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# NSF 21-584: Research Experiences for Teachers Sites in Biological Sciences (BIORETS)

## Program Solicitation

### Document Information

#### Document History

- **Posted:** May 6, 2021

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**National Science Foundation**  
Directorate for Biological Sciences  
Division of Biological Infrastructure

**Full Proposal Deadline(s)** (due by 5 p.m. submitting organization's local time):

August 02, 2021

July 31, Annually Thereafter



### Table Of Contents

[Summary of Program Requirements](#)

[I. Introduction](#)

[II. Program Description](#)

[III. Award Information](#)

[IV. Eligibility Information](#)

[V. Proposal Preparation and Submission Instructions](#)

[A. Proposal Preparation Instructions](#)

[B. Budgetary Information](#)

[C. Due Dates](#)

[D. Research.gov/Grants.gov Requirements](#)

[VI. NSF Proposal Processing and Review Procedures](#)

[A. Merit Review Principles and Criteria](#)

## B. Review and Selection Process

### VII. Award Administration Information

#### A. Notification of the Award

#### B. Award Conditions

#### C. Reporting Requirements

### VIII. Agency Contacts

### IX. Other Information

## Important Information And Revision Notes

Any proposal submitted in response to this solicitation should be submitted in accordance with the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) that is in effect for the relevant due date to which the proposal is being submitted. The NSF PAPPG is regularly revised and it is the responsibility of the proposer to ensure that the proposal meets the requirements specified in this solicitation and the applicable version of the PAPPG. Submitting a proposal prior to a specified deadline does not negate this requirement.

### Important Information

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, 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.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) ([NSF 20-1](#)), which is effective for proposals submitted, or due, on or after June 1, 2020.

## Summary Of Program Requirements

### General Information

#### Program Title:

Research Experiences for Teachers Sites in Biological Sciences (BIORETS)

#### Synopsis of Program:

The National Science Foundation's Directorate for Biological Sciences (BIO) will support up to 10 awards annually to enable active research by cohorts of middle school teachers, high school teachers and/or community college faculty. Research Experiences for Teachers Sites (RET Sites; RETS) will be based at institutions of higher learning or other non-profit organizations in the U.S. that conduct educational and research activities. RETS with a focus on Biological Sciences (BIORETS) will include research projects in fields that are supported by the Directorate for Biological Sciences. BIORETS may be based in a single discipline or department or may offer interdisciplinary or multi-department research opportunities with a coherent intellectual theme. An important goal of the program is to increase the participation of underrepresented groups in biological research and those from geographically underrepresented areas in science, technology, engineering, and mathematics (STEM). Proposals are strongly encouraged to involve members of these groups both as participants and as mentors. BIORETS awards are expected to leverage the teachers' research experiences for curriculum development, with the goal of enriching their classroom

teaching practices and inspiring a broad swath of students to consider higher education and careers in STEM.

Teachers supported with NSF funds in BIORETS projects must be U.S. citizens, U.S. nationals, or permanent residents of the United States.

**Broadening Participation in STEM:**

NSF recognizes the unique lived experiences of individuals from communities that are underrepresented and/or underserved in science, technology, engineering, and mathematics (STEM) and the barriers to inclusion and access to STEM education and careers. NSF highly encourages the leadership, partnership, and contributions in all NSF opportunities of individuals who are members of such communities supported by NSF. This includes leading and designing STEM research and education proposals for funding; serving as peer reviewers, advisory committee members, and/or committee of visitor members; and serving as NSF leadership, program, and/or administrative staff. NSF also highly encourages demographically diverse institutions of higher education (IHEs) to lead, partner, and contribute to NSF opportunities on behalf of their research and education communities. NSF expects that all individuals, including those who are members of groups that are underrepresented and/or underserved in STEM, are treated equitably and inclusively in the Foundation's proposal and award process.

NSF encourages IHEs that enroll, educate, graduate, and employ individuals who are members of groups underrepresented and/or underserved in STEM education programs and careers to lead, partner, and contribute to NSF opportunities, including leading and designing STEM research and education proposals for funding. Such IHEs include, but may not be limited to, community colleges and two-year institutions, mission-based institutions such as Historically Black Colleges and Universities (HBCUs), Tribal Colleges and Universities (TCUs), women's colleges, and institutions that primarily serve persons with disabilities, as well as institutions defined by enrollment such as Predominantly Undergraduate Institutions (PUIs), Minority-Serving Institutions (MSIs), and Hispanic Serving Institutions (HSIs).

"Broadening participation in STEM" is the comprehensive phrase used by NSF to refer to the Foundation's goal of increasing the representation and diversity of individuals, organizations, and geographic regions that contribute to STEM teaching, research, and innovation. To broaden participation in STEM, it is necessary to address issues of equity, inclusion, and access in STEM education, training, and careers. Whereas all NSF programs might support broadening participation components, some programs primarily focus on supporting broadening participation research and projects. Examples can be found on the NSF [Broadening Participation in STEM](#) website.

**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.*

- Arcady R. Mushegian, telephone: (703) 292-8528, email: [amushegi@nsf.gov](mailto:amushegi@nsf.gov)
- Sally E. O'Connor, telephone: (703) 292 8470, email: [soconnor@nsf.gov](mailto:soconnor@nsf.gov)
- Aruna Kilaru, telephone: (703) 292-7481, email: [akilaru@nsf.gov](mailto:akilaru@nsf.gov)
- Catherine O'Reilly, telephone: (703) 292-7934, email: [coreilly@nsf.gov](mailto:coreilly@nsf.gov)

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

- 47.074 --- Biological Sciences

**Award Information**

**Anticipated Type of Award:** Standard Grant or Continuing Grant

**Estimated Number of Awards:** 10

It is anticipated that approximately 10 Site awards will be made per year.

**Anticipated Funding Amount:** \$6,000,000

The total anticipated annual funding for BIORETS is approximately \$6,000,000 per year, subject to the availability of funds. The maximum total request for a Site is \$600,000 for a duration of up to three years.

**Eligibility Information**

**Who May Submit Proposals:**

Proposals may only be submitted by the following:

- Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch Campuses of US IHEs: If the proposal includes funding to be provided to an international branch campus of a US institution of higher education (including through use of subawards and consultant arrangements), the proposer must explain the benefit(s) to the project of performance at the international branch campus, and justify why the project activities cannot be performed at the US campus.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

**Who May Serve as PI:**

The principal investigator of a BIORETS project must be employed in a position with significant research and/or teaching responsibilities at a submitting institution where research is conducted in field(s) supported by the Directorate for Biological Sciences.

**Limit on Number of Proposals per Organization:**

There are no restrictions or limits.

**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:**
  - Full Proposals submitted via Research.gov: *NSF Proposal and Award Policies and Procedures Guide (PAPPG)* guidelines apply. 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](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg).
  - Full Proposals submitted via Grants.gov: *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov* guidelines apply (Note: The *NSF Grants.gov Application Guide* is available on the Grants.gov website and on the NSF website at: [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=grantsgovguide](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)).

**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)** (due by 5 p.m. submitting organization's local time):

August 02, 2021

July 31, Annually Thereafter

### **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:**

Standard NSF reporting requirements apply.

## **I. Introduction**

Research experience is widely accepted as an effective mechanism for promoting engagement, preparation, and retention of individuals in careers in STEM. NSF recognizes the pivotal role teachers play in igniting their students' interest in STEM and has a long history of enabling teachers to engage in research through RET opportunities. RETs are often offered as supplements to individual NSF research grants and support participation of one to a few teachers in these projects. RET Site awards are mechanisms to enable a more expansive and sustained engagement of cohorts of teachers in research and curriculum development with the goal of enriching their classroom teaching practices and thereby inspiring a broad swath of students to consider higher education and careers in STEM.

The BIORETS program seeks to extend research opportunities to groups of teachers in fields that are supported by the Directorate for Biological Sciences. The major goals are to enhance teachers' science literacy through personal experience with scientific thinking and the excitement of discovery, and to create mechanisms whereby teachers develop collaborative relationships with each other and with partners from the host institution to advance learning. The research experiences are intended to be translated into curricular changes that have long-term impact on science education and encourage students to enter STEM-related professions.

An equally important goal of the BIORETS program is to increase the participation of underrepresented groups in biological research and education (see, for example,<sup>[1][2]</sup>) and those from geographically underrepresented areas in STEM. Local, community-based research opportunities may be particularly effective at broadening participation in STEM. Proposals submitted to this solicitation are strongly encouraged to involve PIs, co-PIs, postdoctoral fellows, students, and teachers who are members of such groups, as well as teachers who serve in school districts with high proportions of

students in such groups. Proposers are also encouraged to consider involving veterans of the U.S. Armed Forces as part of NSF's broader effort to promote veteran involvement in STEM research and education.

## **II. Program Description**

The BIORETS program supports active participation of middle school, high school, and/or community college STEM teachers in research through Site awards. BIORETS is intended to involve a broad community of teachers in the U.S. in fields that are supported by the Directorate for Biological Sciences. Research in these fields drives the science needed to develop new technologies, boost the bioeconomy, and find solutions to societal challenges, including natural resource management, sustainability, resilience to environmental changes, and global food security.

Beyond offering research experiences, BIORETS also supports professional development opportunities for teachers, empowering them to use new knowledge to deepen their students' science engagement and research literacy and to help their students pursue higher education and careers in the biological sciences. The translation of research experience into classroom practice is envisioned as a collaborative effort, involving input from fellow teachers and research mentors, that helps build robust networks between the schools and colleges and host institution communities.

### **Key Elements of a BIORETS Project**

A BIORETS project is defined by a RET proposal submitted under this solicitation. Key elements of a BIORETS project are highlighted below and described in greater detail in Section V Proposal Preparation and Submission Instructions. These elements also serve as the basis for solicitation-specific criteria in Section VI Proposal Processing and Review Procedures that will be used as part of the proposal evaluation.

**Research and Professional Development Experience for Teacher Participants.** A BIORETS project should provide a cohort of at least 8-10 middle school, high school, and/or community college STEM teachers (collectively referred to as "teachers" in the remainder of this document) with immersive, authentic research experiences in the biological sciences (as defined above) over a period of at least six weeks, typically during the summer. In cases where access to resources, e.g., specialized equipment or locations, is time-limited, research projects of a shorter duration may be proposed with appropriate justification and assurance of a quality learning experience. Proposers are welcome to incorporate approaches that make use of cyberinfrastructure or other advanced technologies that facilitate research, learning and collaboration over distances ("virtual research projects"). Leveraging other resources in the community, for example through partnerships with local or regional industry, is encouraged as well.

The BIORETS project must have clearly articulated goals. They must present coherent intellectual and research theme(s) within or across disciplines that enable cohort experiences for teachers. The research projects should focus primarily on important concepts and questions in the biological sciences, and secondarily on education or curriculum development. BIORETS proposals must describe details of planned research activities, including how they align with the scientific goals and interests of the host institution's research community. The proposals should also identify the roles and responsibilities of the teachers as researchers. Recognizing that teachers may not have extensive research backgrounds, the proposal must describe orientation activities to prepare them with needed theoretical and practical background information and to acquaint them with laboratory or field methods, safety procedures, etc., related to the research. Teachers and mentors should also receive training in responsible and ethical conduct of research and on expectations of behavior to ensure a safe and respectful environment for all participants. Training should be conducted during the summer research period and not rely on substantial prior preparatory work by the teachers, such as enrollment in courses before or during the summer.

The research should serve as a basis for teachers to create curricula that bring knowledge from their experience back to the classroom, to convey the excitement of scientific research to students and to improve their science learning experience. Teachers should also be encouraged and enabled to disseminate the products of their research and curricular activities. The BIORETS project is expected to facilitate network building between the teachers and their scientist hosts. Proposals should include plans and resources for the scientists and teachers to engage in follow-up academic-year activities that help establish enduring relationships for knowledge exchange between the host institution and participating middle or high schools or community colleges.

Projects that will include teachers from a combination of middle school, high school and community college grade levels should describe plans for coherent programming to ensure relevance for all participants.

**Research Environment.** Proposals for BIORETS projects must be submitted by institutions that conduct research in biological science discipline(s). The BIORETS project must demonstrate substantive intellectual engagement of biological sciences faculty and other personnel who are actively involved in research and teaching. The principal investigator will serve as the intellectual leader for the project, taking primary responsibility for providing the teachers with meaningful research experiences and learning opportunities during the summer and academic year. The BIORETS project may involve a variety of faculty, staff, and students as collaborators and in supporting roles. Researchers at different career stages, including established investigators, must be involved in mentoring the teachers. Proposals should describe the mentors' experience and include plans for training them to support the summer research and follow-on academic-year activities.

The BIORETS program aims to increase participation of underrepresented groups in biological science research and education; hence, the project should be designed to ensure inclusivity for all participants. All participants, including teachers and mentors, must adhere to NSF's sexual harassment policy<sup>[3]</sup>.

**Teacher Recruitment and Selection.** The BIORETS program is intended to support middle school, high school, and community college teachers who are currently teaching a STEM subject at their school. Proposals should describe plans for recruitment and selection in detail, including how they will help achieve the program goals of increasing participation of underrepresented groups in STEM and building sustainable connections between the host institution and local schools. The quality of participant recruitment and selection processes and criteria will be an important element in proposal evaluation.

**Translation to Classroom Curricula and Academic Year Follow-up.** In order to ensure transfer of new knowledge from the BIORETS experience to school classrooms, proposals must provide a plan for continued engagement of the participants after summer. The plan should describe the roles of host community members in supporting teachers' activities during the academic year; for example, faculty, postdoctoral, and student involvement in developing curricular materials, classroom visits, and outreach to local teachers not directly enrolled in the BIORETS project. These follow-up activities are also an opportunity for host community members to learn about middle school, high school, and community college education from the teachers.

**Project Evaluation and Reporting.** Proposals must provide a detailed plan for assessment of the BIORETS project and its classroom impact. The plan must identify and provide the qualifications of an external evaluator who will develop and conduct a credible evaluation based on the BIORETS project programmatic goals and outcomes. The external evaluator may be a member of the host institution but should not be affiliated with academic (or other organizational) units that are integral to the BIORETS project. Funding for the evaluator should be included in the budget.

**Budget.** The focus of a BIORETS project is on the teacher participant experience, and the project budget must reflect this principle. Details on allowable costs for the budget are described below in Section V.

### III. Award Information

**Anticipated Type of Award:** Continuing Grant or Standard Grant

**Estimated Number of Awards:** It is anticipated that approximately 10 Site awards will be made per year.

**Anticipated Funding Amount:** The total anticipated annual funding for BIORETS is approximately \$6,000,000 per year, subject to the availability of funds. The maximum total request for a Site is \$600,000 for a duration of up to three years.

### IV. Eligibility Information

**Who May Submit Proposals:**

Proposals may only be submitted by the following:

- Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch Campuses of US IHEs: If the proposal includes funding to be provided to an international branch campus of a US institution of higher education (including through use of subawards and consultant arrangements), the proposer must explain the benefit(s) to the project of performance at the international branch campus, and justify why the project activities cannot be performed at the US campus.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

#### **Who May Serve as PI:**

The principal investigator of a BIORETS project must be employed in a position with significant research and/or teaching responsibilities at a submitting institution where research is conducted in field(s) supported by the Directorate for Biological Sciences.

#### **Limit on Number of Proposals per Organization:**

There are no restrictions or limits.

#### **Limit on Number of Proposals per PI or Co-PI: 1**

#### **Additional Eligibility Info:**

An individual may be listed as a PI or co-PI on no more than one proposal for a BIORETS project per annual deadline.

## **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](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](mailto: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/publications/pub\\_summ.jsp?ods\\_key=grantsgovguide](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)). 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](mailto:nsfpubs@nsf.gov).

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:



Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via Research.gov. PAPPG Chapter II.E.3 provides additional information on collaborative proposals.

See PAPPG Chapter II.D.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.

**Proposals for RET Sites in Biological Sciences must include the following:**

1. Select the solicitation number for the BIORETS program. Proposals must be submitted to the Division of Biological Infrastructure of the Directorate for Biological Sciences. The title of the project should start with "BIORETS".
2. **Information about Principal Investigators.** A single individual should be designated clearly as the PI of the BIORETS project. The PI must be employed in a position with significant research and/or teaching responsibilities at a submitting institution where research is conducted in field(s) supported by the Directorate for Biological Sciences. This individual will be responsible for overseeing all aspects of the BIORETS project award. The institution may designate up to four additional individuals as co-PIs, if the development and operation of the project require shared responsibility. Other anticipated research supervisors or mentors should be listed as senior/key personnel.
3. **Project Summary.** The Project Summary consists of an overview, a statement on the intellectual merit of the proposed activity, and a statement on the broader impacts of the proposed activity. The Project Summary must contain the headings "Overview," "Intellectual Merit," and "Broader Impacts."

The "Overview" section of the Project Summary must begin with the following list of "Project Elements":

*PROJECT ELEMENTS:*

- New RET Site (Yes/No);
- Project title (as shown on Cover Sheet): "BIORETS: ...";
- Principal Investigator (name, phone number, and email address);
- Submitting organization;
- Schools, school districts, and other institutions involved in the project, including educational level, e.g., middle school, high school, or community college;
- Location(s) (universities, national labs, field stations, etc.) at which the proposed research projects will occur;
- Main field(s) and sub-field(s) of the research;
- Number of teachers per year;
- Number of weeks per year that the teachers will participate in research; and
- Web address (URL) for information about the BIORETS project (if known).

In addition, at the end of the Overview Box, please provide a list of keywords or phrases following the text "Keywords:" that identify the areas of technical expertise and education-related activities involved in the proposed research project(s).

In the remainder of the Project Summary, provide a succinct description of the following, using the Intellectual Merit and Broader Impact fields as appropriate:

- a. the goals of the BIORETS project and the planned activities, including the intended impact on the cohort of participating teachers and their students;
- b. the biological science disciplinary focus and the nature of the research experiences planned for the teachers;
- c. modes by which research-active faculty, students and other professionals will be engaged in the project;

- d. plans for identification of schools or community colleges that will be involved and for recruitment of teachers;
- e. plans for developing curricular materials related to the research experiences and for sharing them with the community beyond the participating teachers;
- f. plans for continued engagement between teachers and research mentors in the academic year; and
- g. intended impact on broadening participation of underrepresented groups in STEM disciplines.

4. **Table of Contents.** The Table of Contents is system-generated and cannot be edited.

5. **Project Description.** The project description contains the following items “a” through “i” and must not exceed 15 pages in length. Please note that per guidance in the PAPPG, the Project Description must contain a separate section within the narrative labeled “Broader Impacts”. This section should provide details of the broader impacts of the proposed activities and may be placed anywhere within the Project Description.

a. **Overview.** This section should provide a brief description of the goals and objectives of the proposed BIORETS project, the targeted teacher participants, the research focus, the broader impact of the proposed activity, the organizational structure, the timetable, and the institutional commitment to the RET activity.

b. **Research and Professional Development Experience for Teacher Participants.** This section should describe the research component and the roles of the PI and other mentors who will guide the research. It should address the following considerations:

- An orientation session must be included at the beginning of the program to acquaint the teachers with laboratory or field methods, safety procedures, etc., as relevant to the proposed research.
- The BIORETS project must include activities that support an effective research and learning experience, including hands-on training to provide the necessary scientific background information and skills. These activities should not rely on online or on-site courses as pre- or co-requisites. There should be minimal expectations for prior preparatory work or study by the teachers. Careful planning and mentor training will be necessary to ensure the participants are prepared and have adequate time for an authentic research experience.
- A section labeled “Teacher Research Component” should provide a detailed description of representative research projects that the teachers will conduct, highlighting their contributions to the projects. The research projects must address important concepts and questions in the biological sciences and involve teachers as active participants in experimentation and analysis, not just as observers. The projects should be framed by overarching intellectual and research theme(s) to promote coherent learning and knowledge sharing among teachers. Virtual activities that facilitate research, learning and collaboration across distances may be integrated into the program as appropriate.
- The teachers must work closely in teams with institutional faculty, postdoctoral, and/or graduate student mentors; regular interactions with research-active personnel are particularly important. The quality of the mentoring relationships and interactions will be an important element in proposal evaluation. The teachers must have opportunities to present their research plans, progress, and results to the institutional community and other RET participants. They should also be encouraged to participate in future scientific meetings related to their research in order to strengthen their disciplinary knowledge.

c. **Research Environment.** This section should provide information pertaining to the host institution’s capacity and quality as a potential RET Site. It should describe the experience of the PI, faculty, postdoctoral fellows, graduate students, and other members of the institution who may serve as research mentors. Information on the research publication record of the host scientist(s) and their educational and outreach efforts, especially related to the professional development of STEM teachers, should be included. Activities designed to train mentors, particularly postdoctoral fellows and graduate students, to support teachers during the summer and academic year should be outlined as well. The Site should be

inclusive to all RET participants, and PIs should indicate any diversity and inclusion training they have taken or intend to take in preparing for a BIORETS project. The Site is also expected to adhere to NSF's policy on Sexual Harassment, Other Forms of Harassment, or Sexual Assault (See section f. below for more details).

- d. **Teacher Recruitment and Selection.** The quality of participant recruitment and selection processes and criteria will be an important element in proposal evaluation. This section should describe the recruitment plan with as much specificity as possible, including the types and/or names of institutions and school systems from which participants will be recruited, as well as efforts to recruit members of underrepresented groups in STEM. Teachers must be currently teaching a STEM subject at their institution in order to participate in this program. Proposers are expected to facilitate cohort building and effective transfer of knowledge from the BIORETS experience to the classroom. A key goal of the BIORETS program is to build sustainable connections between the BIORETS host institution and schools, school systems, and community colleges; thus, recruitment should target schools and colleges that would benefit from building ties to the host institution, bolstered by faculty, teachers, and students maintaining interactions during the school year beyond the summer program.

RET Sites may host resident or non-resident programs as necessary to meet their goals and the needs of the participating teachers. Non-resident programs may be suitable in cases where teachers can easily commute to the RET Sites, whereas resident programs may be necessary, for example, at geographically isolated research locations such as field stations or to enable participation from teachers in underserved communities.

- e. **Development of Curricular Materials.** During the summer, BIORETS participants should begin developing curricular materials, such as modules, that draw on their research experience. The modules should be anchored in established middle school, high school, or community college curricula and consider state and/or national teaching standards, when applicable. The goal of creating teaching materials is an integral part of the BIORETS summer experience and should be woven into the program with an appropriate timeline. Effective materials will require careful guidance and collaboration between BIORETS participants and disciplinary experts and possibly support from educational experts as well. This section should provide a clear description of the activities planned to achieve the goal of curricular development.

Other major goals are to ensure that the teachers' research experiences inform their classroom practices during the academic year and to develop long-term relationships between the teachers, the host institution community, and the participating schools. Toward this end, the proposal must provide a plan for sustained academic year engagement that supports classroom implementation of lesson plans, curricula, or skills developed in summer. Graduate student involvement in classroom activities is encouraged, as are faculty and student visits to teachers' classrooms. Plans for conferences and other outreach activities to enable teachers to disseminate curricular materials and share their experience with the community is also encouraged.

- f. **NSF Policy on Sexual Harassment, Other Forms of Harassment, or Sexual Assault.** NSF does not tolerate sexual harassment, or any kind of harassment, where NSF-funded activities take place. Proposers are required to have a policy or code of conduct that addresses sexual harassment, other forms of harassment, and sexual assault. Proposers should provide an orientation for all participants in the BIORETS project, including teachers, faculty, postdoctoral fellows, graduate students, and other personnel, that covers expectations of behavior to ensure a safe and respectful environment for everyone involved and to review the institution's policy or code of conduct addressing sexual harassment, other forms of harassment, and sexual assault, as well as reporting and complaint procedures. Such orientation should be specifically mentioned in the proposal. For additional information, see the NSF policies at <https://www.nsf.gov/od/odi/harassment.jsp> and "Promising Practices" at [https://www.nsf.gov/od/odi/promising\\_practices/index.jsp](https://www.nsf.gov/od/odi/promising_practices/index.jsp).

g. **Project Evaluation and Reporting.** This section should provide a plan for formative and summative evaluation of the proposed project. It should identify the external evaluator and include a brief description of their qualifications. Note that the PI, co-PI, and main project personnel cannot serve in this role. The objective of the evaluation process is to measure qualitatively and/or quantitatively the progress and impacts of the project in achieving its goals, particularly the extent to which the participants' perspectives on science and their knowledge of the practice of biological sciences have expanded, as well as the impact on school or community college students and their curricula. The evaluation plan is an important part of the proposal, and proposers have latitude in designing a plan that best suits their BIORETS project. Although not required, BIORETS project PIs may wish to engage educational research specialists in planning and implementing the project evaluation. The evaluation should involve periodic measures to gauge progress according to the project plan, and pre- and post-project measures to assess the effects on teacher and/or community college faculty and student learning. Additionally, it is highly desirable to have a structured means of tracking the participants in order to determine the lasting influence of the BIORETS experience.

h. **Publication/Documentation/Dissemination.** To fulfill NSF dissemination requirements and to ensure long-term free access to the science curricular materials that are created, BIORETS awardees are strongly encouraged to publish the materials in journals, other repositories that reach a wide audience, or open collaborative environments. Other means of dissemination may include posting the materials on an institutional BIORETS website or portal and ensuring free access to educators. All dissemination methods should be described in this section

i. **Results from Prior Support** (if applicable; essential for a RET Site renewal proposal). If the submitting institution has not received prior support through a 'Research Experiences' mechanism, then "N/A" should be entered in this section.

If the submitting institution has received a prior RET Site award in the same disciplinary area(s), the proposal must include a section (limited in length to five pages) entitled "Results from Prior NSF Support" within the 15-page narrative description of the project. This section must describe the earlier RET project(s) and outcomes(s) in sufficient detail for reviewers to reach an informed conclusion regarding the value of the project. This section can include summary information on the recruiting efforts; the number of applicants; participants and their demographic composition, research, education and dissemination activities; results from the project evaluation; lessons learned; modifications and changes to the proposed RET Site; and a list of publications or reports (if to be submitted for publication) resulting from the prior NSF award.

6. **References Cited.** A list of references to pertinent literature, including those related to the research projects, is required. Proposals without references will be returned without review.
7. **Current and (Other) Support.** The guidelines in the PAPPG apply. The required information must be provided for all persons listed as senior/key personnel (limited to 12 people).
8. **Facilities, Equipment, and Other Resources.** This section is required and must be completed in accordance with the instructions in the PAPPG.
9. **Biographical Sketches.** The basic guidelines in the PAPPG for biographical material apply; however, senior/key personnel are encouraged to include activities or accomplishments relevant to a successful RET Site. Senior/key personnel are the PI, the co-PI, if one is designated, and other faculty and professionals who are expected to serve as research mentors. The number of biographical sketches is limited to 12.
10. **Project Budget.** The focus of RET Sites is on the teacher experience, and the project budget must reflect this principle. The proposal should include a detailed budget and budget justification, as described in the PAPPG. Project costs may include, for example, teacher stipends and travel. These costs must be listed under Participant Support in the budget. The BIORETS project may not charge participants an application fee. The budget justification should explain and justify major cost items as well as any unusual inclusions and address the cost-effectiveness of the project.

The total amount requested for a BIORETS project may not exceed \$600,000, with a program duration of up to three years. The proposal must include funds for at least 8-10 teachers, totaling at least \$100,000 per year of the budget (i.e., Participant Support section). The total cost per teacher is limited to \$15,000 per year, which includes funds for the teacher stipend and up to \$2,000 for the cost of materials, equipment, software, and other supplies for developing classroom materials. The stipend may be distributed over the course of the program to encourage full participation, including engagement in the following academic year. If necessary, a BIORETS project with a resident program may apply for a higher per-teacher budget to account for local housing costs. The remaining funds may be requested for other activities and expenses that contribute to the success of the BIORETS program (for example, salaries, wages, and fringe benefits; travel; materials and supplies; and applicable indirect costs); any such costs must be listed under the appropriate NSF budget categories and must be explained in the budget justification. Costs for external evaluation should be included in the budget. Travel support should be directly related to the BIORETS program goals for dissemination of research results or classroom materials. The budget justification should clearly detail the purpose of any travel funds and identify any conferences that might be attended. Funds requested for the RET Site to conduct conferences should be included in the yearly proposal budget and fully itemized and described in the budget justification. Note that the proposal cannot include funds for social activities or special meals, including meals related to weekly team meetings; for resident programs, meal costs can be paid as part of subsistence. The budget cannot include tuition for any students.

11. **Supplementary Documentation.** In addition to the documents listed in the PAPPG, the following must be provided.

**Letters of Collaboration.** Letters of collaboration from the leadership in participating school systems and other educational institutions are required; these letters should be no more than one page in length. Additional signed letters of collaboration documenting key collaborative arrangements or special situations (for example, when the awardee and performing organizations are different, or when faculty or facilities of more than one institution are involved) must be included as well; these letters should conform to the policy outlined in the PAPPG. Letters of endorsement from individual teachers are not permitted. Proposals without the required letters of collaboration will be returned without review.

## **B. Budgetary Information**

### **Cost Sharing:**

Inclusion of voluntary committed cost sharing is prohibited.

### **Other Budgetary Limitations:**

The total amount requested for a BIORETS project may not exceed \$600,000, with a program duration of up to three years. The proposal must include funds for at least 8-10 teachers, totaling at least \$100,000 per year of the budget. The total cost per teacher is limited to \$15,000 per year, which includes funds for the teacher stipend and up to \$2,000 for the cost of materials, equipment, software, and other supplies for developing classroom materials. The stipend may be distributed over the course of the program to encourage full participation, including engagement in the following academic year. If necessary, a BIORETS project with a resident program may apply for a higher per-teacher budget to account for local housing costs. The remaining funds may be requested for other activities and expenses that contribute to the success of the BIORETS program (for example, salaries, wages, and fringe benefits; travel; materials and supplies; and applicable indirect costs); any such costs must be listed under the appropriate NSF budget categories and must be explained in the budget justification.

Note that the proposal budget cannot include funds for social activities or special meals, including meals related to weekly team meetings; for resident programs, meal costs can be paid as part of subsistence. The budget cannot include tuition for any students.

### **Budget Preparation Instructions:**

Costs for external evaluation should be included in the budget. The budget must also include funds for participation by the PI and at least one teacher in a BIORETS conference during the second year of the project. The PIs and teachers will be expected to share their experiences in the interest of identifying and learning best practices as a group and for collaborative networking.

### C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. submitting organization's local time):

August 02, 2021

July 31, Annually Thereafter

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

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

To prepare and submit a proposal via Research.gov, see detailed technical instructions available at: [https://www.research.gov/research-portal/appmanager/base/desktop?\\_nfpb=true&\\_pageLabel=research\\_node\\_display&\\_nodePath=/researchGov/Service/Desktop/ProposalPreparationan](https://www.research.gov/research-portal/appmanager/base/desktop?_nfpb=true&_pageLabel=research_node_display&_nodePath=/researchGov/Service/Desktop/ProposalPreparationan) For Research.gov user support, call the Research.gov Help Desk at 1-800-673-6188 or e-mail [rgov@nsf.gov](mailto: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.

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

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: <https://www.grants.gov/applicants>. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical 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](mailto: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:** Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to Research.gov for further processing.

The NSF [Grants.gov Proposal Processing in Research.gov informational page](#) provides submission guidance to applicants and links to helpful resources including the NSF [Grants.gov Application Guide](#), [Grants.gov Proposal Processing in Research.gov how-to guide](#), and [Grants.gov Submitted Proposals Frequently Asked Questions](#). Grants.gov proposals must pass all NSF pre-check and post-check validations in order to be accepted by Research.gov at NSF.

When submitting via Grants.gov, NSF strongly recommends applicants initiate proposal submission at least five business days in advance of a deadline to allow adequate time to address NSF compliance errors and resubmissions by 5:00 p.m. submitting organization's local time on the deadline. Please note that some errors cannot be corrected in Grants.gov. Once a proposal passes pre-checks but fails any post-check, an applicant can only correct and submit the in-progress proposal in Research.gov.

Proposers that submitted via Research.gov may use Research.gov to verify the status of their submission to NSF. For proposers that submitted via Grants.gov, until an application has been received and validated by NSF, the Authorized

Organizational Representative may check the status of an application on Grants.gov. After proposers have received an e-mail notification from NSF, Research.gov should be used to check the status of an application.

## **VI. NSF Proposal Processing And Review Procedures**

Proposals received by NSF are assigned to the appropriate NSF program for acknowledgement 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 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/](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.D.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.D.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, but 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 other underrepresented groups 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 and Sharing Plan and the Mentoring Plan, as appropriate.

### **Additional Solicitation Specific Review Criteria**

Proposals will be externally reviewed based on the two basic NSF review criteria in the context of the BIORETS program. In addition, emphasis will be placed on the following considerations:

1. **Research and Professional Development Experience for Teacher Participants.** Appropriateness and value of the research and professional development experience for teachers, particularly the suitability of the research project(s) for teacher involvement, the nature of their involvement in the project, and the plans for follow-up academic year activities.
2. **Research Environment.** Quality of the research environment, including the facilities, the preparedness of the research mentor(s), the intellectual engagement of research-active faculty and other personnel, and the professional development opportunities for teachers.
3. **Teacher Recruitment and Selection Plans.** Appropriateness of the teacher recruitment and selection plans, including efforts to include teachers from groups underrepresented in STEM or teachers from schools with high proportions of students from underrepresented groups.
4. **Translation of Research Experience to Classroom Curricula and Academic Year Follow-up.** Quality of the plans for development and dissemination of classroom curricula and follow-through activities to foster continued interactions between teachers and research mentors.
5. **Project Evaluation and Reporting.** Effectiveness of the plans for evaluating and reporting the outcomes of the project.
6. **Results of Prior Support** (if applicable). For renewals of previously funded RET Sites: effectiveness of the previous site.

### **B. Review and Selection Process**

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

## **VII. Award Administration Information**

### **A. Notification of the Award**

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations 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 Principal Investigator. (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. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization 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](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](mailto:nsfpubs@nsf.gov).

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the NSF *Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=pappg](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg).

### **Administrative and National Policy Requirements**

#### **Build America, Buy America**

As expressed in Executive Order 14005, [Ensuring the Future is Made in All of America by All of America's Workers](#) (86 FR 7475), it is the policy of the executive branch to use terms and conditions of Federal financial assistance awards to maximize, consistent with law, the use of goods, products, and materials produced in, and services offered in, the United States.

Consistent with the requirements of the Build America, Buy America Act (Pub. L. 117-58, Division G, Title IX, Subtitle A, November 15, 2021), no funding made available through this funding opportunity may be obligated for infrastructure projects under an award unless all iron, steel, manufactured products, and construction materials used in the project are produced in the United States. For additional information, visit NSF's [Build America, Buy America](#) webpage.

#### **Special Award Conditions:**

The budget must include funds for participation by the PI and at least one teacher in a BIORETS conference during the second year of the project. The PIs and teachers will be expected to share their experiences in the interest of identifying and learning best practices as a group and for collaborative networking.

In addition to the evaluation required as part of the BIORETS project, awardees may be required to participate in NSF-sponsored across-the-sites evaluation and assessment activities. These activities will be conducted by NSF or its contractor(s) and necessitate access to project-related documents, staff, activities, and data. They may occur at any time during the grant period or shortly after the grant ends. Participation may include, but is not limited to, responding to inquiries (including surveys), engaging in interviews and focus groups, and providing requested data. NSF may arrange site visits or reverse site visits of during the lifetime of the awards.

#### **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 annual project report, and a project outcomes report for the general public.

Failure to provide the required annual or final annual 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 annual 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.

More comprehensive information on NSF Reporting Requirements and other important information on the administration of NSF awards is contained in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=pappg](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg).

### **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:

- Arcady R. Mushegian, telephone: (703) 292-8528, email: [amushegi@nsf.gov](mailto:amushegi@nsf.gov)
- Sally E. O'Connor, telephone: (703) 292 8470, email: [soconnor@nsf.gov](mailto:soconnor@nsf.gov)
- Aruna Kilaru, telephone: (703) 292-7481, email: [akilaru@nsf.gov](mailto:akilaru@nsf.gov)

- Catherine O'Reilly, telephone: (703) 292-7934, email: [coreilly@nsf.gov](mailto:coreilly@nsf.gov)

For questions related to the use of NSF systems contact:

- NSF Help Desk: 1-800-381-1532
- Research.gov Help Desk e-mail: [rgov@nsf.gov](mailto: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](mailto: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.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <https://www.nsf.gov>

- **Location:** 2415 Eisenhower Avenue, Alexandria, VA 22314
- **For General Information** (NSF Information Center): (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
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