

Basic Research to Enable Agricultural Development (BREAD)

PROGRAM SOLICITATION

NSF 15-538

REPLACES DOCUMENT(S):

NSF 11-579



National Science Foundation

Directorate for Biological Sciences
Division of Integrative Organismal Systems

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

April 27, 2015

IMPORTANT INFORMATION AND REVISION NOTES

Revision Notes and Highlights:

There are two focus areas in FY 2015: **Developing High Throughput, Low Cost Phenotyping Tools and Devices (PHENO)** and **Advancing Basic Research in Crop Plants Relevant to Smallholder Agriculture in Developing Countries (ABRDC)**. Research in these two areas **only** will be supported in FY 2015.

Conflict of Interest document: The format of the form for submitting the required Conflict of Interest document has been revised. The provided template must be used to generate the Conflict of Interest document.

Important Information:

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide (PAPPG) (NSF 17-1)*, which is effective for proposals submitted, or due, on or after January 30, 2017.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Basic Research to Enable Agricultural Development (BREAD)
A program jointly supported by NSF and the Bill & Melinda Gates Foundation (BMGF)

Synopsis of Program:

The Basic Research to Enable Agricultural Development (BREAD) Program was established in 2009 as a National Science Foundation (NSF) program supported in partnership with the Bill & Melinda Gates Foundation (BMGF). The goal of BREAD is to support innovative basic scientific research designed to address key constraints to smallholder agriculture in the developing world. Proposals submitted to BREAD must make a clear and well-defined connection between the outcomes of the proposed basic research and its direct relevance and potential application to agriculture in the developing world.

In FY 2015, activities in two focus areas will be supported: (1) Developing High Throughput, Low Cost Phenotyping Tools and Devices to facilitate assessment of field-based phenotypes, especially for root and tuber crops (PHENO), and (2) Advancing Basic Research in Crop Plants Relevant to Smallholder Agriculture in Developing Countries (ABRDC) to develop critically needed sequence and functional genomics resources to enable basic and applied research in crop plants important for smallholder agriculture.

As in past competitions, proposals are expected to address project outcomes in the context of broader societal impacts, and as appropriate to the research proposed, engage international partners in scientific collaborations.

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.

- Diane Jofuku Okamuro, E12344, telephone: (703) 292-4400, email: BREAD-WG@nsf.gov

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

- 47.074 --- Biological Sciences

Award Information

Anticipated Type of Award: Continuing Grant

Estimated Number of Awards: 10 to 20

Anticipated Funding Amount: \$12,000,000

Up to \$12 million is anticipated to be available for funding of this program in FY 2015, subject to availability of funds.

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Universities and colleges [universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the U.S., acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.]; U.S. non-profit research organizations, including museums, research laboratories, professional societies; or similar organizations in the U.S. that are directly associated with educational or research activities; or consortia led by the eligible organizations listed here.
- A proposal from a consortium of organizations must be submitted as a single proposal with one U.S. organization serving as the lead and all other organizations as subawardees. **Separately submitted collaborative proposals will not be accepted and will be returned without review.**
- Subawards may be made to U.S. or non-U.S. academic institutions, research organizations, research laboratories, professional societies and similar organizations that are directly associated with educational or research activities.

Who May Serve as PI:

The PI must hold a position at an eligible U.S. institution or not-for-profit research organization.

Federal employees may not submit applications to the BREAD program unless the application is submitted via an appointment at an eligible U.S. Institution.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

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

An investigator may serve as PI or Co-PI on only **one** proposal submitted in response to this solicitation.

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 FastLane: *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:**

Indirect cost limitations may apply to non-U.S. subaward institutions. Please see the full text of this solicitation for further information.

- **Other Budgetary Limitations:**

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

C. Due Dates

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

April 27, 2015

Proposal Review Information Criteria

Merit Review Criteria:

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

Award Administration Information

Award Conditions:

Standard NSF award conditions apply.

Reporting Requirements:

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

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I. INTRODUCTION

Agriculture has benefitted from advances in genomics and the outcomes of this basic research have allowed academic and industrial researchers to expand the plant and animal breeders' toolkit, and to develop a broad range of tools to increase agronomic productivity. While support is available to promote the downstream applications derived from advances in science and technology to address constraints to developing country agriculture, there have been fewer funding opportunities to support development of cutting-edge and creative new approaches in this area.

The BREAD program, a partnership between NSF and the BMGF, fosters new collaborations among a broad range of scientists and engineers aimed at a different way of thinking about the major problems facing developing country agriculture and the transformative basic research that will emerge. The activities supported by the BREAD program build on the accomplishments of the National Plant Genome Initiative (NPGI) and the NSF's Plant Genome Research Program (PGRP) in the area of crop plant genomics, extending the opportunities to include international partners in efforts to generate innovative, science-based solutions to a broad range of problems of smallholder agriculture in developing countries. Through these new partnerships and projects, the BREAD program is changing the research culture to one that is more broadly inclusive of these needs.

II. PROGRAM DESCRIPTION

The advances made through the PGRP have led to the development of resources with potential benefit far beyond U.S. agriculture. The BREAD program represents an additional opportunity within the PGRP that allows for a broader engagement of researchers across multiple disciplines and across international boundaries to form a new community of scientists who may not have worked together before by enabling funding to be provided to eligible, U.S. or non-U.S. institutions through subawards. A major distinction between the BREAD program and other programs at NSF is that proposals to the BREAD program must make a clear and well-defined connection between the outcomes of the proposed basic research and its direct relevance and potential application to smallholder farming in the developing world.

The BREAD program is a component of the PGRP, which was established in FY1998 as part of the NPGI. The PGRP has followed the long-range plans for the NPGI and, working closely with the other agencies participating in the NPGI, has contributed to tremendous advances in plant genomics and plant sciences through support of new, innovative ideas in the form of basic research and tool development projects. The program is currently following the fourth five-year plan (National Plant Genome Initiative: 2014-2018; https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/NSTC/ngpi_five-year_plan_5-2014.pdf). While the focus of the PGRP is on plants of agricultural importance and plant processes of potential agronomic value, the goals of the BREAD program have extended beyond crop plants to include such broad basic research areas involving animals, microbes, soils, weather forecasting, and technology development. The awards made through earlier BREAD competitions can be found at https://www.nsf.gov/bio/pubs/awards/bread10.htm?_pims_id=503285.

From its inception, one focus of the BREAD program has been to support original proposals that address major constraints to the productivity of crops important to smallholder farmers, or on the development of novel and efficient production practices. In the FY 2015 competition, the BREAD program specifically solicits innovative basic research proposals in two key focus areas: (1) Development of high throughput, low cost tools and devices for capturing phenotypic data, especially for root and tuber crops (PHENO) and (2) Advancing Basic Research in Crop Plants Relevant to Smallholder Agriculture in Developing Countries (ABRDC) to develop critically needed sequence and functional genomics resources to enable basic and applied research in crop plants important for smallholder agriculture.

Focus Areas for FY 2015

Development of high throughput, low cost tools and devices for capturing phenotypic data, especially for root and tuber crops (PHENO)

There is a critical need for innovations in high-throughput, high resolution, phenotyping tools and platforms that are both low cost and accessible to alleviate the constraint for effective utilization of genomics data and tools for crop improvement in developing countries. Potentially high-risk, high-payoff proposals or proposals that present unconventional ideas are welcomed. In FY 2015, proposals are especially encouraged for the development of new or novel phenotyping tools and devices for root and tuber crops of relevance to smallholder farmers in developing countries. These include but are not limited to yams, sweet potatoes and cassava. However, accessible, low cost tools and devices for any crop plant system relevant to smallholder agriculture in developing countries may be chosen as long as it is well justified for the proposed research and the outcomes of the research will advance the goals of the BREAD program.

Advancing Basic Research in Crop Plants Relevant to Smallholder Agriculture in Developing Countries (ABRDC)

Tremendous advances in plant genome research have been made due to the development and access of genetic resources and high throughput tools and technologies. The Advancing Basic Research in Crop Plants Relevant to Smallholder Agriculture in Developing Countries (ABRDC) opportunity specifically solicits proposals that focus on the development of genetic and sequence resources and tools to enable basic and applied research in currently underfunded or understudied crop plants of relevance to smallholder farmers in developing countries. Sequence resources may include, but are not limited to, whole genome sequences, survey sequences, physical maps, and sequences that could improve genome annotations and assemblies. Genetic and functional genomic resources may include, but are not limited, genetic maps that utilize low-cost, easy-to-use molecular markers, genetic mapping populations for use in complex trait analysis [e.g., nested association mapping (NAM) population], novel strategies for gene delivery as it applies to genome editing and strategies for the efficient production of double haploid lines. **Proposers must provide a justification for the crop plant(s) selected, the type of resources to be generated, and why the resources are essential for the improvement of crops relevant to small holder farmers in the developing world.** Especially encouraged are proposals that focus on yams, sweet potatoes, cassava, banana, cowpea, chickpea, common bean, groundnut and millet. However, any crop plant system relevant to smallholder agriculture in developing countries may be chosen as long as it is well justified for the proposed research and the outcomes of the research will advance the goals of the BREAD program. Proposals focused entirely on the mapping and/or cloning of single genes associated with a

specific trait in a crop plant(s) are more appropriate for funding elsewhere and may be returned without review. Proposers are strongly encouraged to contact a Program Director prior to submission to determine the suitability of the project for BREAD.

For both focus areas, projects must be justified in terms of potential demand, efficiency, and cost-effectiveness. Proposals must describe clearly how project outcomes, including the timing and form of released data, resources, tools or materials, will be disseminated and made accessible to the public. If appropriate, plans for continued maintenance or dissemination after the award should be described without assuming long-term NSF support. Proposers are encouraged to consider the available resources and to leverage existing resources as much as possible. If other projects are under way that have overlapping goals, including international projects, proposers should present a clear plan for coordination.

Proposals are solicited from single investigators, small groups, or multi-institution "virtual centers." The scale of the project in terms of personnel and budget should be developed in the context of the proposed activities. The management plan should be appropriate for the proposed activities and a carefully developed budget, research plan and timetable will strengthen a proposal.

Proposals that do not focus on one of the two key focus areas are beyond the scope of the competition and will be returned without review. Proposers are strongly encouraged to contact the Program Director for further guidance about program fit.

Simultaneous submission of proposals to this program and another source of funding is permissible only with prior written approval of the funding agencies involved. A proposal from the submitter that is a duplicate of, or substantially similar to, a proposal already under consideration by NSF will be returned without review.

Additional considerations:

International Collaboration: International collaborative research is actively pursued all over the world. International research collaboration is strongly encouraged in the BREAD program, particularly with investigators from developing or developed countries, and especially where there is a common research focus or system. **However, the PI must hold an appointment at an eligible U.S. institution. Proposals will not be accepted from a non-U.S. institution serving as the lead institution.** Subawardee(s) may be eligible U.S. or non-U.S. institutions. Subaward activities should be clearly connected to the overall goals of the proposed research and the human and institutional capacities available for the project described for each institution.

NSF requires that organizations registering to use NSF's electronic systems have a valid and active SAM registration and have a valid DUNS number. NSF will also validate that each proposer's DUNS number and SAM registration are active and valid prior to allowing submission of a proposal to NSF. Any subrecipients named in the proposal also are required to obtain a DUNS number and register in FastLane. Subrecipients named in the proposal, however, do not need to be registered in SAM. **Applicants are strongly encouraged to complete registration well in advance of the proposal deadline.** There are no financial requirements for registration. Information about FastLane registration is available online at <https://www.fastlane.nsf.gov/a0/about/registration.htm>. Questions regarding SAM should be handled through <http://www.sam.gov> and not through the NSF or the BREAD Program.

Industrial Collaboration: Private industry has already made a significant investment in plant genomic research. Innovative collaborations with industry are encouraged when they advance the goals of the program. Participation of a company as a provider of a service should be managed according to the submitting institution's procurement policy. When private industry is involved, the proposer is responsible for ensuring that any intellectual property issues are handled according to the program policy (see section A-1 under Special Information and Supplementary Documentation below).

Integration of Research and Education and Broadening Participation: Proposers are encouraged to take advantage of opportunities to train young scientists in the course of proposed projects and to promote increased participation by members of under-represented groups. Innovative approaches to training are encouraged where they fit with the goals of the proposal and may include training of young scientists in research programs of institutions in the developing world that are building programs that aim to apply the advanced sciences to agriculture. However, proposals focused primarily on supporting existing or new training programs are not eligible and will be returned without review. A mentoring plan must be included for all supported postdoctoral researchers and students as specified under Special Information and Supplementary Documentation sections in the PAPPG and in A-4 (below), respectively.

Data sharing: Proposals that would generate large amounts of data or new resources such as software and other computational tools should present a plan for how these resources will be made widely available and accessible, notably to developing countries. Where appropriate, project outcomes are expected to meet current community standards for genomic data and be deposited into existing long-lived community databases. For more details, see section A-1 under Special Information and Supplementary Documentation below.

Societal Impacts: The societal benefits and potential long-term impacts on developing country agriculture of the proposed research should be integrated into the Project Description. Proposals that lack a discussion of potential societal benefits and/or long-term impacts on developing country agriculture will be less competitive than those that include this information.

III. AWARD INFORMATION

Most projects are anticipated to be supported for 3 years, with funding for each succeeding year dependent upon meeting annual financial and technical reporting requirements. While there are no lower or upper limits on requested award size, budgets should be commensurate with the scope and scale of the proposed research. The estimated number of awards is 10-20, pending availability of funds. The earliest anticipated award date is November 2015. Approximately \$12 million is available for new awards supported through this solicitation, pending availability of funds. As is the case for all competitive NSF proposals, a well-crafted and justified budget will be considered a strength.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Universities and colleges [universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the U.S., acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.]; U.S. non-profit research organizations, including museums, research laboratories, professional societies; or similar organizations in the U.S. that are directly associated with educational or research activities; or consortia led by the eligible organizations listed here.

A proposal from a consortium of organizations must be submitted as a single proposal with one U.S. organization serving as the lead and all other organizations as subawardees. ***Separately submitted collaborative proposals will not be accepted and will be returned without review.***

Subawards may be made to U.S. or non-U.S. academic institutions, research organizations, research laboratories, professional societies and similar organizations that are directly associated with educational or research activities.

Who May Serve as PI:

The PI must hold a position at an eligible U.S. institution or not-for-profit research organization.

Federal employees may not submit applications to the BREAD program unless the application is submitted via an appointment at an eligible U.S. Institution.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

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

An investigator may serve as PI or Co-PI on only **one** proposal submitted in response to this solicitation.

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 Grants.gov or via the NSF FastLane system.

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Proposal & Award Policies & 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) 292-7827 or by e-mail from nsfpubs@nsf.gov. Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- 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) 292-7827 or by e-mail from nsfpubs@nsf.gov.

See Chapter II.C.2 of the PAPPG 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.

Special Instructions for BREAD Proposal Preparation: Unless indicated below, proposers should follow the guidelines for Full Proposals as outlined in the NSF Grant Proposal Guide or NSF Grants.gov Application Guide.

Proposal Cover Sheet: When completing the cover sheet, please consider the following guidance:

- The Project title must start with "BREAD PHENO:...." or "BREAD ABRDC:...."
- In FastLane, click on the "GO" button at "Program Announcement/Solicitation/Program Description No." Highlight BREAD Program and click on the "SELECT" button. Your proposal will automatically be assigned to BIO-BREAD Program. Note to Grants.gov Users: The program solicitation number will be pre-populated by Grants.gov on the NSF Grant Application Cover Page.

- Be sure to complete the remainder of the cover sheet information.

Project Summary (maximum 1 page): Project Summaries must include the following sections:

- An Overview Section: In addition to the requirements in the PAPPG, this section must include a list of U.S. and non-U.S. senior personnel (PI, Co-PIs, key collaborators) along with their home institutions;
- A Statement on Intellectual Merit; and,
- A Statement on Broader Impacts.

The summary should be written in the third person, informative to those working in the same or related field(s), and understandable to a scientifically or technically literate reader. **Proposals that do not separately and explicitly address the overview and both intellectual merit and broader impacts in the Project Summary will not be accepted by FastLane or will be returned without review.**

Project Description (maximum 15 pages, including figures and tables): In addition to the standard description in the PAPPG, the guidelines below should be followed:

- Describe the focus area to be addressed and make clear how the proposed tools and/or resources would impact smallholder agriculture.
- Provide a clear description of the intellectual aspects of any collaborations among the U.S. and international partners and how they synergize to advance the research and education goals. The unique contributions expected from each collaborator should be outlined.
- The key research elements should be outlined clearly. **Use of innovative approaches that involve state-of-the-art science is particularly encouraged.**
- A description of outcomes from prior NSF support, following the PAPPG guidelines, is only required for the PI or U.S. Co-PIs.

References Cited: Indicate with an asterisk any cited publications that resulted from prior research funded by NSF for the PI, or Co-PI when following the PAPPG guidelines for all references cited.

Biographical Sketches (2 pages each): Biographical sketches following the PAPPG guidelines must be listed for the PI, Co-PIs and each of the Senior Personnel listed on the Project Summary page, both U.S. and non-U.S. Please limit the overall number of biographical sketches to 10, prioritizing as required.

Budget and Budget Justification:

1. If a non-U.S. subawardee institution does not separate fringe benefits from the total salary, please indicate in the Budget Justification that the salary requested includes fringe benefits.
2. Travel: Funds to cover the estimated cost of attendance of the PI and up to one Co-PI at the annual awardee meeting (location variable but within the continental U.S.) should be requested.
3. Subawards: When subawards are involved, summary and yearly budgets are required for each subaward in addition to those for the lead institution. As per the PAPPG, a budget justification should be provided for each budget submitted (maximum 3 pages per budget). All budgets must be in U.S. dollars.
4. **Non-U.S. subawardees who have a previously negotiated rate agreement with a U.S. Federal Agency that has a practice of negotiating rates with foreign entities may request indirect costs in accordance with this rate agreement only if evidence of this rate agreement is provided as a Single Copy Document.**

Non-U.S. subawardees that do not have a U.S. Federal Agency negotiated indirect cost rate agreement may claim costs associated with compliance up to a de minimis rate of 10% of modified total direct costs and may include, but are not limited to, the following.

- Financial record keeping;
- Audits of financial records;
- Project management;
- Acquisition of permits, licenses, import or export documents required to carry out the proposed research;
- Project-specific costs for critical research services (e.g., special IT access, extraordinary water or utility costs);
- U.S. visas required for visits associated with project activities.

Organizations may not claim both indirect costs and the direct cost of compliance.

Within the budget narrative, U.S. lead institutions should explain what resources will be allocated to oversight, monitoring, and, as needed, education for non-U.S. subawardees to comply with requirements related to financial accountability and research ethics.

Proposers are strongly encouraged to contact a Program Director with any questions regarding cost eligibility.

Current and Pending Support: Current and Pending Support following the PAPPG guidelines must be listed for the PI, Co-PIs and each of the Senior Personnel (domestic and foreign) listed on the Project Summary page.

Facilities, Equipment and Other Resources: Provide a description of available facilities and priorities for their use for all key domestic and foreign institutions.

Special Information and Supplementary Documentation:

Include the following materials in addition to the Project Description. These materials should be labeled clearly and included in the Supplementary Documents section of FastLane or Grants.gov. Provide only the allowable and applicable items as noted in the PAPPG or NSF Grants.gov Application Guide and this section. Include the materials in the proposal by transferring them as .PDF files through the "Supplementary Docs" module of FastLane or Grants.gov.

(A-1) Sharing of Results and Management of Intellectual Property (maximum 3 pages): Describe the management of intellectual

property rights related to the proposed project, including plans for sharing data, information, materials, and/or any plans for protection of technologies or new devices resulting from the award with specific attention to the implications of data access for developing countries. This plan must be specific about the nature of the results to be shared, the timing and means of release, and any constraints on release. The proposed plan must take into consideration the following conditions where applicable:

- Nucleic acid sequences must be released according to the currently accepted community standard (e.g. Bermuda/Ft. Lauderdale agreement/Toronto principles) to public databases (GenBank, if applicable), as soon as they are assembled and the quality checked against a stated, pre-determined quality standard.
- Proposals that would develop genome-scale expression data through approaches such as microarrays should meet community standards for these data (for example, Minimum Information about a Microarray Experiment or MIAME standards: <http://www.ncbi.nlm.nih.gov/geo/info/MIAME.html>). The community databases (e.g. Gene Expression Omnibus) into which the data would be deposited, in addition to any project database(s), should be indicated.
- If the proposed project would produce community resources (tools, devices, biological materials, software, etc.), NSF encourages that they be made available as soon as their quality is checked to satisfy the specifications approved prior to funding. The timing of release should be stated clearly in the proposal. The resources produced must be available to all segments of the scientific community, including industry. A reasonable charge is permissible, but the fee structure must be outlined clearly in the proposal. If accessibility differs between industry and the academic community, the differences must be clearly spelled out. If a Material Transfer Agreement is required for release of project outcomes, the terms must be described in detail.
- When the project involves the use of proprietary data or materials from other sources, the data or materials resulting from BREAD-funded research must be readily available without any restrictions to the users of such data or materials (no reach-through rights). The terms of any usage agreements should be stated clearly in the proposal.
- Budgeting and planning for short-term and long-term distribution of the project outcomes must be described in the proposal. If a fee is to be charged for distribution of project outcomes, the details should be described clearly in the proposal. Letters of commitment should be provided from databases or stock centers that would distribute project outcomes, including an indication of what activities would be undertaken and funds needed for these activities (if any).
- Submitting institutions should be aware of and abide by the general policies of NSF with respect to the patenting and licensing of any new technologies or devices that may be generated in the course of the project (see Award & Administration Guide, Chapter VI Section B. Intellectual Property).
- In case of a multi-institutional proposal, the lead institution is responsible for coordinating and managing the intellectual property resulting from the BREAD award. Institutions participating in multi-institutional projects should formulate a coherent plan for the project prior to submission of the proposal.

IMPORTANT: Appendix A-1 is submitted as a supplementary document in lieu of the DATA MANAGEMENT PLAN (DMP) required of all proposals submitted to NSF (see PAPPG Chapter II.C.2.j). Because the DMP is required, FastLane will not allow submission of a proposal with a DMP in excess of the 2-page maximum. For this reason, please submit as a supplementary document and add the text "SEE APPENDIX A-1 UPLOADED AS A SUPPLEMENTARY DOCUMENT" to the DMP field in FastLane.

(A-2) Project Management Plan (maximum 3 pages): Projects involving more than one investigator and/or more than one institution must provide a description of the management plan for coordinating activities.

- This description should include plans for internal means of communication, coordination of data and information management, evaluation and assessment of progress, allocation of funds and personnel and other specific issues relevant to the proposed activities.
- For proposals with more than one investigator, a table summarizing the role of each investigator is required. The exact time commitment of each key project member should be indicated in the management plan, regardless of any request for his/her salary from NSF.
- **A letter expressing an intent to collaborate is required from any non-U.S. subawardee institution or any non-U.S. scientist listed as a Co-PI who would not receive a subaward, to be filed as a Supplementary Document.**
- For proposals involving international travel, describe the process for U.S. travelers to obtain any required visas and, through the submitting institution, for providing documentation in support of U.S. visas for foreign counterparts needing to travel to the United States as part of the project. The PI and lead institution are also responsible for obtaining research permits and import/export documents where necessary. Pls should review NSF's web page "Information for U.S. Travelers" <https://www.nsf.gov/od/iaa/ise/for-travelers-main.jsp>. Among other things, this page includes information regarding the collection of genetic resources outside the U.S.

(A-3) Oversight Plan (maximum 3 pages): Projects with subawards **must** provide a detailed description of the lead institution's Oversight Plan for those subawards, including:

- Ensuring financial accountability, including the monitoring of expenditures and reporting on outcomes, for all subawardees. In this regard, the submitting institution should also provide a description of any past experiences in dealing with subawards to foreign institutions, particularly in the country or countries where subawards would be made in this proposal.
- Ensuring compliance with regulations for the use of recombinant DNA, microbes, transgenic plants or animals, including any work involving vertebrate animals (see PAPPG Chapter II.D.6).
- Ensuring compliance with regulations relating to the U.S. Agricultural Bioterrorism Act of 2002 (https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-and-animal-product-import-information/SA_Ag_Select_Agent).
- Adherence to common principles for the responsible conduct of research and the investigation of research misconduct allegations (as reference, see OECD Global Science Forum materials at <http://www.oecd.org/science/sci-tech/researchintegritypreventingmisconductanddealingwithallegations.htm> and NIH Fogarty International Center materials at <http://www.fic.nih.gov/ResearchTopics/Bioethics/Pages/investigators-ethics-committees.aspx>).
- The BREAD program does not anticipate the use of any human subjects in proposed research. However, if any is anticipated, the PI must contact the Program Officer of BREAD for guidance prior to submission of a proposal.

If there are non-U.S. subawardees, there are additional policies and guidelines that must be adhered to. For this reason, an Oversight Plan should also:

- Be developed by the awardee in conjunction with the non-U.S. subawardee and describe how the awardee will provide effective oversight of non-U.S. subawardee for each element of the Oversight Plan

- Include an explanation of how the Plan accommodates both the awardee's and the non-U.S. subawardee's rules and regulations, providing citations to appropriate NSF regulations (see above) and non-U.S. subawardee policies; and,
- Include a signed statement of agreement between the awardee and non-U.S. subawardee to adhere to the Plan

(A-4) Plans for Undergraduate and Graduate Student Mentoring (maximum 1 page): All proposals that include funding to support undergraduate or graduate students must include a description of the mentoring activities that will be provided for all such individuals, regardless of location. This part of the proposal will be evaluated under the Foundation's broader impacts merit review criterion.

Proposals that contain any material not specifically requested or in excess of the page allowances will be considered non-compliant and may be returned without review. It is the submitting institution's responsibility to ensure that the proposal is compliant with the guidelines.

Single Copy Documents:

Conflict of Interest Document: The template found at <https://www.nsf.gov/bio/ios/ioscoitemplate.xlsx>, contains a total of five tabs. Please read the Instructions carefully and follow the guidance. Using the template, compile an Excel Workbook that identifies conflicts of interest (COIs) for all persons listed on the Proposal Cover Page, along with other senior personnel and/or collaborators and subaward lead(s). Conflicts to be identified are (1) Ph.D. dissertation advisors and advisees, (2) collaborators or co-authors, including postdoctoral researchers, for the past 48 months, (3) coeditors within the past 24 months, (4) spouse or other relative(s), and (5) any other individuals with whom, or institutions with which, the senior personnel (PI(s), co-PI(s), and any named personnel) have financial ties, including advisory committees (specify type), boards of directors, or prospective employees. With regard to publications developed by large consortia, only co-authors that an individual has directly interacted with should be included as a conflict of interest. Members of current Advisory Committees who receive reimbursement for travel or honoraria should be included in the last category. PAPPG Exhibit II-2 contains information on conflicts of interest that may be useful in preparation of this list.

Please follow the Instructions provided in the template. Do not use the temporary FastLane ID or a Research.Gov ID to fill out the COI template. You must use only an assigned NSF Proposal ID, which should be 7 digits long and will start with the fiscal year numbers (e.g., for FY15, all the Proposal ID's will start with "15"). Do not send in the COI template until you have been assigned the official NSF Proposal ID at the time of submission.

The completed Excel Workbook should be emailed to IOScoispreadsheet@nsf.gov immediately after you submit your proposal, but no later than the proposal deadline.

In addition to the Conflict of Interest Document, other correspondence to the program not intended to be sent to reviewers can be uploaded as Single Copy Documents. Please note that key project personnel may be required, prior to an award decision, to submit copies of any intellectual property agreements or material transfer agreements they have signed, or are planning to sign, that would impact the unrestricted and timely distribution of the outcomes of the NSF funded research. Submission of a Single Copy Document will allow these documents to be reviewed by the NSF officials only, and they will remain confidential.

Previously Negotiated Indirect Cost Rate. If a non-U.S. institution proposed as a subawardee has a previously negotiated rate agreement with a U.S. Federal Agency that has a practice of negotiating rates with foreign entities, provide evidence of this rate as a Single Copy Document.

Proposal Classification Form. Applicants must complete the Proposal Classification Form. The Proposal Classification Form is required for all submissions to BIO; FastLane will not allow processing of the proposal without it.

Checklist for Proposal Preparation

- Title begins "BREAD PHENO:..." or "BREAD ABRDC:..."
- Project Summary contains all requested information, including broader impacts of the proposed work and potential relevance to smallholder farmers in developing countries.
- Project Description is 15 pages or less in length, including figures, tables, and discussion of societal impacts.
- References Cited includes publications resulting from prior research funded by NSF (marked*).
- Biographical Sketches (2 pages each) included for PI, Co-PIs and Senior Personnel listed in the Project Summary.
- Budget and budget justification, including separate budgets and budget justifications for each subawardee institution. Requests for travel to annual BREAD awardee meeting should also be included.
- Current and Pending Support Statements included for PI, Co-PIs and Senior Personnel listed in the Project Summary.
- Facilities, Equipment and Other Resources for all key domestic and foreign institutions
- Sections (A-1), (A-2), (A-3), and (A-4) uploaded in Supplementary Documents
- Oversight Plan (A-3) addresses all of the required elements and a signed statement of agreement between the awardee and non-U.S. subawardee(s) to adhere to the Plan
- Supplementary documents include letters of commitment from databases or stock centers that would distribute project outcomes, if applicable.
- No general letters of support are included in Supplementary Documents; however a letter expressing an intent to collaborate is required from any non-U.S. subawardee institution or any non-U.S. scientist listed as a Co-PI who would not receive a subaward.
- Combined Conflict of Interest document generated using the template and emailed to IOScoispreadsheet@nsf.gov immediately after submission of proposal, but no later than the proposal deadline.
- It is highly recommended that a list of 12 suggested reviewers be entered into the appropriate tab on the COI spreadsheet template, including the individuals' names; institutions; and areas of expertise, email addresses and URLs if available. Please contact a Program Director for guidance if you are unable to download the template.
- Prior negotiated indirect cost rate uploaded as a Single Copy Document, as applicable.

This checklist is not intended to be an all-inclusive repetition of the required proposal contents and associated proposal preparation guidelines. It is, however, meant to highlight certain critical items so they will not be overlooked when the proposal is prepared.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Indirect Cost (F&A) Limitations:

Indirect cost limitations may apply to non-U.S. subaward institutions. Please see the full text of this solicitation for further information.

Other Budgetary Limitations:

Non-U.S. subawardees that have a previously negotiated rate agreement with a U.S. Federal Agency that has a practice of negotiating rates with foreign entities may recover indirect costs at the current negotiated rate. Evidence of the rate should be provided as a Single Copy Document.

Non-U.S. subawardees that do not have a U.S. Federal Agency negotiated indirect cost rate agreement may claim costs associated with compliance up to a de minimis rate of 10% of modified total direct costs.

C. Due Dates

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

April 27, 2015

D. FastLane/Grants.gov Requirements

For Proposals Submitted Via FastLane:

To prepare and submit a proposal via FastLane, see detailed technical instructions available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane 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: <http://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 FastLane are strongly encouraged to use FastLane 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 *Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018*. 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 underrepresented minorities in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

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

Additional Solicitation Specific Review Criteria

- *International Collaboration*: Proposers are strongly encouraged to include one or more international collaborators as appropriate for the proposed research. Collaborations are encouraged that would build on the specific knowledge, local resources or agricultural needs of the international participants. Proposers should address the international collaboration in terms of mutual benefits, true intellectual collaboration among the international partners, benefits to be realized from the expertise and specialized skills, facilities, sites and/or resources of the international counterparts, and active research engagement of students and early-career researchers, where such individuals are engaged in the project. Where applicable, proposed research activities should be coordinated with similar efforts in other countries to maximize efficiency and avoid unnecessary duplication of effort.
- *Data Sharing*: Proposers are encouraged to consider project outcomes in the context of the broader international community and ensure maximal accessibility and visibility to all. Outcomes are expected to meet current community standards for genomics data and be deposited in long-lived community databases where appropriate.
- *Integration of Research and Education and Broadening Participation*: Activities supported through the NSF-BMGF Program should provide an ideal environment for training young scientists in modern research technologies, introducing them to new paradigms in biology, and promoting increased participation by members of under-represented groups. NSF expects proposers to take advantage of the unique opportunities the proposed project provides in terms of education and incorporate these into the plan at a scale that is commensurate with the scale and scope of the proposed activity. Focused activities that fit well with the specific opportunities offered by the project would be viewed as a strength. However, projects that focus primarily on education or training are beyond the scope of the program and may be returned without review. Proposers are strongly encouraged to contact a Program Director for additional guidance.
- *Societal Impacts and Relevance to Developing Country Agriculture*: Issues related to societal impact, including implications for developing country agriculture with specific emphasis on smallholder farmers, should be addressed as an integral part of the proposal. These may be integrated into an education and/or outreach activity designed to communicate the significance of the outcomes to the end-users.

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Ad hoc and panel review.

One or two review panels will be assembled, depending on the number of proposals received. Some of the panelists may participate virtually.

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 letter, 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 letter; (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 letter. 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) 292-7827 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 Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

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=papppg.

Additional reporting requirements, including financial and scientific reports, will be detailed in the award letter.

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:

- Diane Jofuku Okamuro, E12344, telephone: (703) 292-4400, email: BREAD-WG@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@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:

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 <http://www.grants.gov>.

Related Programs:

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) 292-7827
- **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 Systems of Records, [NSF-50](#), "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and [NSF-51](#), "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). 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
Office of the General Counsel
National Science Foundation
Alexandria, VA 22314

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