

Leading Culture Change Through Professional Societies of Biology (BIO-LEAPS)

PROGRAM SOLICITATION NSF 22-542

REPLACES DOCUMENT(S): NSF 21-049



National Science Foundation
Directorate for Biological Sciences
Division of Biological Infrastructure

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

July 01, 2022

July 03, 2023

July 01, 2024

July 01, 2025

IMPORTANT INFORMATION AND REVISION NOTES

This solicitation replaces the Dear Colleague Letter NSF 21-049. Any proposals that would be submitted to NSF 21-049 should instead be submitted to this solicitation.

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 22-1](#)), which is effective for proposals submitted, or due, on or after October 4, 2021.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Leading Culture Change Through Professional Societies of Biology (BIO-LEAPS)

Synopsis of Program:

The Leading Culture Change through Professional Societies of Biology (BIO-LEAPS) program aims to advance diversity, equity, and inclusion in the biological sciences broadly by leveraging the leadership, broad reach, and unique ability of professional societies to create culture change in the life sciences. The Directorate for Biological Sciences at the National Science Foundation (NSF BIO) recognizes that culture change in the biological sciences is an urgent priority because it is foundational to increasing diversity, equity, and inclusion in the discipline. The culture of a scientific discipline — defined here as the shared values, norms, traditions, and practices — can be thought of as an emergent property that results from years of experiences and interactions among scientists, their institutions, their professional societies, and their networks. It is increasingly recognized that the perceptions and attitudes of that culture can be quite variable for different individuals and are often negative for individuals historically excluded from the sciences (e.g., based on gender, gender identity, disability status, sexual orientation, ethnicity, race, the intersections of these, and others). Therefore, this program is designed to foster the necessary culture change within biology to move towards an equitable and inclusive culture that supports a diverse community of biologists that more fully reflects the demographic composition of the US population.

Professional societies are uniquely positioned to help facilitate culture change in their disciplines through: publishing journals, fostering scientific discussion and debate, broad membership (including membership from academia, government agencies, and private businesses), hosting large scientific meetings that can serve as networking and professional development opportunities for people at many professional

levels, and electing leaders that greatly influence views and norms within a discipline. Recognizing that culture change in biology will require broad, sustained, and innovative approaches for meaningful and lasting changes to occur, society leaders will need to enable and support the establishment and definition of new norms and practices in biology and to encourage engagement with experts in diversity, equity, and inclusion-related organizational change.

NSF BIO will support awards that leverage the work of professional societies towards facilitating necessary culture change in the biological sciences to advance diversity, equity, and inclusion at scale — In other words, at the broad and deep scales that are required to address this systemic issue. Examples of evidence-based work that will be supported through this program include (but are not limited to): (1) creating transparent norms and practices that engender and support a sense of belonging and identity for diverse scientists from all backgrounds and demographics; (2) mitigating the systemic factors that result in inequities in the biological sciences, such as the perception of who a "scientist" is, and any factors that discourage diverse participation in biology; (3) assessing the state of norms and practices in professional societies and/or the other components and institutions within their disciplines; and, (4) planning, implementing, and assessing society-sponsored activities to change culture — such as safe conference best practices, strategies to mitigate implicit bias in hiring/promotion for society leadership positions, diversification of editorial boards, etc.

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.

- BIO-LEAPS Working Group, telephone: (703) 292-8470, email: BIO-LEAPS@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: 11 to 14

Awards are contingent on availability of funds and the quality of proposals.

In each year, NSF expects to make approximately:

- Three to four Evaluation awards; up to \$500,000 for up to two years
- Three to four Design awards; up to \$500,000 for up to two years
- Five to six Implementation awards; up to \$2,000,000 for four to five years

Anticipated Funding Amount: \$12,000,000

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 PI will be responsible for overseeing all aspects of the award. Additional members may be designated as co-Principal Investigators if developing and operating the BIO-LEAPS award would involve shared responsibility and well-justified close collaboration. Other members of the leadership team or collaborators are considered non-co-PI Senior Personnel.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

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

There are no restrictions or limits.

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

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

July 01, 2022

July 03, 2023

July 01, 2024

July 01, 2025

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.

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I. INTRODUCTION

The "culture" of science, technology, engineering, and mathematics (STEM) can be defined as the values, norms, priorities, and practices that govern research and education environments, whereas "climate" refers to how people experience that culture. In STEM, culture is recognized as a critically important component in the successful recruitment, retention, and advancement of diverse participants in the scientific enterprise. However, there is growing evidence that individuals who have been historically excluded from STEM frequently encounter a climate that is not welcoming to them. This unwelcoming climate can have a negative impact on STEM career trajectories and on the STEM enterprise itself. The causes of this current condition likely trace to historical cultural legacies that have determined many of today's values, norms, priorities, and practices, many of which can be exclusionary. Thus, we need to assess the components of STEM culture that result in these undesirable climates to identify strategies to create the needed change to ensure that persons of all identities and intersectionalities feel welcome, respected, supported, and safe to thrive and succeed in their educational and career pathways.

Professional scientific societies play a key role in shaping a discipline's culture by virtue of their significant responsibilities, broad reach, and substantial influence. Because professional societies include individuals from many institutions, and sometimes across sectors, they have the potential for sweeping impacts. In addition, professional societies can be viewed as standard-setters; they model disciplinary norms and values, thereby exerting widespread influence on the culture of a discipline or sub-discipline. By their very nature, societies can have an effect on many interrelated disciplinary components that may benefit from culture change, including mentoring, training, research environments, awards and recognition, hiring and promotion, departmental and institutional practices, publishing, and more. In all of these areas, scientific societies are poised to promote ethical standards, establish codes of behavioral conduct, support broadening participation activities and mentoring, set professional norms, diversify disciplinary leadership, and translate all of the above across a broad range of institutions and people. Therefore, professional societies are well-positioned to make significant systemic change towards more diverse, equitable and inclusive disciplines with more impactful outcomes than what can be achieved at the level of single projects or institutions.

II. PROGRAM DESCRIPTION

The BIO-LEAPS program of the NSF Directorate for Biological Sciences (NSF BIO) aims to advance diversity, equity, and inclusion (DEI) in the biological sciences by leveraging the leadership, broad reach, and unique ability of professional societies to enact culture change that results in welcoming climates for diverse individuals. This program will consider involvement of professional societies or organizations that support research in any of the sub-disciplines in biology that is supported by NSF's Directorate for Biological Sciences. The BIO-LEAPS program is particularly interested in culture change efforts with potential for broad impacts on an entire discipline or sub-discipline, such as might be achieved through partnerships across multiple societies; engagement with key stakeholders, including but not restricted to, grass-roots organizations, early-career groups, or industries; and consortium-building for collective action. Proposals are expected to articulate how the investigators define culture, what specific components of culture they are trying to change, and how they will facilitate change at a broad scale. BIO-LEAPS proposers are expected to partner with, or use the resources available through, professional societies to help change the culture of biology. NSF BIO-LEAPS is interested in supporting a wide range of professional society activities, especially those with strong potential to influence cultural factors that impact individuals historically excluded from STEM. Examples include, but are not limited to: demographic self-assessments to determine baselines for change; development of community standards and how they are implemented for strongest impact; diversification of journal editorial and publishing practices; inclusive society conference practices; equitable composition of society leadership; networking and mentoring opportunities for historically excluded groups; DEI and inclusive leadership training; society partnerships for amplifying change; and early-career leadership opportunities.

The BIO-LEAPS program recognizes that disciplines and professional societies may be at different points in the process of assessing and addressing their culture. Therefore, this solicitation offers three tracks appropriate for various stages of project development. Proposers are not required or expected to pursue these in a specific order, and there is no requirement that one track be completed prior to any other. Proposers should assess the three tracks described below to determine which one best fits their current needs. Description of the three BIO-LEAPS tracks:

1. The Evaluation Track is for projects focused on assessment and research of the values, norms, priorities, and practices associated with the culture of the discipline or sub-discipline (e.g., demographics and/or climate—including power-dynamics, procedural justice, norms, and behavioral expectations). Proposals submitted to this track can include evidence-based assessment and research activities (e.g., applied social science research focused on equity or cultural change in biology), as long as these activities are associated with measuring and assessing culture change through professional societies, and they have the potential for broad impact. Examples of activities supported by this track include the creation of new tools for measuring climate or other approaches for evaluation and assessment of culture, as well as dissemination. Assessment and evaluation tools must include evidence of their effectiveness in measuring the intended factors. PIs may request up to \$500,000 for up to 2 years of support for this track. Formative assessments of activity in this track need to be reported in annual reports. Submissions to this track should begin with "EVALUATION:" in the title.
2. The Design Track is for projects to develop an evidence-based plan to address broad-scale culture change within a discipline or sub-discipline. Proposals submitted to this track can include activities such as gathering the appropriate partners for a larger network of participants and/or developing resources to build the necessary infrastructure to submit a larger proposal. Proposals should explicitly describe why the funded activities are necessary and how the funded activities will be used to create a future initiative, be it a grant proposal (e.g., a future BIO-LEAPS proposal or a proposal to another solicitation) or other activity. PIs may request up to \$500,000 for up to 2 years of support for this track. Formative assessments of activity in this track need to be reported in annual reports. Submissions to this track should begin with "DESIGN:" in the title.
3. The Implementation Track is for projects to implement evidence-based cultural change strategies that leverage the influence of biological professional societies. These projects are expected to have a broad scope for cultural change across one or more (sub-)disciplines. Significant impacts will likely differ, depending on the systemic inequity issue(s) addressed, the culture-change goals identified, and the proposed intervention(s). Information on the numbers and percentages of individuals or organizations reached and the degree of change that is expected from those who participate should be articulated in the proposal to explain the scope of reach. For example, proposals by professional societies to alter the format/content/approach of all their regional and national conferences to include activities meant to change the practices, norms, and values of biology or its sub-disciplines as a whole could have significant reach if the societies have a large and broad enough membership and conference attendance. PIs may request up to \$2,000,000 for 4-5 years of support for this track. Formative assessments of activities in this track need to be reported in annual reports. Submissions to this track should begin with "IMPLEMENTATION:" in the title.

Key Elements of a BIO-LEAPS Proposal

All BIO-LEAPS proposals need to be evidence-based and grounded in relevant literature on organizational or systemic change and DEI. Proposals submitted to Tracks 1 or 2 should include a clear description of the state of the sub-discipline or discipline and the evidence-based strategies to be used. Proposals submitted to Track 3 should clearly articulate what aspect(s) of the culture of the sub-discipline or discipline they will focus on, what the current state of that culture is, and what evidence-based strategies for change they will implement. They must also include individuals with expertise in one or more of the following areas: assessment, systemic or organizational change, or DEI. It is expected that individuals who are participating in the scope of work for a BIO-LEAPS proposal are given the appropriate resources and compensation to accomplish this work. Proposals are encouraged from, or that fully partner with, Minority Serving Institutions, Primarily Undergraduate Institutions (PUIs), professional societies focused on DEI in STEM, and DEI community initiatives in STEM. BIO-LEAPS proposals are encouraged to leverage established networks, alliances, and programs such as [NSF INCLUDES](#) (Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science), [NSF ADVANCE](#) (Organizational Change for Gender Equity in STEM Academic Professions), or other existing broadening participation programs. Letters of collaboration with partners or other entities should be included as supplementary documents. Such letters should adhere to the format specified in the [PAPPG](#). The proposal must include a section on broader impacts, which can include the proposed impacts related to culture-change. Each proposal must also include an explicit description of the project management team and their roles and responsibilities, and an assessment plan that explicitly describes the formative and summative assessments of the project (for specific instructions, see Section V. below).

III. AWARD INFORMATION

Anticipated Type of Award: Continuing Grant or Standard Grant

Estimated Number of Awards: 11 to 14

Awards are contingent on availability of funds and the quality of proposals.

In each year, NSF expects to make approximately:

- Three to four Evaluation awards; up to \$500,000 for up to two years
- Three to four Design awards; up to \$500,000 for up to two years
- Five to six Implementation awards; up to \$2,000,000 for four to five years

Anticipated Funding Amount \$12,000,000

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.
- 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 PI will be responsible for overseeing all aspects of the award. Additional members may be designated as co-Principal Investigators if developing and operating the BIO-LEAPS award would involve shared responsibility and well-justified close collaboration. Other members of the leadership team or collaborators are considered non-co-PI Senior Personnel.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

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

There are no restrictions or limits.

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.

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.D.3 provides additional information on collaborative proposals.

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

Cover Sheet: Research.gov Users: The Prepare New Proposal setup will prompt you for the program solicitation number (located on the first page of this document). From 'where to apply', select Directorate for Biological Sciences, Division of Biological Infrastructure (DBI), Human Resources.

Grants.gov users: The program solicitation will be pre-populated by Grants.gov on the NSF Grant Application Cover Page. Refer to Section VI.1.2. of the NSF Grants.gov Application Guide for specific instructions on how to designate the NSF Unit of Consideration. Beginning Investigators (individuals who have not been a Principal Investigator [PI] or co-Principal Investigator [co-PI] on a Federally funded award with the exception of doctoral dissertation, postdoctoral fellowship or research planning grants) listed as Lead PI must check the box for "Beginning Investigator" on the proposal Cover Sheet.

Title of Proposed Project: Begin the title of the proposed project with one of the three following titles, based on the type of proposal you are submitting: 1) EVALUATION.; 2) DESIGN.; or 3) IMPLEMENTATION.

Project Summary: The Project Summary should include sections described in the PAPPG (II.C.2.b).

Project Description: The Project Description should follow the PAPPG (II.C.2.d) guidelines and must address Intellectual Merit and Broader Impacts (see also specific solicitation review criteria under section VI).

The Project Description is limited to 15 pages and should include the following sections that are clearly labeled:

1. Culture: Definition, Framing, and Change Goals: As part of the Intellectual Merit of the proposal, projects must: (a) clearly define 'culture' and describe how it is defined in their disciplinary context, (b) describe the framing of the culture problem/issue to be addressed, and (c) provide a clear statement of the change goals. Definitions and framing are expected to have supporting evidence from the literature as well as data and assessments of the professional society(s) or the discipline.

2. Approach: The proposal must include a description of what the PI(s) plan to evaluate, assess, plan, and/or implement and why it is important as well as justification for their approach. EVALUATION or DESIGN Track proposals must include a clear description of what evidence-based tools will be used to perform evaluation and assessment (with relevant preliminary data/literature) or, if appropriate, what new tools will be created to perform this evaluation and assessment. IMPLEMENTATION Track proposals are required to include preliminary data/literature describing prior assessment and evaluation that supports the problem being addressed, as well as the approach(es) that will be taken. It is expected that proposers cite relevant literature showing that these approaches have been successful in the past, where appropriate, and address the potential for change using these approaches.

3. Broader Impacts: Outcomes of the project relevant to Broader Impacts must be highlighted in this section. We encourage activities that aim to complement the aspect(s) of culture identified and addressed in the first two sections identified above, although other broader impacts strongly connected to the project goals are also acceptable.

4. Evaluation and Assessment Plan: BIO-LEAPS proposals are required to include both formative and summative evaluation plans. The plans should be developed by an evaluator with appropriate expertise. The formative evaluation should include benchmarks and indicators of progress, whereas the summative evaluation should assess the overall impact of the project on culture change in the target scientific community. In particular, the proposal should identify specific cultural outcomes sought, along with performance measures and an evaluation timetable. Because culture change will take both time and broad participation, the assessment plan should describe how and when assessment outcomes will be shared with the project participants, the professional society leadership, and other stakeholders outside the participants in the proposal (e.g., through professional meetings or publications). Proposals should describe mechanisms for regular feedback from the evaluator(s) and how that feedback will inform the project planned activities and strategies. Awardees should be prepared to contribute to the BIO-LEAPS program evaluation, including participation at NSF-sponsored PI meetings, and periodic cross-award, joint video conferences to share insights, effective practices, and evaluation findings. The project team should ensure that the project benefits from an unbiased and external perspective in project assessment/evaluation activities. Project evaluator(s) can be from an assessment unit or consulting entity. If a project chooses to involve an individual or a team from the lead or collaborating institution(s) in the evaluation, then the project must provide justification and explain how lack of bias is ensured. This section should also describe project evaluation sustainability plans, including the efforts that will be made so that the assessment/evaluation tools that are developed/implemented during the project period are available to the professional society beyond the award period. The lead evaluator must be listed as one of the senior personnel.

5. Project Management Plan: Proposals must include a project management plan and timeline. The Project Management Plan can be up to two pages within the 15 page limit. The Project Management Plan should (1) articulate how the leadership and coordinators will facilitate participant communication and interactions with other members of the proposal team, and (2) provide a timeline with milestones, including: major activities (and project evaluations), projected benchmarks, who will be responsible for completing the proposed activities, and expected completion dates.

Budget Guidelines: Provide yearly budgets for the duration of the proposed project. The total budget of the project may not exceed the budget limits described for the respective tracks described in this solicitation.

- Budgets for all projects must include funding for 2 project team members, one of which should be the PI, to attend an annual BIO-LEAPS PI meeting held in the Washington, DC area.
- When subawards are involved, yearly budgets are required for each subaward. Research.gov or Grants.gov will generate cumulative budgets for the primary and subaward organizations. A budget justification (of up to five pages) is required for each subaward. Organizations ineligible to submit to this program solicitation may not receive subawards; if such organizations are part of the proposed network, their participation is expected to be supported by non-NSF sources.
- Funds may be requested to promote collaborative activities, such as pre-conference meetings, sharing of unique facilities and/or resources, establishment of a public web site, collaborative retreats, etc. Funds may also be requested to support research costs for participants, for example, research for mentored student work that is focused on project goals and culture change or assessment. Note that these research funds must be tied to activities that promote culture change. Any well-justified activity that fulfills the goals of the BIO-LEAPS program will be considered. Innovative ideas for creating new tools for assessment of culture and climate, for sharing of resources among biological disciplines and societies, and for communicating the importance of culture and climate in the biological disciplines are especially encouraged. Funds from this program may not support independent, individual biological research projects of the participants, nor are they to be used as a mechanism for a mini-grant awarding program.
- Salary and fringe benefits support for a program coordinator or director to implement and direct the program are allowable.
- Salary for lead PI or co-PI and other staff is allowed following limits in the PAPPG. Duties and responsibilities of PIs, co-PI(s), external/internal assessor, and other members of the leadership team should be clearly described in the budget justification, as well as in the project management plan.
- All BIO-LEAPS awards are required to hold an annual meeting for participants to present outcomes and to assess progress. Although preference is given for in-person meetings, well-justified use of online communication can be substituted as needed in the networking design.
- Funds are expected to be used to support formal evaluation and assessment activities, workshop development, and/or other related costs that incur direct costs.

Supplementary Documents: The following documents are uploaded as Supplementary Documents:

- **Data Management Plan:** The PAPPG (II.C.2.j) requires the inclusion of a Data Management Plan with all full proposal submissions. The Data Management Plan can be no longer than two pages and must be inclusive of the entire project. All participant projects must ensure that data and biological materials are collected, archived, digitized, and made available using methods that allow current and future investigators to access data and material. Funded projects must disseminate project data broadly, using widely accepted electronic data standards and a named publicly accessible data site. Investigators are strongly encouraged to make use of appropriate community infrastructure for data management. The Directorate for Biological Sciences provides additional context and guidance to PIs on the preparation of Data Management Plans here: <https://www.nsf.gov/bio/biodmp.jsp>.
- **Postdoctoral Research Mentoring Plan (if applicable):** This one-page document should describe the mentoring of all postdocs in the project, including those at collaborating institutions and co-mentors.
- **Letters of Collaboration.** Letters of collaboration from key administrators and organizational leaders of each partner are required and should be submitted as supplementary documents. Supplementary Documents may also include letters of collaboration from individuals or organizations that are integral to the proposed project but are neither senior personnel nor supported by subawards. This may include subsidiary involvement in some aspect of the project, such as cooperation on recruitment, mentoring, or training efforts. Letters of collaboration must focus solely on affirming that the individual or organization is willing to collaborate on the project as specified in the Project Description or Facilities, Equipment and Other Resources section of the proposal. No additional description of research activities or endorsements of the potential value or significance of the project may be included. Each letter of collaboration must be signed by the designated collaborator. Requests to collaborators for letters of collaboration should be made by the PI well in advance of the planned proposal submission date because they must be included at the time of the proposal submission PIs should use the recommended template for letters of collaboration from the PAPPG (Chapter II.C.2.d(iv)).

Single-Copy Documents:

- **Collaborators & Other Affiliations (COA) Information:** As detailed in the PAPPG (II.C.1.e), information regarding collaborators and other affiliations must be provided for each individual who has a biographical sketch in the proposal, this includes all senior personnel (mentors and co-mentors listed in the proposal). If you have correctly added biographical sketches for all persons, there should be a separate space within Single Copy Documents to upload each individual's COA file. The COA information must be provided through use of the [COA template](#).
- **Suggested Reviewers:** PIs are encouraged to provide a list of suggested reviewers, including the individuals' names, institutions, and areas of expertise, email addresses, and URLs if available. Please ensure no one on this list has a conflict of interest with the proposal. More information can be found about conflicts of interest in the [NSF Manual 15 - Conflicts of Interest and Standards of Ethical Conduct](#).

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

C. Due Dates

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

July 01, 2022

July 03, 2023

July 01, 2024

July 01, 2025

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/ProposalPreparationandSubmission.html. 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 the NSF FastLane system for further processing.

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 acknowledgment and, if they meet NSF requirements, for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF either as *ad hoc* reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not 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.C.2.d(i). contains additional information for use by proposers in development of the Project Description section of the proposal). Reviewers are strongly encouraged to review the criteria, including PAPPG Chapter II.C.2.d(i), prior to the review of a proposal.

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

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

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

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

Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, 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 Plan and the Postdoctoral Researcher Mentoring Plan, as appropriate.

Additional Solicitation Specific Review Criteria

In addition, reviewers will be asked to evaluate proposals for:

- The clear articulation of the culture components to be addressed and the strength of evidence that proposed activities would result in greater inclusivity, diversity and equity in the biological sciences;
- The commitment of organizational leadership; this is reflected in dedicated staff or participant time (with compensation) to accomplish the scope of the work proposed;
- The effectiveness of the plans to evaluate and assess project progress and outcomes; and
- The quality and thoroughness of the Project Management Plan that includes strategies to facilitate communication of all members, milestones, and a clear description of how these milestones will be reached.

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. 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.

C. Reporting Requirements

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

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

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

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:

- BIO-LEAPS Working Group, telephone: (703) 292-8470, email: BIO-LEAPS@nsf.gov

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

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

For questions relating to Grants.gov contact:

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

IX. OTHER INFORMATION

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

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

ABOUT THE NATIONAL SCIENCE FOUNDATION

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

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

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

Facilitation Awards for Scientists and Engineers with Disabilities (FASSED) 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
- **To Order Publications or Forms:**
 - 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:

Suzanne H. Plimpton
Reports Clearance Officer
Policy Office, Division of Institution and Award Support
Office of Budget, Finance, and Award Management
National Science Foundation
Alexandria, VA 22314

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