to annual and final reports, Fellows must file an interim report 90 days after the start of the fellowship. This report must include a letter signed by the postdoctoral fellow and the host mentor on the expectations for the fellowship and the deliverables that must be produced at the end of the fellowship.

The Accomplishment section of the final report should include a statement describing how the data policy requirements have been met. Information on the AGS Data Policy is available on the AGS website (https://www.nsf.gov/geo/geo-data-policies/ags/index.jsp).

VIII. AGENCY CONTACTS

Please note that the program contact information is current at the time of publishing. See program website for any updates to the points of contact.

General inquiries regarding this program should be made to:

- Soumaya Belmecheri, telephone: (703) 292-8527, email: sbelmech@nsf.gov
- Chia-Lin Huang, telephone: (703) 292-7544, email: chihuang@nsf.gov

For questions related to the use of FastLane or Research.gov, contact:

- FastLane and Research.gov Help Desk: 1-800-673-6188
- FastLane Help Desk e-mail: fastlane@nsf.gov
- Research.gov Help Desk e-mail: rgov@nsf.gov

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: support@grants.gov.

IX. OTHER INFORMATION

The NSF website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this website by potential proposers is strongly encouraged. In addition, "NSF Update" is an information-delivery system designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Grants Conferences. Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. "NSF Update" also is available on NSF’s website.

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this mechanism. Further information on Grants.gov may be obtained at https://www.grants.gov.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 55,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See the NSF Proposal & Award Policies & Procedures Guide Chapter II.E.6 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.
PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy, and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See System of Record Notices, NSF-50, "Principal Investigator/Proposal File and Associated Records," and NSF-51, "Reviewer/Proposal File and Associated Records." Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0023. Public reporting burden for this collection of information is estimated to average 12 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

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