

International Research Experiences for Students (IRES)

PROGRAM SOLICITATION

NSF 12-551

REPLACES DOCUMENT(S):

NSF 04-036



National Science Foundation

Office of International Science and Engineering

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

August 21, 2012

Third Tuesday in August, Annually Thereafter

August 18, 2015

Third Tuesday in August, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

Revision Summary

1. The number of IRES competitions and award cycles per year is reduced from two to one, but this change is not intended to reduce the size of the program.
2. Principal Investigator and/or other U.S. administrative support salary has been added as an allowable expense, within a maximum allowable limit of \$15,000 per year of the project.
3. This solicitation specifies that all projects must be of exactly three years' duration and send no fewer than three student cohorts abroad.
4. The maximum allowable budget per project is raised from \$150,000 to \$250,000 and the previous annual budget limit of \$50,000 is removed entirely. Removal of the annual budget cap provides more project flexibility, but projects are still required to send a student cohort abroad in each of the three years of the project.
5. Language has been added that student participants "must" be US Citizens or Permanent Residents.
6. Language has been changed and/or added to strengthen the emphasis on more thorough recruitment and preparation of student participants, engagement of foreign research mentorship, high-quality research experiences coupled with appropriate support of US students in the foreign location, and post-experience follow-up for students' career enhancement and networking purposes.
7. Explicit IRES program considerations to be used in the review and ranking of proposals have been added.
8. The Doctoral Dissertation Enhancement Program (DDEP) has been removed from this solicitation.
9. Research Experience for Teachers (RET) has been added.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide (PAPPG)* ([NSF 16-1](#)), which is effective for proposals submitted, or due, on or after January 25, 2016.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

International Research Experiences for Students (IRES)

Synopsis of Program:

The International Research Experiences for Students (IRES) program supports development of globally-engaged U.S. science and engineering students capable of performing in an international research environment at the forefront of science and engineering. The IRES program supports active research participation by students enrolled as undergraduates or graduate students in any of the areas of research funded by the National Science Foundation. IRES projects involve students in meaningful ways in ongoing research programs or in research projects specifically designed for the IRES program.

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.

- Maija M. Kukla, telephone: (703) 292-8710, email: IRES@nsf.gov

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

- 47.041 --- Engineering
- 47.049 --- Mathematical and Physical Sciences
- 47.050 --- Geosciences
- 47.070 --- Computer and Information Science and Engineering
- 47.074 --- Biological Sciences
- 47.075 --- Social Behavioral and Economic Sciences
- 47.076 --- Education and Human Resources
- 47.079 --- Office of International Science and Engineering
- 47.083 --- Office of Integrative Activities (OIA)

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 12 - Approximately 12 IRES awards will be made in FY 2013, pending quality of proposals and availability of funds.

Anticipated Funding Amount: \$2,250,000 - Approximately \$2,250,000 in FY 2013, pending 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 US acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- 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:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

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

One per year per individual serving as either PI or co-PI (this includes international REU submissions).

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, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg.
 - 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: http://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 costs are allowable, consistent with NSF's general policy. Student stipends, travel, and subsistence costs for this training experience are typically listed as participant support costs and as such are not subject to indirect costs. Off-campus indirect rates are applicable to activities at foreign sites.
- **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):

August 21, 2012

Third Tuesday in August, Annually Thereafter

August 18, 2015

Third Tuesday in August, Annually Thereafter

Proposal Review Information Criteria

Merit Review Criteria:

National Science Board approved criteria. 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:

Standard NSF reporting requirements apply.

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I. INTRODUCTION

Many of the world's most pressing science and engineering challenges and opportunities are trans-national in nature, and moreover, leading scientific and engineering facilities, resources, and expertise are found around the globe. In order to remain at the forefront of science, technology, engineering, and mathematics (STEM), the United States (U.S.) needs to nurture a globally-engaged STEM workforce capable of performing in an international research environment. To help address this need, the International Research Experiences for Students (IRES) program provides support for U.S. students to conduct high-quality research abroad in collaboration with foreign investigators. Such experiences expose U.S. students to the international research community at a critical early stage in their careers.

The IRES program encourages projects in any field that NSF supports. Projects must involve U.S. students conducting research at foreign sites with appropriate foreign expert mentorship. Projects are organized and proposed by U.S. institutions and U.S.-based Principal Investigators, who arrange the specific research topics, foreign site placements, appropriate foreign research mentorship, and necessary local resources, and then recruit and prepare U.S. students to participate in these experiences. A key feature of IRES is that the primary research mentorship in-country must come from the researchers at the foreign host institution.

II. PROGRAM DESCRIPTION

Because IRES requires high-quality research within the discipline of an IRES project, an IRES project will often enable students to work within an established collaboration between a U.S.-based research group and a foreign collaborating research group (for example, an existing lab-to-lab arrangement). However, IRES projects may also be proposed by the U.S.-based PI(s) for new foreign collaborations.

In all cases, the IRES students will be recruited and prepared by the U.S. PI(s), then travel to the foreign site to conduct research under the direct supervision of the foreign research mentors.

IRES proposals must have a unifying research theme that enables a "cohort" experience for participating students. The IRES cohort concept requires that within each IRES project, each participating student must have an individual research project for which he/she is responsible, but these individual projects must also be coordinated to address a unifying research theme. To provide the best cohort experience, and to simplify logistical burdens, it is advised that all students supported by a given IRES project will go to the same foreign location at the same time, even though each student may have individual research project responsibility and individual foreign research mentorship. If students are to be hosted at more than one location, it is expected that there is a common scientific theme across locations, and the proposal should include a plan for all participants to be together at one of the foreign locations at least once during the stay.

IRES support is supplied for projects of three years' duration, and is expected to support three separate student cohorts during those three years. IRES projects should give as many students as feasible, within budgetary and project constraints, the opportunity for a meaningful research experience abroad. Projects which include fewer than four U.S. students per year, or whose annual duration of research conducted abroad is less than four weeks, should be justified by exceptional conditions or circumstances. Longer duration projects, and/or those involving more students, are generally preferable to shorter duration projects with fewer students. A typical IRES project supports 5 students per year for a summer-length research experience abroad, but the actual number of students, length of time abroad, and time of year spent abroad, may vary from IRES project to IRES project.

IRES proposals are accepted from U.S.-based academic research institutions, professional societies, or consortia. However, primary research mentorship must be provided by foreign mentors. Nevertheless, the U.S. PI is responsible for recruiting and preparing U.S. student participants, ensuring the quality of the research experience and the appropriateness of the foreign research mentorship. It may be necessary for U.S. PIs to spend a short period of time with the U.S. students to help with the transition to the foreign site and mentors, but are not expected to remain on-site and actively engaged with the U.S. students throughout the period abroad.

Recruitment of the U.S. student participants may occur locally, or may involve wider regional or national recruitment plans. In all cases, the proposal must clearly describe the plan for recruiting candidates, including the plan for broadening participation among underrepresented groups, and for selecting and preparing the students who will participate. IRES support must be given to students who are U.S. citizens or permanent residents; the intent of the program is to broaden the international experience of US students, not to provide an additional international experience to non-U.S. students. Preparation of selected students to enable maximum benefit during the period spent abroad is particularly important, and should include both scientific preparation for the research project as well as more general, location-specific preparation for practical and cultural issues they will encounter.

Proposals should describe the research focus of the proposed activity; the intellectual collaboration with the foreign team; the plan for enhancement of students' professional networks and details on mentoring, professional development, and training that students will receive; recruitment and broadening participation plans; selection process; the pre-departure preparation of students; arrangements for housing, health insurance, and other logistics; plans for leveraging U.S. and foreign resources to strengthen the project; the plan to assess the impact of the IRES project; and strategies for disseminating project results.

A good source of general information for PIs planning to take students abroad, which proposers may find valuable, is an OISE workshop report entitled 'Looking Beyond the Borders: A Project Director's Handbook of Best Practices for International Research Experiences for Undergraduates', available at:

<http://www.nsf.gov/pubs/2006/nsf06204/index.html>

The IRES program does not support summer schools or coursework.

Whereas two-way exchanges of U.S. and non-U.S. students are strongly encouraged, the IRES program can only provide support for U.S. students. Typically, the IRES program does not provide support for the foreign- research mentors. However, in certain circumstances, especially involving developing countries, it may be necessary to provide mentor support in order to make the IRES project possible. In such cases, the proposal must clearly demonstrate such need, and also limit requested support to the minimum necessary to enable the project on behalf of the U.S. student participants. PIs considering such a proposal are strongly encouraged to consult with the IRES program officer prior to submission.

PIs are responsible for obtaining required visas for foreign travel. PIs are also responsible for obtaining research permits and import/export documents, where necessary.

Research Experiences for Teachers

NSF encourages research experiences for K-12 teachers of science, technology, engineering, and mathematics and the coordination of these experiences with IRES projects. Most directorates support Research Experiences for Teachers (RET) as a formal activity and announce their specific interests (e.g. RET Sites, RET Supplements) either in solicitations, in "Dear Colleague" letters, or on directorate/division websites. Other NSF units have no formal announcement but respond to requests for RET support on a case-by-case basis. Teachers may also be included in an IRES project. Applicants who wish to include an RET in an IRES proposal should contact the IRES program officer for guidance.

III. AWARD INFORMATION

Estimated program budget, number of awards and average award size/duration are subject to the quality of proposals and availability of funds. It is expected that NSF will support approximately 12 awards in FY 2013.

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 US acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- 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:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

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

One per year per individual serving as either PI or co-PI (this includes international REU submissions).

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 Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG 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: (http://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 GPG 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 GPG instructions.

The information below supplements the standard Grant Proposal Guide (GPG) and NSF Grants.gov Application Guide proposal preparation guidelines. Please use this information while preparing a proposal under the IRES program:

1. **Proposal Cover Sheet.** Fastlane Users: Select the IRES solicitation number from the pull down list and select "International Research Experiences for Students" as the Program in the Unit Selection List. Grants.gov Users: The program solicitation number 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. Give a proposal title beginning with "IRES:" followed by a descriptive title of the proposed activities. Check the box for "International Cooperative Activities Country Name" that appears under Other Information when the "remainder of cover sheet" is clicked, then select the countries involved.
2. **Project Summary (one page maximum).** Clearly indicate the number of undergraduate and/or graduate participants per year AND number of weeks per year that the students will participate. Include the names and institutional affiliations of key foreign collaborators, and note their roles in the proposed activities. Summarize the research topic and highlight the collaborative aspects of the activity. **Intellectual merit** and anticipated **broader impacts must** be addressed in separate paragraphs.
3. **Project Description and Results from Prior NSF Support.** Project descriptions should address intellectual merits and broader impacts, and in addition, provide details concerning the specific IRES elements listed below:
 - **Overview.** Provide a brief description of the research focus of the proposed activity, including specific examples of research projects that individual students will conduct during their time abroad.
 - **Nature of Student Activities.** Proposals should address the intellectual collaboration with the foreign team. Provide detailed descriptions of examples of research projects that students will pursue.
 - **The Research Environment.** Describe the unique expertise, facilities, data, and/or other resources that will be available to participating IRES students. Describe why the particular host(s) is desirable for this project from a scientific standpoint, and in addition, why the particular site and facilities are suitable for hosting and mentoring

U.S. students.

- **Student Recruitment and Selection.** The overall quality of the student recruitment and selection processes and criteria will be an important element in the evaluation of the proposal. The recruitment plan should be described with as much specificity as possible including a detailed description of the efforts that will be made to attract members of under-represented groups. IRES student participants must be U.S. citizens or permanent residents.
- **Logistics.** The proposal should describe plans for pre-departure preparation of U.S. student participants, arrangements for housing, health insurance and other logistics.
- **Leveraging Resources.** Discuss plans for leveraging U.S. or foreign resources to strengthen the project, such as, taking advantage of campus IT facilities, academic centers, language instruction, international programming, or cultural activities.
- **Professional Development.** Describe plans for enhancing the professional development of student participants, including any plans for follow-on interactions such as student-faculty, student-mentor, and student-student cooperation.
- **Project Evaluation and Reporting.** Discuss plans to a) measure qualitatively and quantitatively the IRES project in terms of student research experiences and the professional development of student participants, b) for disseminating results of the research within the appropriate scientific disciplinary community, c) to publicize the IRES project student experiences in ways that will share the experiential benefits across a wider body of U.S. students and encourage other students to engage internationally.

4. Supplementary Documentation:

- Biographical sketches for principal foreign collaborators. Sketches must be in English and must adhere to the format given in the Grant Proposal Guide (Chapter II.C.2.f, http://nsf.gov/publications/pub_summ.jsp?ods_key=gpg).
- Letters of commitment from foreign researchers who will serve as the mentor(s) for the IRES students.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Indirect Cost (F&A) Limitations:

Indirect costs are allowable, consistent with NSF's general policy. Student stipends, travel, and subsistence costs for this training experience are typically listed as participant support costs and as such are not subject to indirect costs. Off-campus indirect rates are applicable to activities at foreign sites.

Other Budgetary Limitations:

IRES projects have duration of three years, and a maximum total budget of \$250,000.

In most instances, the majority of IRES funding is expected to be in direct participant support costs (student stipends, travel, and living expenses at the foreign-research site). Other allowable budget items include: modest expenses for materials, supplies, publication costs, etc., in support of U.S. student research; support for short-term visits of the U.S.-based PI to establish and manage the project; up to \$15,000 in salary support for the U.S. PI and/or other U.S. administrative staff directly involved with student support, per year; and reasonable costs in support of project assessment.

Student stipends should be provided for all participants, and should be comparable to similar NSF-sponsored research opportunities such as EAPSI and REU (approximately \$500 per student per week). The stipend should be provided in addition to actual travel and living expenses. The intention of this requirement is to eliminate economic need as a barrier to student participation.

In most cases, foreign mentors may not be supported by funds from the IRES program. However, when foreign mentors are from a developing country, some support may be provided for the foreign participation. Applicants should discuss specifics with the IRES program officer before submitting a proposal, and any requests for such funding must clearly establish that such funding is necessary in order for the project to proceed, and that all such funding is for activities in direct support of the US-based student participants. Any support provided to foreign mentors or their labs must be identified on Line G6 "Other" on the Proposal Budget form. Subawards are not permitted. IRES funds may not be used to support foreign student participation.

For living expenses abroad, applicants are encouraged to work with foreign counterparts to develop realistic budget requests. For example, access to university guest housing or similar facilities should be explored. In no case should the amount for lodging and meals and incidental expenses (MI&E) exceed the [authorized U.S. Government per diem rates](#), calculated at the daily rate for the first 30 days of a single project visit, and 50 percent of that rate for all time after that. Various approaches to cost-effective, reciprocal arrangements can be considered. All travel must comply with current travel guidelines (please see Article 14 of the Agency Specific Requirements to the Research Terms and Conditions http://www.nsf.gov/pubs/policydocs/rtr/nsf_212.pdf).

Some disciplinary REU (Research Experiences for Undergraduates) programs hold a PI meeting. IRES PIs should plan on attending an REU PI meeting organized by their NSF disciplinary program, if applicable. The meetings are held in the U.S. and the budget should include the appropriate travel costs.

C. Due Dates

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

August 21, 2012

Third Tuesday in August, Annually Thereafter

August 18, 2015

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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 the [GPG](#) as Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: http://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. (GPG 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 GPG 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

In addition to the general NSF review criteria described above, the following criteria will be used in evaluating proposals submitted in response to this solicitation:

1. Appropriateness of the student recruitment and selection plans, including those for involving students from underrepresented groups and from academic institutions with limited research opportunities.
2. Quality of plans for student preparation, including both academic/research and cultural/practical preparation specific to the topic of the research and the site of the international placement.
3. The appropriateness of the host research mentors and host institution or location arrangements, from both a disciplinary and logistical standpoint, including the opportunity for US students to benefit from the expertise, facilities, etc. of the foreign host.
4. The suitability of the research mentoring plan and project for the academic level of the intended student participants, the length of the program, the facilities available, etc.
5. Plans to enhance the project's effectiveness and impact on students' careers and/or their disciplines after the overseas experience is completed, to disseminate research results and experiences within the discipline and among other students.

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

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:

- Maija M. Kukla, telephone: (703) 292-8710, email: IRES@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: 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 <http://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 provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 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 <http://www.nsf.gov>

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230
- **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
Arlington, VA 22230

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