NSF 22-500: Building Research Capacity of New Faculty in Biology (BRC-BIO)

Program Solicitation

Document Information

Document History
- **Posted:** October 8, 2021

Public comment: Please refer to NSF 22-058 for Frequently Asked Questions (FAQs) related to this program solicitation.

View the program page

National Science Foundation
Directorate for Biological Sciences
Division of Biological Infrastructure

Submission Window Date(s) (due by 5 p.m. submitting organization's local time):

January 03, 2022 - January 31, 2022

June 01, 2022 - June 30, 2022

December 01, 2022 - January 03, 2023

June 01, 2023 - June 30, 2023

May 01, 2024 - July 01, 2024

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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.

Summary Of Program Requirements

General Information

Program Title:

Building Research Capacity of New Faculty in Biology (BRC-BIO)

Synopsis of Program:

With a focus on enhancing research capacity and broadening participation of new faculty of biology at minority-serving institutions (MSIs), predominantly undergraduate institutions (PUIs), and other universities and colleges that are not among the nation's most research-intensive institutions, the Directorate for Biological Sciences (BIO) offers the Building Research Capacity of New Faculty in Biology (BRC-BIO) program. The BRC-BIO program aims to a) broaden participation by expanding the types of institutions that submit proposals to BIO, and b) expand opportunities to groups underrepresented in the biological sciences, including Blacks and African Americans, Hispanics, Latinos, Native Americans, Alaska Natives, Native Hawaiians and other Pacific Islanders, and persons with disabilities, especially those serving at under-resourced institutions. Awards will provide the means for new faculty to initiate and build independent research programs by enhancing their research capacity. These projects might also include biology-focused research collaborations among faculty within the same institution, across peer-, or research-intensive institutions, or partnerships with industry or other non-academic partners that advance the candidate's research program. By providing this funding opportunity, BIO recognizes the

national urgency to broaden, strengthen, and diversify the science, technology, engineering, and mathematics (STEM) workforce. In particular, these awards will build capacity for research at institutions that have a primary focus on teaching and undergraduate education, or that have limited capacity for research. Projects should enable the establishment of sustainable research programs for faculty and also enrich undergraduate research experiences and thereby grow the STEM workforce. BRC-BIO welcomes proposals from principal investigators who share NSF's commitment to diversity, equity, and inclusion.

Proposals in response to this solicitation must be submitted to the Division of Biological Infrastructure (DBI) in the Directorate for Biological Sciences (BIO).

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.

- BRC-BIO Working Group, telephone: (703) 292-8470, email: BRC-BIO@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: 20 to 30

Pending availability of funds and quality of proposals.

Awards are for a maximum of 36 months and up to $450,000 plus $50,000 for equipment. Equipment costs above $50,000 will be considered on a case-by-case basis.

Budgets must be thoroughly justified. All awards will be pending availability of funds.

Anticipated Funding Amount: $10,000,000 to $15,000,000

Estimated program budget, number of awards and average award size/duration are subject to the availability of funds.

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.

- The emphasis of this activity is helping to launch the careers of new faculty in biology who are pre-tenure (or the equivalent) and who are at Predominantly Undergraduate Institutions (PUIs), Minority-serving Institutions (MSIs) that are not among the nation's most research-intensive institutions, and other institutions that are classified as R2, D/PU, or M1-3 (see Carnegie Classification of Institutions of Higher Education http://carnegieclassifications.iu.edu/ ☑). If PIs

are unclear about the status of their institution, they are encouraged to reach out to the program officers in advance.

Primarily Undergraduate Institutions (PUIs):

PUIs are accredited colleges and universities (including two-year community colleges) that award Associates degrees, Bachelor's degrees, and/or Master's degrees in NSF-supported fields, but have awarded 20 or fewer Ph.D./D.Sci. degrees in all NSF-supported fields during the combined previous two academic years.

Minority Serving Institutions (MSIs):

MSIs include historically Black Colleges and Universities (HBCUs), Hispanic-serving institutions (HSIs), Tribal colleges or universities (TCUs), and other institutions that enroll a significant percentage of underrepresented minority students as defined by the U.S. Department of Education. These other institutions include Alaska Native-serving institutions, Native Hawaiian-serving institutions, Predominantly Black Institutions, Asian American and Native American Pacific Islander-serving institutions, and Native American-serving non-tribal institutions. For more information, please see the U.S. Department of Education's definitions and lists of eligible postsecondary institutions (Link to MSI definitions and eligibility information). Proposal submissions are permitted from institutions of higher education that primarily serve populations of students with disabilities and can be found here.

Separately submitted collaborative proposals are not allowed; all submissions should be from a single institution. Participation of other institutions should be included using the subaward mechanism.

Who May Serve as PI:

Lead PIs must be at the Assistant Professor rank (or equivalent), with service at that rank for **no more than 3 years by the proposal submission date**.

Principal Investigators must hold at least a 50% tenure-track (or tenure-track equivalent) position as an assistant professor (or equivalent rank), be untenured, and be within the first three years of such appointment. For a position to be considered a tenure-track-equivalent, it must meet all the following requirements: (1) the employee has a continuing appointment that is expected to last the three years of a BRC-BIO grant; (2) the appointment has research *and* educational responsibilities; and (3) the proposed project relates to the employee's career goals and job responsibilities as well as to the mission of the department or organization. Official leaves of absence (for illness, family, etc.) should be subtracted from the total time in the position, as certified by the PI's department chair/head.

Early-career researchers who are members of groups typically underrepresented in the biological sciences are especially encouraged to apply. Groups that are significantly underrepresented in biology in the U.S. include Blacks or African Americans, Hispanics, Latinos, and Native Americans, Alaska Natives, Native Hawaiians and other Native Pacific Islanders, and persons with disabilities.

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.
    - 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).

B. Budgetary Information

- **Cost Sharing Requirements:**

    Inclusion of voluntary committed cost sharing is prohibited.

- **Indirect Cost (F&A) Limitations:**

    Not Applicable

- **Other Budgetary Limitations:**

    Not Applicable

C. Due Dates

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

    January 03, 2022 - January 31, 2022

    June 01, 2022 - June 30, 2022

    December 01, 2022 - January 03, 2023

    June 01, 2023 - June 30, 2023

    May 01, 2024 - July 01, 2024

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:

Standard NSF award conditions apply.

Reporting Requirements:

Standard NSF reporting requirements apply.

I. Introduction

The Directorate for Biological Sciences (BIO) supports research to advance understanding of the principles and mechanisms governing life. Research studies extend across systems that encompass biological molecules, cells, tissues, organs, organisms, species, populations, communities, and ecosystems up to and including the global biosphere. The research supported by BIO is relevant to health, food and water security, protection of the environment, and overall human wellbeing. Achieving BIO's mission is predicated on identifying and empowering all individuals who may contribute to addressing the research challenges in the biological sciences, especially those who educate diverse communities and are uniquely positioned to engage, diversify, and grow the STEM workforce.

Consistent with the approach outlined in the May 2020 National Science Board Report Vision 2030 (https://www.nsf.gov/nsb/publications/2020/nsb202015.pdf) and the 2019 report from the National Academies of Science Engineering, and Medicine on Minority Serving Institutions (https://www.nap.edu/catalog/25257/minority-serving-institutions-americas-underutilized-resource-for-strengthening-the-s the BRC-BIO program supports the growth and development of research capacity at MSIs and PUIs. Vision 2030 highlights the importance of "...strategically building research infrastructure and capacity in the nation's underserved areas and institutions" as well as making greater use of strategic partnerships. Additionally, NSF's Strategic Plan for fiscal years 2018 to 2022 establishes inclusion as a core value of the Foundation's mission "to support outstanding researchers and innovative thinkers from across our Nation's diversity of regions, types of organizations, and demographic groups." (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf18045). The NSF mission to support outstanding and innovative researchers necessitates genuine actions to identify and include, more comprehensively, the nation's diversity into the science, engineering, and education enterprise. PUIs and MSIs, by the nature of their missions and locations, faculty, and student demographics, can make considerable contributions to the nation's research community and further enhance U.S. economic growth and competitiveness. However, the opportunity for these institutions and their faculty to meaningfully engage in research may be impeded by limited research capacity.

BIO aims to tap the wealth of expertise and opportunities at PUIs and MSIs by supporting new faculty through enhancing their research capacity and building independent research programs. This enhancement of new faculty in the context of their institutional environment will also enable the engagement of undergraduates in research experiences. These awards are also intended to provide support for research collaborations or partnerships as long as the proposed activities align with the individual goals of the PI within the context of their institution.

II. Program Description

The BRC-BIO program is intended to support new faculty who are within the first 3 years of an appointment by enabling them to initiate sustainable research programs at this critical early career stage. The program targets institutions and their faculty that are currently poorly represented among the institutions submitting proposals to and receiving awards from BIO. This includes Predominantly Undergraduate Institutions (PUIs), Minority-serving Institutions (MSIs) that are not among the nation's most research-intensive institutions, and other institutions that are classified as R2, D/PU, or M1-3 (see Carnegie Classification of Institutions of Higher Education http://carnegieclassifications.iu.edu/). This opportunity is intended to help establish sustainable research programs for new faculty and position them to submit subsequent competitive proposals to the BIO Core program solicitations and the CAREER funding mechanism. BIO also recognizes that these institutions are often under-resourced and thus require different budgetary support than research intensive institutions. BRC-BIO is designed to support research projects that:

- Build capacity and enhance research participation in the biological sciences across the wide diversity of institutions;
- Provide new faculty with the means to establish research programs in the context of their faculty appointments that can be sustained with future funding from the NSF;
- Promote active research in the educational experiences of undergraduates nationwide; and
- Contribute to a stronger, more innovative STEM workforce by diversifying research experiences and engaging diverse communities.

Proposed projects are expected to focus on research from any area of biology that is supported by the BIO directorate at NSF. Projects should be presented in sufficient detail to enable evaluation based on the potential to: a) provide valuable new scientific insights that will enable future research, and b) integrate the research into an educational training environment that engages undergraduates in authentic research experiences. An additional expectation is that the broader impacts activities of these projects, including training, have a focus on inclusion and broadening participation in biological research.

Research collaborations or partnerships are encouraged if they strongly benefit the PI through the sharing of expertise, facilities, and/or personnel, and/or if they increase the opportunities for students to gain authentic research experiences. Examples of collaborations or partnerships that may be supported (with collaborators named as either co-PIs or senior/key personnel) include: 1) Collaborations with faculty or researchers from the home institution, who are either within the PIs department or in other departments, or 2) Collaborations with faculty or researchers from peer- or research-intensive institutions, or, 3) Partnerships with industry, non-governmental organizations, state or tribal organizations, or federally-funded research and development centers (FFRDCs). Collaborations or partnerships with other institutions must be implemented via the subaward mechanism.

Individual investigators who have questions about the fit of a specific project for support by this program are encouraged to contact a cognizant program officer.

III. Award Information

Anticipated Type of Award: Continuing Grant or Standard Grant

Estimated Number of Awards: 20 to 30, pending availability of funds and quality of proposals.

Awards are for a maximum of 36 months and up to $450,000 plus $50,000 for equipment. Equipment costs above $50,000 will be considered on a case-by-case basis.

Budgets must be thoroughly justified. All awards will be pending availability of funds.

Anticipated Funding Amount: $10,000,000 to $15,000,000

Estimated program budget, number of awards and average award size/duration are subject to the availability of funds.

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.

- The emphasis of this activity is helping to launch the careers of new faculty in biology who are pre-tenure (or the equivalent) and who are at Predominantly Undergraduate Institutions (PUIs), Minority-serving Institutions (MSIs) that are not among the nation's most research-intensive institutions, and other institutions that are classified as R2, D/PU, or M1-3 (see Carnegie Classification of Institutions of Higher Education http://carnegieclassifications.iu.edu/). If PIs are unclear about the status of their institution, they are encouraged to reach out to the program officers in advance.

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PUIs are accredited colleges and universities (including two-year community colleges) that award Associates degrees, Bachelor's degrees, and/or Master's degrees in NSF-supported fields, but have awarded 20 or fewer Ph.D./D.Sci. degrees in all NSF-supported fields during the combined previous two academic years.

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Separately submitted collaborative proposals are not allowed; all submissions should be from a single institution. Participation of other institutions should be included using the subaward mechanism.

Who May Serve as PI:

Lead PIs must be at the Assistant Professor rank (or equivalent), with service at that rank for **no more than 3 years by the proposal submission date**.

Principal Investigators must hold at least a 50% tenure-track (or tenure-track equivalent) position as an assistant professor (or equivalent rank), be untenured, and be within the first three years of such appointment. For a position to be considered a tenure-track-equivalent, it must meet all the following requirements: (1) the employee has a continuing appointment that is expected to last the three years of a BRC-BIO grant; (2) the appointment has research *and* educational responsibilities; and (3) the proposed project relates to the employee's career goals and job responsibilities as well as to the mission of the department or organization. Official leaves of absence (for illness, family, etc.) should be subtracted from the total time in the position, as certified by the PI's department chair/head.

Early-career researchers who are members of groups typically underrepresented in the biological sciences are especially encouraged to apply. Groups that are significantly underrepresented in biology in the U.S. include Blacks or African Americans, Hispanics, Latinos, and Native Americans, Alaska Natives, Native Hawaiians and other Native Pacific Islanders, and persons with disabilities.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

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/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.

See PAPPG Chapter II.D2 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.

Separately submitted collaborative proposals are not allowed. Participation of other institutions should be included using the subaward mechanism.

1) The **Title** should begin with "BRC-BIO:"

2) The **Project Description** is *limited to 6 pages*. The Project Description must include the named sections **Intellectual Merit** and **Broader Impacts**.

a. The **Intellectual Merit** section should include a Research Plan, in which the proposer articulates a compelling overarching research goal for their research program, specific research questions to be addressed by this project, and a brief but feasible research plan that describes the overall approach. Appropriate research topics for this program include any field supported by the BIO directorate. It is expected that the proposed work would result in publications and other outcomes. It is not expected that the plan includes prior results or preliminary findings, but it is expected that the research provides a solid foundation upon which to build a long-term, sustainable research program.

b. The **Broader Impacts** section should include a description of how the proposed activities will increase participation of the next generation of scientists from underrepresented groups in biology as well as plans for enhancing undergraduate participation in research experiences. Such efforts may include, for example, the establishment of CURE (Course-based Undergraduate Research Experience) courses and/or direct participation of students in research. Other broader impacts activities may also be proposed.

3) Budget and Budget Justification:
BRC-BIO awards can be up to $500,000, including justified equipment costs up to $50,000, to be spent over 36 months (up to $450,000 in costs less equipment plus up to $50,000 for equipment).

Budgets may include up to 50 percent release time per year in support of the PI. Two months of summer salary support in each year of the award is also allowed. Salary and fringe benefits for supporting personnel is also allowable. This includes support for a post-baccalaureate research associate or assistant, laboratory technician, other research staff (including student workers), or postdoctoral support (that engage in either research, or both research and teaching).

Travel expenses are allowed and may be used to facilitate conference attendance by the PI or associated personnel. Research-related travel to partnering institutions to use specialized equipment and to field sites is also allowed. In all cases, detailed justification for the requested travel and costs must be provided.

Up to $50,000 total is allowed for equipment that is specifically required for the proposed research.

Collaborating institutions that receive some of the funds must be strongly justified and must be supported via subawards. However, most of the resources allocated to these awards should directly support the PI and the building of research capacity at the PI's institution.

Budgeting for contractual administrative services that are important to the implementation of the project but not available on campus is allowed. These services may include those provided by a Sponsored Research Officer (SRO) or other equivalent position. PIs are encouraged to explore the availability of these services in the non-academic offices on their campuses, at neighboring institutions, or at institutions with which they are collaborating.

4) Additional Supplementary Documentation Required:

Impact Statement. Proposals must include an Impact Statement, not to exceed two (2) pages. The statement, which will be evaluated by reviewers as part of the merit review process, is an opportunity to provide information that will help reviewers assess the likely impact of the proposed project on the research environment and capacity of the individual PI and their institution. Thus, the statement should address:

- the impact on the career development and the research capacity of the faculty participant(s), and
- the impact on undergraduate research experiences, such as expectations for retention and diversification of STEM majors, and/or preparation of students for advanced degree programs.

Letters of Collaboration. If the project involves collaborative arrangements of significance, these arrangements should be documented through letters of collaboration. Letters of collaboration should be limited to a statement of the intent to collaborate and should not contain endorsements or evaluation of the proposed project. Letters of collaboration should follow the single-sentence format:

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

5) Additional Single Copy Document:

Institutional Support Letter. Proposals must include an Institutional Support Letter, not to exceed one (1) page, from the PI's department head (or more senior organizational official). In cases of joint appointments, the letter should be signed by both department heads.

The Institutional Letter should include the institutional official's name and title below the signature. It should contain the following:

- A statement to the effect that the PI is eligible for this program as defined in the eligibility criteria specified in this solicitation. For non-tenure-track faculty, the Institutional Support Letter must affirm that the investigator's appointment is at an early-career level equivalent to pre-tenure status, pursuant to the eligibility criteria specified above. Further, for non-tenure-track faculty, the Institutional Support Letter must clearly and convincingly demonstrate how the faculty member satisfies all the requirements of tenure-track equivalency as defined in the eligibility criteria specified in this solicitation.
- A statement of support for the proposed plan described in the proposal that demonstrates an understanding of the proposed project.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

C. Due Dates

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

     January 03, 2022 - January 31, 2022

     June 01, 2022 - June 30, 2022

     December 01, 2022 - January 03, 2023

     June 01, 2023 - June 30, 2023

     May 01, 2024 - July 01, 2024

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/ProposalPreparationa 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.

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/web/grants/applicants.html. 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. 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/.

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Building the Future: Investing in Discovery and Innovation - NSF Strategic Plan for Fiscal Years (FY) 2018 – 2022*. 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

- The potential of the proposed project to increase the quantity, quality, and capacity of research of the PI.
- The potential to increase the diversity and number of students engaged in authentic research experiences and, thus, the potential to contribute to diversifying and growing the STEM workforce.
- Institutional support for the activity, as described in the institutional support letter.
- If applicable, the nature and impact of the proposed collaborations or partnerships.

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by 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. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from 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.

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

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 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.

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.

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:

- BRC-BIO Working Group, telephone: (703) 292-8470, email: BRC-BIO@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.

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.

BRC-BIO Working Group; BRC-BIO@nsf.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**   (703) 292-5111
>   (NSF Information Center)**:**
>
> - **TDD (for the hearing-impaired):**   (703) 292-5090
>
> - **To Order Publications or Forms:**
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>   Send an e-mail to: nsfpubs@nsf.gov
>
>   or telephone: (703) 292-8134
>
> - **To Locate NSF Employees:**   (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 3145-0058. Public reporting burden for this collection of information is estimated to average 120 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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Office of Budget, Finance, and Award Management
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