Fostering Interdisciplinary Research on Education (FIRE)

National Science Foundation

Directorate for Education & Human Resources
 Research on Learning in Formal and Informal Settings

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

April 29, 2011

IMPORTANT INFORMATION AND REVISION NOTES

A revised version of the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), NSF 11-1, was issued on October 1, 2010 and is effective for proposals submitted, or due, on or after January 18, 2011. Please be advised that the guidelines contained in NSF 11-1 apply to proposals submitted in response to this funding opportunity. Proposers who opt to submit prior to January 18, 2011, must also follow the guidelines contained in NSF 11-1.

Cost Sharing: The PAPPG has been revised to implement the National Science Board's recommendations regarding cost sharing. Inclusion of voluntary committed cost sharing is prohibited. In order to assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section of the proposal. The description should be narrative in nature and must not include any quantifiable financial information. Mandatory cost sharing will only be required when explicitly authorized by the NSF Director. See the PAPP Guide Part I: *Grant Proposal Guide (GPG)* Chapter II.C.2.g(xi) for further information about the implementation of these recommendations.

Data Management Plan: The PAPPG contains a clarification of NSF's long standing data policy. All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. FastLane will not permit submission of a proposal that is missing a Data Management Plan. The Data Management Plan will be reviewed as part of the intellectual merit or broader impacts of the proposal, or both, as appropriate. Links to data management requirements and plans relevant to specific Directorates, Offices, Divisions, Programs, or other NSF units are available on the NSF website at: http://www.nsf.gov/bfa/dias/policy/dmp.jsp. See Chapter II.C.2.j of the GPG for further information about the implementation of this requirement.

Postdoctoral Researcher Mentoring Plan: As a reminder, each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. Please be advised that if required, FastLane will not permit submission of a proposal that is missing a Postdoctoral Researcher Mentoring Plan. See Chapter II.C.2.j of the GPG for further information about the implementation of this requirement.

Revision Summary

FIRE continues to be a strand of the REESE program (NSF 10-586) in a stand-alone solicitation. The purpose and structure of the FIRE solicitation has not changed. Revisions for FY 2011 include:

- FIRE projects must have *one* mentor and *one* investigator (the person being mentored in a new field). Other personnel and co-PIs are allowed, but the role of the mentor must be clearly described.
- FIRE is open to whether the mentor is designated as the PI and the mentee as the co-PI, or vice versa, as allowed by their institutions.
- Investigators may receive a FIRE award at any time in their post-graduate career.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Fostering Interdisciplinary Research on Education (FIRE)

Synopsis of Program:

FIRE is a strand of the Research and Evaluation on Education in Science and Engineering (REESE) program (NSF 10-586) and it is anticipated that FIRE will eventually be incorporated into the REESE solicitation. The FIRE program seeks to facilitate the process by which scholars can cross disciplinary boundaries to acquire the skills and knowledge that would improve their abilities to conduct rigorous research on STEM learning and education. The primary goal of the strand is to facilitate the development of innovative theoretical, methodological, and analytic approaches to understanding complex STEM education issues of national importance and, by so doing, make progress toward solving them. A secondary goal of the strand is to broaden and deepen the pool of investigators engaged in STEM educational research. In order to address this goal, investigators must pair with a mentoring scholar in a to-be-learned field of interest. Proposals therefore have both a research and a professional development component. Investigators may receive a FIRE award at any point in their post-graduate careers.

Cognizant Program Officer(s):

- Jinfa Cai, telephone: (703) 292-8620, email: jcai@nsf.gov

- James Dietz, telephone: (703) 292-5156, email: jdietz@nsf.gov

- Janice M. Earle, telephone: (703) 292-5097, email: jearle@nsf.gov

- Gavin W. Fulmer, telephone: (703) 292-7998, email: gfulmer@nsf.gov

- Elmima C. Johnson, telephone: (703) 292-5137, email: ejohnson@nsf.gov

- Janet Kolodner, telephone: (703) 292-8930, email: jkolodne@nsf.gov

- Celestine H. Pea, telephone: (703) 292-5186, email: cpea@nsf.gov

- Kusum Singh, telephone: (703) 292-5110, email: Kusingh@nsf.gov

- Gregg Solomon, telephone: (703) 292-8333, email: gesolomo@nsf.gov

- Larry E. Suter, telephone: (703) 292-5144, email: lsuter@nsf.gov

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

- 47.076 --- Education and Human Resources

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 8 to 10 FIRE awards will be funded, pending availability of funds.

Anticipated Funding Amount: $3,200,000 to $4,000,000 for FIRE awards in FY 2011, pending availability of funds. The maximum award for FIRE projects is $400,000, with duration of up to two years.

Eligibility Information

Organization Limit:

None Specified

PI Limit:

Each proposal must consist of *one* individual who will serve as the mentor and *one* individual who will be mentored. FIRE is open as to whether the mentor is designated as the PI and the mentee as the co-PI, or vice versa, as allowed by their institutions. Other personnel and co-PIs are allowed, but the role of the mentor should be clearly described. Investigators may receive an award at any point in their post-graduate careers, whether at a more junior (e.g., immediately after earning a doctorate) or senior level (e.g., mid-career or later). Both the individual who will act as mentor and the individual who will be mentored must have obtained their respective doctoral degrees by date of award.

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable

- **Preliminary Proposal Submission:** Not Applicable

- **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:** Not Applicable

- **Other Budgetary Limitations:** Not Applicable

C. Due Dates

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

    April 29, 2011

Proposal Review Information Criteria

Merit Review Criteria: National Science Board approved criteria apply.

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 most pressing STEM education problems facing the nation are of such complexity that solving them will require harnessing the research capacities of multiple academic disciplines. A great benefit of interdisciplinary efforts is that they can allow new ways of approaching old problems. Theories, methodologies, analytic techniques, and findings robustly understood in one field can have a catalytic effect when brought into contact with those of another. Moreover, interdisciplinary endeavors also increase the human capacity of the nation to address difficult problems, broadening the range and diversity of scholars working toward their solution. Unfortunately, a common impediment to such endeavors is the often disparate nature of the relevant disciplinary literatures and communities (Rhoten & Parker, 2004; The National Academies, 2005). This is particularly true in education research, where, for a variety of scientific, sociological, and practical reasons, many first-rate scholars who might be interested in doing transformational research on STEM education are not doing so. In some cases, scientists with relevant expertise and interest in educational issues may be at a loss as to how to make the transition to educational researcher. In other cases, scholars doing educational research may lack the particular skills common to another scientific discipline that would allow them to improve their content expertise or broaden their methodological repertoire. These are opportunities lost for the nation.

II. PROGRAM DESCRIPTION

FIRE is a strand of the Research and Evaluation on Education in Science and Engineering (REESE) program (NSF 10-586). It is anticipated that FIRE will be incorporated into the REESE solicitation. The FIRE strand seeks to facilitate the process by which scholars can cross disciplinary boundaries to acquire the skills and knowledge that would improve their abilities to conduct rigorous research on STEM learning and education. The primary goal of the strand is to facilitate the development of innovative theoretical, methodological, and analytic approaches to understanding complex STEM education issues of national importance and, by so doing, make progress toward solving them. In order to address this goal, proposals must describe a research plan that makes it clear how the project could help to catalyze discovery and innovation at the frontiers of STEM learning, education, and evaluation in formal and informal settings. Consistent with the goals of the REESE program, this strand encourages proposals that seek to contribute to both far-reaching, transformative, and longer-term developments in knowledge and theory, as well as those that address shorter-term problems and topics in STEM teaching, learning, and evaluation.

A secondary goal of the strand is to broaden and deepen the pool of investigators engaged in STEM educational research, by bringing their communities into closer and more systematic interaction with another. In order to address this goal, investigators must pair with a mentoring scholar in the to-be-learned field. Proposals therefore have both a research and a professional development component. Each proposal must consist of *one* individual who will serve as the mentor and *one* individual who will be mentored. FIRE is open as to whether the mentor is designated as the PI and the mentee as the co-PI, or vice versa, as allowed by their institutions. Other personnel and co-PIs are allowed, but the role of the mentor should be clearly described.

Investigators may receive an award at any point in their post-graduate careers, whether at a more junior (e.g., immediately after earning a doctorate) or senior level (e.g., mid-career or later). Awards are open to investigators who have received a doctoral degree in a disciplinary STEM field outside of education proper and wish to pursue research in learning and education, or who have received a doctoral degree from an educational research program and wish to complement their expertise with training in a disciplinary STEM field outside of education. For the purposes of this solicitation, FIRE defines non-education STEM fields as those communities largely represented by a program at NSF in the directorates of Biological Sciences (BIO), Computer and Information Sciences and Engineering (CISE), Engineering (ENG), Geosciences (GEO), Mathematics and Physical Sciences (MPS), or Social, Behavioral and Economic Sciences (SBE), or the Office of Polar Programs (OPP).

Investigators must propose a research project on STEM learning or education to be conducted under the direction of one or more collaborating mentors. Some examples of appropriate collaborations include: a developmental psychologist working with a curriculum developer; a biology education researcher working with a geneticist; a mathematics teacher educator working with an organization or systems analyst; a neuroscientist working with a special educator; a learning scientist working with a labor economist; a test developer working with a mathematician; a communications expert working with an expert on STEM workforce issues; a cognitive psychologist working with an undergraduate engineering education professor; a chemist working with a social science methodologist; a sociologist working with a museum exhibit designer; a computational linguist working with an assessment developer; a statistician or program evaluator working with an educational psychologist; and a science educator working with a philosopher of science. These are but a few possible collaborations the FIRE strand would welcome. Investigators are encouraged to contact a REESE Program Officer should they have any questions about whether the collaboration they wish to propose is appropriate for this solicitation.

The program focuses primarily on supporting interdisciplinary and multidisciplinary research activities. Investigators should describe the educational or learning problem being addressed, the importance of the problem to STEM education, the specific research hypotheses, the relevant research literatures and how they might contribute to a solution, the research design including methodological details and a data analysis plan, and an anticipated timeline for the activities to be carried out under the award. Investigators should also describe what their professional development goals are and what activities they will engage in to achieve those goals (e.g., courses or seminars participated in, lab groups joined). The proposal should make clear the collaborative activities among the investigators, how these activities will develop capacity in STEM educational research, and why an interdisciplinary collaboration is essential to make progress on the educational issue addressed. Finally, proposals should describe possible outcomes as well as the audiences that the project is intended to affect directly. These outcomes could include the submission of manuscripts on the research to specific peer-reviewed journals or the submission of a full proposal to another NSF program.

References

Rhoten, D., & Parker, A. (2004). Risks and rewards of an interdisciplinary research path. *Science*, *306*, 2046.

The National Academies (2005). *Facilitating Interdisciplinary Research*. Washington, DC: National Academy Press.

III. AWARD INFORMATION

Anticipated Type of Award: Continuing Grant or Standard Grant

Estimated Number of Awards: 8 to 10 FIRE awards will be funded, pending availability of funds.

Anticipated Funding Amount: $3,2000,000 to $4,000,000 for FIRE awards in FY 2011, pending availability of funds. The maximum award for FIRE projects is $400,000, with duration of up to two years. Estimated program budget, number of awards and average award size/duration are subject to the availability of funds.

IV. ELIGIBILITY INFORMATION

Organization Limit:

    None Specified

PI Limit:

    Each proposal must consist of *one* individual who will serve as the mentor and *one* individual who will be mentored. FIRE is open as to whether the mentor is designated as the PI and the mentee as the co-PI, or vice versa, as allowed by their institutions. Other personnel and co-PIs are allowed, but the role of the mentor should

be clearly described. Investigators may receive an award at any point in their post-graduate careers, whether at a more junior (e.g., immediately after earning a doctorate) or senior level (e.g., mid-career or later). Both the individual who will act as mentor and the individual who will be mentored must have obtained their respective doctoral degrees by date of award.

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

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.

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

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.4 of the Grant Proposal Guide provides additional information on collaborative proposals.

The following information supplements the standard GPG or NSF Grants.gov Application Guide proposal preparation guidelines:

1. **PIs.** FIRE is open as to whether the mentor is designated as the PI and the investigator as the co-PI, or vice versa, as allowed by their institutions. In preparing a budget, the investigator (the person seeking to learn a new field) and the collaborating mentor should not be listed as post-docs or other personnel. While it is possible that the investigator will work with more than one person (who may be co-PIs or other personnel), the proposal should designate one person alone as the mentor, and this role should be described clearly in the proposal.
2. **Project Description**. This section should include a description of the research plan, the investigator's professional development plans, and possible project outcomes and their intended audiences.
3. **Biographical Sketches** (not to exceed 2 pages each). Include biographical sketches for the investigator, the mentor, and other senior personnel.
4. **Budget**. The maximum award size, including direct and indirect costs, is $400,000 over two years. This can include salary for the investigator and up to one month of salary for the mentor each year.
5. **Mentor's statement** (not to exceed 2 pages). Include a statement from the mentor as a Supplementary Document. The letter should describe the investigator's merits, how the mentor and the research setting can support the investigator's goals, and the mentor's willingness to serve in such a capacity. **This statement is in addition to the one page Postdoctoral Researcher Mentoring Plan which is required for each proposal that requests funding (in budget line B.1) to support postdoctoral researchers.**
6. **Project Evaluation**. All projects must have a brief evaluation plan as part of the 15-page project description. An independent board of 3-5 members should serve both advisory and evaluative roles. In addition to the board, the investigator may propose to include other evaluative components in the plan depending on the needs of the investigators and the nature of the project.

B. Budgetary Information

Cost Sharing: Inclusion of voluntary committed cost sharing is prohibited

Budget Preparation Instructions: The budget should include a request for funds to cover the cost of attendance of the PI at each year's annual awardee meeting in Arlington, VA.

C. Due Dates

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

D. FastLane/Grants.gov Requirements

- **For Proposals Submitted Via FastLane:**

  Detailed technical instructions regarding the technical aspects of preparation and submission via FastLane are 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.

  Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the Grant Proposal Guide for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Further instructions regarding this process are available on the FastLane Website at: https://www.fastlane.nsf.gov/fastlane.jsp.

- **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. The Grants.gov's Grant Community User Guide is a comprehensive reference document that provides technical information about Grants.gov. Proposers can download the User Guide as a Microsoft Word document or as a PDF document. The Grants.gov User Guide is available at: http://www.grants.gov/CustomerSupport. In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding 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.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program where they will be reviewed if they meet NSF proposal preparation requirements. 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 who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the 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.

A. NSF Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two NSB-approved merit review criteria are listed below. The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgements.

What is the intellectual merit of the proposed activity?
How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?
How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website at: http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf.

Mentoring activities provided to postdoctoral researchers supported on the project, as described in a one-page supplementary document, will be evaluated under the Broader Impacts criterion.

NSF staff also will give careful consideration to the following in making funding decisions:

Integration of Research and Education
One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide

abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- 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.

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 formulate a recommendation to either support or decline each proposal. 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 is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, 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.

In all cases, 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 and 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.

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 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 at least 90 days before the end of the current budget period. (Some programs or awards require more frequent project reports). Within 90 days after 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 that PI. 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 FastLane, for preparation and submission of

annual and final project reports. Such reports provide information on activities and findings, project participants (individual and organizational) publications; and, other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report 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.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Jinfa Cai, telephone: (703) 292-8620, email: jcai@nsf.gov

- James Dietz, telephone: (703) 292-5156, email: jdietz@nsf.gov

- Janice M. Earle, telephone: (703) 292-5097, email: jearle@nsf.gov

- Gavin W. Fulmer, telephone: (703) 292-7998, email: gfulmer@nsf.gov

- Elmima C. Johnson, telephone: (703) 292-5137, email: ejohnson@nsf.gov

- Janet Kolodner, telephone: (703) 292-8930, email: jkolodne@nsf.gov

- Celestine H. Pea, telephone: (703) 292-5186, email: cpea@nsf.gov

- Kusum Singh, telephone: (703) 292-5110, email: Kusingh@nsf.gov

- Gregg Solomon, telephone: (703) 292-8333, email: gesolomo@nsf.gov

- Larry E. Suter, telephone: (703) 292-5144, email: lsuter@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, National Science Foundation Update is a free e-mail subscription service 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 Regional Grants Conferences. Subscribers are informed through e-mail when new publications are issued that match their identified interests. Users can subscribe to this service by clicking the "Get NSF Updates by Email" link on the NSF web site.

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this new 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."

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