

# NSF GRADUATE TEACHING FELLOWS IN K-12 EDUCATION (GK-12)

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## Program Solicitation

**NSF 06-556**

*Replaces Document NSF 05-553*



### National Science Foundation

Directorate for Education and Human Resources

Division of Graduate Education

Directorate for Biological Sciences

Directorate for Computer and Information Science and Engineering

Directorate for Engineering

Directorate for Geosciences

Directorate for Mathematical and Physical Sciences

Directorate for Social, Behavioral, and Economic Sciences

Office of Polar Programs

### Letter of Intent Due Date(s) (required):

May 05, 2006

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

June 19, 2006

## REVISIONS AND UPDATES

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In furtherance of the President's Management Agenda, in Fiscal Year 2006, NSF has identified programs that will offer proposers the option to utilize Grants.gov to prepare and submit proposals. Grants.gov provides a single Government-wide portal for finding and applying for Federal grants online.

Proposers may opt to submit proposals in response to this Program Solicitation via Grants.gov or via the NSF FastLane system.

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

- A. All collaborative proposals must be submitted via the NSF FastLane system. This includes collaborative proposals submitted:
  - by one organization (and which includes one or more subawards); or
  - as separate submissions from multiple organizations.

Proposers are advised that collaborative proposals submitted in response to this Program Solicitation via Grants.gov will be requested to be withdrawn and proposers will need to resubmit these proposals via the NSF FastLane system. (Chapter II, Section D.3 of the Grant Proposal Guide provides additional information on collaborative proposals.)

- B. All Other Types of Proposals That Contain Subawards. All other types of proposals that contain one or more subawards also must be submitted via the NSF Fastlane system. (Chapter II, Section C.2.g. (vi)(e) of the Grant Proposal Guide provides additional information on subawards.)

**The following items are major revisions and updates to the previous version of this program solicitation:**

1. Award size and duration of awards: The GK-12 program is transitioning to offering only non-renewable 5 year awards for up to \$600,000 per year. In this competition we will be offering New awards (5 years/\$600,000 per year) and will also offer Continuing projects (3 years/\$600,000 per year) to those projects that have received initial funding as Track 1 awards. Those projects that have received 5 or more years of GK-12 funding are not eligible for Continuing projects. We are no longer offering Track 1 or Track 2 awards as in previous years.
2. New text has been added to clarify program goals:
  - “In essence, fellows will bring their scientific research experience to the schools, so that teachers and K-12 students are exposed to what science is all about, how science is done, how discoveries happen and what scientists do.”
  - “The GK-12 program is an opportunity to bring the excitement and the results of science to schools and to create cultural changes both in K-12 schools and in institutions of higher education. It is also an opportunity for fellows to acquire skills that normally are not emphasized in a more traditional STEM graduate program so that they can have additional career options as professional scientists and engineers.”
3. Language involving an International component has been added: New and Continuing projects are encouraged to involve fellows and teachers in international research and education experiences. PIs may either include an international component in the proposal or request supplementary funding.
4. Under Project Focus (Section III) new language has been added:
  - “Projects may be organized on a single or interdisciplinary theme. Theme(s) should involve a diverse group of fellows and faculty. Projects focused on interdisciplinary theme(s) are encouraged.”
5. Under eligibility requirements for fellows, the following limitations have been added:
  - “Graduate students pursuing degrees in science education are not eligible.”
  - “Fellows can be supported on the grant for no more than 2 years.”
6. New text has been added under Recruitment and Selection (Section V) to encourage PIs to enhance diversity in their GK-12 projects by linking with NSF supported programs in their campus that involve recruitment, retention and professional development of students:
  - “Describe the nature and extent of connections with existing programs at their institutions, particularly those supported by NSF, that involve recruitment, retention and professional development of students such as Alliances for Graduate Education and the Professoriate (AGEP), Louis Stokes Alliances for Minority Participation (LSAMP), Tribal Colleges and Universities Program (TCUP), Historically Black Colleges and Universities Undergraduate Program (HBCU-UP), and the Centers for Research Excellence in Science and Technology (CREST).”
7. Evaluation: While the previous solicitation required an evaluation plan, projects now must include an external evaluator. This person should not be a project Co-PI. The evaluation plan should include formative and summative evaluations with qualitative and quantitative components.
8. REESE linkage: Under Other Programs of Interest, information related to the Research and Evaluation on Education in Science and Engineering (REESE) replaces the information related to the former Research on Learning and Education (ROLE) program.

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## **SUMMARY OF PROGRAM REQUIREMENTS**

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### **General Information**

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**Program Title:**

## Synopsis of Program:

This program provides funding to graduate students in NSF- supported science, technology, engineering, and mathematics (STEM) disciplines to acquire additional skills that will broadly prepare them for professional and scientific careers in the 21<sup>st</sup> century. Through interactions with teachers in K-12 schools, graduate students can improve communication and teaching skills while enriching STEM instruction in K-12 schools. Through this experience graduate students can gain a deeper understanding of their own scientific research. In addition, the GK-12 program provides institutions of higher education with an opportunity to make a permanent change in their graduate programs by incorporating GK-12 like activities in the training of their STEM graduate students. **Expected outcomes include improved communication, teaching and team building skills for the fellows; professional development opportunities for K-12 teachers; enriched learning for K-12 students; and strengthened partnerships between institutions of higher education and local school districts.**

## Cognizant Program Officer(s):

- Sonia Ortega, Program Director, Directorate for Education & Human Resources, Division of Graduate Education, 875 S, telephone: (703) 292-8697, fax: (703) 292-9048, email: [sortega@nsf.gov](mailto:sortega@nsf.gov)
- Carolyn L. Piper, Assistant Program Director, Directorate for Education & Human Resources, Division of Graduate Education, 875 S, telephone: (703) 292-8697, fax: (703) 292-9048, email: [cpiper@nsf.gov](mailto:cpiper@nsf.gov)

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

- 47.074 --- Biological Sciences
- 47.070 --- Computer and Information Science and Engineering
- 47.076 --- Education and Human Resources
- 47.041 --- Engineering
- 47.050 --- Geosciences
- 47.049 --- Mathematical and Physical Sciences
- 47.078 --- Office of Polar Programs
- 47.075 --- Social, Behavioral and Economic Sciences

## Eligibility Information

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### • Organization Limit:

Only academic institutions in the United States and its territories that grant masters or doctoral degrees in STEM disciplines supported by the National Science Foundation (NSF) may submit proposals.

### • PI Eligibility Limit:

The PI must be a faculty member at the lead institution in a STEM discipline.

- **Limit on Number of Proposals:** One per institution, either New or Continuing for any one competition.

## Award Information

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- **Anticipated Type of Award:** Continuing Grant
- **Estimated Number of Awards:** 25 including New and Continuing projects
- **Anticipated Funding Amount:** \$16,000,000 approximately in FY 2007 (pending availability of funds.)

## Proposal Preparation and Submission Instructions

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### A. Proposal Preparation Instructions

- **Letters of Intent:** Submission of Letters of Intent is required. Please see the full text of this solicitation for further information.

- **Full Proposal Preparation Instructions:** This solicitation contains information that supplements the standard Grant Proposal Guide and NSF Grants.gov Application Guide guidelines.
  - Full proposals submitted via FastLane:
    - Grant Proposal Guide (GPG) Guidelines apply
  - 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/bfa/dias/policy/docs/grantsgovguide.pdf>) To obtain copies of the Application Guide and Application Forms Package: click on the Apply tab on the Grants.gov website, 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.

## B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required by NSF.
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

## C. Due Dates

- **Letters of Intent (required):**  
May 05, 2006
- **Full Proposal Deadline Date(s)** (due by 5 p.m. submitter's local time):  
June 19, 2006

## Proposal Review Information

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- **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

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- **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**

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The National Science Foundation (NSF) recognizes that graduate students in science, technology, engineering and mathematics (STEM) must be prepared with the necessary skills to face the career challenges of the 21st century. In addition to research competencies, STEM graduate students must be able to communicate science and their research findings not only to other scientists but also to the general public. NSF also recognizes that STEM graduate students can contribute to the national effort to advance scientific knowledge in K-12 schools through partnerships with K-12 teachers. These partnerships offer graduate students an opportunity to bring cutting-edge research findings to K-12 classrooms and integrate those findings with the teaching of STEM in K-12 schools. These interactions also stimulate interest in science and engineering among K-12 students. To support these opportunities, NSF continues to offer the Graduate Teaching Fellows in K-12 Education (GK-12) program.

Through the GK-12 program, institutions of higher education have an opportunity to make a permanent change in STEM graduate education programs and to create strong and enduring partnerships with K-12 schools.

GK-12 is one of three major fellowship/traineeship programs offered and managed by NSF's Division of Graduate Education (DGE) in the Directorate for Education and Human Resources (EHR). GK-12 is an NSF-wide activity supported by the Directorates for Education and Human Resources (EHR), Biological Sciences (BIO), Computer and Information Science and Engineering (CISE), Engineering (ENG), Geosciences (GEO), Mathematical and Physical Sciences (MPS), Social Behavioral and Economic Sciences (SBE), and the Office of Polar Programs (OPP). Additional information concerning the program can be found on the GK-12 website. [http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=5472&org=DGE&from=home](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5472&org=DGE&from=home).

## **II. PROGRAM DESCRIPTION**

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The objectives of the GK-12 program are: 1) to support highly qualified graduate students in NSF- supported STEM disciplines through fellowships to provide them with an opportunity to acquire additional skills that will broadly prepare them for professional and scientific careers in the 21st century; 2) to improve STEM instruction in K-12 schools; and 3) to provide institutions of higher education with an opportunity to make a permanent change in their graduate programs by incorporating GK-12 like activities in the training of their STEM graduate students. Expected project outcomes include:

- improved team building, communication and teaching skills for fellows;
- content gain and professional development opportunities for K-12 teachers;
- enriched learning by K-12 students; increased interest in STEM by K-12 students;
- incorporation of GK-12 like activities as an integral part of the institution's graduate programs in STEM;
- strengthened partnerships between higher education institutions and local school districts; and
- reporting of project activities and outcomes to promote best practices in STEM graduate education.

GK-12 fellows, selected by awardee institutions, will work directly with K-12 teachers in and out of the classroom to, for example: integrate scientific methods in the teaching and learning of STEM disciplines; provide role models for future STEM professionals; enhance K-12 teachers' content knowledge and understanding of principles of mathematics and the sciences; and jointly design and deliver K-12 science and mathematics instruction. In essence, fellows will bring their scientific research

experience to the schools, so that teachers and K-12 students are exposed to what science is all about, how science is done, how discoveries happen and what scientists do. The GK-12 program is an opportunity to bring the excitement and the results of science to schools and to create changes both in K-12 schools and in institutions of higher education. It is also an opportunity for fellows to acquire skills that normally are not emphasized in a more traditional STEM graduate program and broaden their career options as professional scientists and engineers.

Principal Investigators (PIs), university and school administrators, K-12 teachers and STEM faculty must work together in the development of the GK-12 proposal. It is strongly recommended that a partnership among all potential parties involved in the proposed project be developed early. For example, PIs and school administrators are encouraged to discuss such issues as the types of incentives and resources necessary to support participation of teachers in GK-12 projects and the projects that will best serve the needs of the participating schools and teachers.

Although training activities on the campus of an institution of higher education may be part of the project plan, it is expected that the preponderance of fellows' activities with teachers and students will occur in K-12 schools. It is understood that research advisors will be supportive of fellows' activities in K-12 schools. PIs are encouraged to establish collaborative arrangements with other institutions (e.g. industry, non-profit organizations, and museums) to support their activities.

The GK-12 program is transitioning to offering only non-renewable 5 year awards for up to \$600,000 per year. In this competition we will be offering New awards (5 years/\$600,000 per year) and will also offer Continuing projects (3 years/\$600,000 per year) to those projects that have received initial funding as Track 1 awards. Those projects that have received 5 or more years of GK-12 funding are not eligible for Continuing projects. We are no longer offering Track 1 or Track 2 awards as in previous years.

For New and Continuing projects: the GK-12 program continues to encourage PIs to involve fellows and teachers in international research and education experiences. PIs may either include an international dimension in their GK-12 proposals, or request supplementary funding to active awards for international activities by contacting the managing program officer for their award. They can also contact NSF's Office of International Science and Engineering (OISE) staff with expertise in the country or region of interest for information about institutions and counterpart agencies. (Contacts for cognizant program manager(s) are available from the OISE home page – <http://www.nsf.gov/div/index.jsp?div=OISE>).

### III. ELIGIBILITY INFORMATION

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#### A. Academic Institutions\*

Academic institutions in the United States and its territories that grant masters or doctoral degrees in STEM disciplines supported by NSF are eligible to apply. Projects may involve more than one institution, but a single institution must accept overall management responsibility. In any one competition, an institution may submit only one proposal as lead from either a single-institution or from a multi-institutional proposal. This includes New and Continuing projects.

Non-academic institutions, industry, non-profit organizations and museums may serve as collaborating organizations.

\*An academic institution is defined as a separate legal and fiscal entity, whether at the central or system level, or branch campus level, which can receive awards and which is separately and consistently identified at that level for federal research and development reporting purposes through a Federal Entity Number. NSF institution codes ARE NOT entity numbers.

#### B. Project Focus

Projects involving any of the STEM fields normally supported by NSF are eligible. Projects may draw participants from two or more departments within one institution or from more than one institution. Projects may be organized on a single or interdisciplinary theme. Theme(s) should involve a diverse group of fellows and faculty. Projects focused on interdisciplinary theme(s) are encouraged.

#### C. Principal Investigator

The PI must be a faculty member at the lead institution in a STEM discipline supported by NSF and should serve as the director of the GK-12 project. Any appropriate faculty or administrator at universities, K-12

schools or partnership institutions may serve as Co-PI.

#### D. Graduate Fellows

GK-12 fellows will be selected by awardee institutions. During their tenure as fellows, they must be full time graduate students pursuing degrees (master's or PhD) in STEM disciplines. Graduate students pursuing degrees in science education are not eligible. Fellows must be citizens, nationals or permanent residents of the United States. Foreign students who hold student visas are not eligible. Fellows can be supported on the grant for no more than 2 years. Institutions are encouraged to recruit, retain and mentor fellows that are women, underrepresented minorities, or persons with disabilities.

#### E. GK-12 Teachers

GK-12 teachers should have sufficient experience in pedagogy to help improve the communication and teaching skills of the GK-12 fellows.

### IV. AWARD INFORMATION

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#### A. Number and Size of Awards

The number of awards will vary depending upon the scope of projects and availability of funds. It is anticipated that approximately 25 total institutional awards will be made. The size for New and Continuing projects will be for up to \$600,000 per year. New awards will be for up to five years. Continuing projects will be for up to three years. The GK-12 program is transitioning to offering only non-renewable New awards for up to five years. In the meantime, those projects that have received initial funding for three years would be eligible to apply for an additional three years as stipulated above. Those projects that have received 5 or more years of funding are not eligible to apply for additional funds.

The anticipated funding amount in FY2007 is \$16 million, pending availability of funds.

#### B. Stipends and Allowances

The stipend for a graduate student will be \$30,000 for a 12-month tenure. NSF also provides a cost-of-education allowance for tuition, health insurance, and normal fees of \$10,500 per year per student (for 12 months). If this allowance is not fully required, then it may be used to support other GK-12 -related activities. All fellows will spend fifteen hours per week directly involved in GK-12 projects. It is recommended that fellows spend ten (10) of the fifteen (15) hours in a physical location where learning takes place.

The stipends for GK-12 teachers may be up to 15% of the funds allocated for a fellow's stipend (i.e. 15% of \$30,000 or \$4,500 per year). The stipends for GK-12 teachers may support participation in summer educational institutes, travel support for professional meetings, involvement in weekend and evening workshops, and after-hours mentoring of fellows through the project.

### V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

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#### A. Proposal Preparation Instructions

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##### **Letters of Intent (required):**

Letters of Intent must be submitted via the NSF FastLane System, even if full proposals will be submitted via Grants.gov. A Letter of Intent (LOI) is required for all (New and Continuing) proposals including those that were declined in previous years and are re-applying to the program. The Letter of Intent is not a preliminary proposal. It is limited to one single-spaced page and it must contain the following:

Title of Project:

Institution:

PI/Co-PI:

Faculty advisors and departments involved:

Number of graduate fellows per year:

Number of K-12 classes anticipated to be served/year:

Number of K-12 teachers working with the fellows:

School District Partners:

Target audience of the project (middle, high or elementary grades):

Setting: Urban, suburban or rural

NSF supported disciplines or theme(s) involved:

Include an overview of the proposed project (indicate whether the project is New or Continuing, its goals and objectives, and innovative aspects of the project. Indicate how STEM knowledge will be brought to the classrooms by the fellows.

Program staff will use the Letters of Intent to guide the selection of reviewers. PIs should not expect feedback on their Letters of Intent beyond acknowledgement of their receipt.

Letters of Intent should serve as a basis for the Project Summary section (below).

Letters of Intent must be submitted via the LOI module in FastLane (<http://www.fastlane.nsf.gov/>) and must be received by May 5, 2006.

### **Full Proposal Instructions:**

In furtherance of the President's Management Agenda, in Fiscal Year 2006, NSF has identified programs that will offer proposers the option to utilize Grants.gov to prepare and submit proposals. Grants.gov provides a single Government-wide portal for finding and applying for Federal grants online.

Proposers may opt to submit proposals in response to this Program Solicitation via Grants.gov or via the NSF FastLane system.

- Proposals submitted via the FastLane system:

Proposals submitted in response to this Program Solicitation via FastLane 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](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 [pubs@nsf.gov](mailto:pubs@nsf.gov).

- 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/bfa/dias/policy/docs/grantsgovguide.pdf>). 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, i.e., the Program Solicitation Number, 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 [pubs@nsf.gov](mailto:pubs@nsf.gov).

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

- A. Collaborative Proposals. All collaborative proposals must be submitted via the NSF FastLane system. This includes collaborative proposals submitted:
- by one organization (and which includes one or more subawards); or
  - as separate submissions from multiple organizations.

Proposers are advised that collaborative proposals submitted in response to this Program Solicitation via Grants.gov will be requested to be withdrawn and proposers will need to resubmit these proposals via the NSF FastLane system. (Chapter II, Section D.3 of the Grant Proposal Guide provides additional information on collaborative proposals.)

- B. All Other Types of Proposals That Contain Subawards. All other types of proposals that contain one or more subawards also must be submitted via the NSF Fastlane system. (Chapter II, Section C.2.g. (vi)(e) of the Grant Proposal Guide provides additional information on subawards.)

The following information supplements the Grant Proposal Guide and the NSF Grants.gov Application Guide.

Proposals must contain the following elements in the order indicated. Proposals that do not strictly adhere to the specified page and font limitations (given below) will be ineligible for consideration and will be returned without review.

1. **COVER SHEET FOR PROPOSALS:** Proposers must identify the program solicitation number stated at the beginning of this document in the program solicitation block on the proposal Cover Sheet. In the title section of the Cover Sheet, enter either " New, GK-12" or "Continuing, GK-12" at the beginning of the proposal title.
2. **PROJECT SUMMARY:** This section, limited to one single-spaced page, prepared in a standard font (no smaller than Times New Roman 12), must be suitable for publication and should contain two sections (see below): 1) a List of Project Elements, followed by 2) a Project Summary. In addition, Continuing proposals should specifically include a short summary of significant outcomes of their previous project.

#### List of Project Elements

Title of Project:

Institution:

PI/Co-PI:

Number of graduate fellows per year:

Number of K-12 classes anticipated to be served/year:

Number of K-12 teachers working with the fellows:

School District Partners:

Target audience of the project (middle, high or elementary grades):

Setting: Urban, suburban or rural

NSF supported disciplines/theme(s) involved:

Project Summary: Include a brief description of the project, objectives, STEM research/disciplinary theme(s), and innovative aspects of the project. Indicate how fellow-teacher partnerships will be initiated and enhanced during the lifetime of the project. Describe how the fellows will integrate their STEM knowledge and research experience into the K-12 STEM classes. **Explicitly indicate in separate statements the intellectual merit and broader impacts of the project proposed. NSF will return without review proposals that fail to address both of these criteria in the summary.** Include benefits to be achieved by all participants in the project, the fellows, teachers, K-12 students, and K-12 and higher education institutions. If the proposal is funded, NSF staff will edit the Project Summary, and will publish it along with abstracts of other awards.

3. **PROJECT DESCRIPTION:** This section is limited to 15 single spaced pages including any visual materials. It must be prepared in standard font no smaller than Times New Roman 12. The Project Description should include the following subsections (a-h):

- a. **Results from Prior NSF Support:** Provide information about relevant funding that the PI or co-PI(s) received during the past five years related to GK-12 activities. For each project cited indicate the NSF award number, amount and period of support and PIs, co-PIs, and/or partner organizations involved. Indicate how the proposed project is different than previously funded NSF proposals.
- b. **Goals and Objectives:** Provide the conceptual focus, goals, and objectives of the project. Describe the research/disciplinary theme(s) and activities that will form the foundation for the project.
- c. **Project Plan:** It is important to indicate in this section not only what activities will be conducted but also how they will be implemented. Include disciplinary theme(s) addressed and mechanisms of operation. Indicate the number of fellows that will be available in any given school district and the specific schools involved. Indicate how the fellows will be recruited, selected and assigned to schools and classes. Outline plans to prepare fellows to bring STEM findings, scientific methodology and cutting-edge research experience into the classroom.

Incorporate training activities for fellows including communication, team building, methods for scientific inquiry, pedagogical skills and cultural competency (when appropriate). Clearly state what the fellows will be doing and how they will enhance K-12 STEM knowledge and instruction in the specified school district, including as appropriate, their role in implementing inquiry-based instructional strategies and materials. Describe how fellows' activities will contribute to deeper understanding of their own scientific research. Describe workshops and professional development activities for GK-12 teachers. Explain how these activities will be used to help increase teacher content and scientific process pedagogy.

Describe the level and type of participation by the institution(s) of higher education, K-12 school district(s), and any collaborating organization(s). Indicate any relevant history of the higher education department(s) in K-12 involvement and how the proposed activities will be aligned with educational needs of K-12 schools. Describe how the project will be aligned with mathematics and science standards established by national organizations, states and school districts. Describe implementation plans involving special populations in K-12 schools (e.g. women, underrepresented minorities, students at risk, with disabilities, with English as second language, etc.).

Clarify in sufficient detail the benefits to fellows, GK-12 teachers, universities and K-12 schools. For projects that include an international component, describe the procedures and arrangements for selecting, preparing and sending teams of GK-12 fellows and teachers to foreign sites for research and education collaboration, including how their activities abroad will be integrated into and benefit the overall GK-12 project. Discuss how specific projects and activities will be determined for fellows and teachers teams. Discuss how the disciplinary research advisors might be involved. Address the practical aspects of sending US fellows and teachers abroad, including logistical arrangements, language and cultural issues, in country hosts, and administrative requirements. Discuss the benefits of international research and education experiences for the career development of fellows and teachers.

Indicate how you plan to implement GK-12 type activities as an integral part of the institution's STEM graduate education program(s); how you plan to establish K-12-university partnerships; and how they will serve as a mechanism to advance STEM

education.

Indicate how participating fellows, GK-12 teachers and schools will be followed longitudinally to determine indicators of project impact and sustainability such as: length of time that fellows take to degree completion compared to other graduate students, career choices and the use of newly acquired skills; increased teacher expertise in science and mathematics, teaching methods adapted, participation in professional development activities in STEM; number of schools or teachers requesting GK-12 partnerships, changes in student STEM interest and competence level; number of faculty and students participating in GK-12 activities, changes in faculty and/or department support and practices related to GK-12 activities, and overall impact on the institution.

Indicate strategies to develop partnerships with other organizations (e.g. industry) as potential collaborators and future sources of funding for project sustainability.

- d. **Recruitment and Selection:** Describe plans and procedures for the recruitment and selection of fellows, including specific provisions for success with women, underrepresented minorities and persons with disabilities. Provide reasonable estimates of the number of potential fellows eligible and likely to be interested in participating. Describe the nature and extent of connections with existing programs at their institutions, particularly those supported by NSF, that involve recruitment, retention and professional development of students such as Alliances for Graduate Education and the Professoriate (AGEP), Louis Stokes Alliances for Minority Participation (LSAMP), Tribal Colleges and Universities Program (TCUP), Historically Black Colleges and Universities Undergraduate Program (HBCU-UP), and the Centers for Research Excellence in Science and Technology (CREST). Also describe plans for the recruitment and selection of GK-12 teachers.
- e. **Organization, Management, and Institutional Commitment:** The Principal Investigator (PI) will have overall responsibility for the administration of the award, the management of the project, and interactions with the NSF. The PI and the home institution are expected to develop an administrative structure that enables faculty, GK-12 teachers, school administrators, fellows, and others involved in the group effort to interact productively during the award period. The PI is expected to be an integral participant in the education and training activities of the GK-12 project. Include plans and procedures for the development of a management team for the proposed activity indicating how the responsibilities among team members will be allocated (e.g. who will select the fellows, who will coordinate activities of fellows and GK-12 teachers, how fellows' advisors will be involved).

Include a statement from the institution of higher education that the NSF funds will not replace financial resources already assigned to science and mathematics education. Provide a similar statement from the superintendent of the K-12 district. The statement(s) with the original signature may be electronically scanned and incorporated as a PDF file into the Supplementary Documentation (see item 7 below).

Describe how the activities will be sustained after the period of NSF funding. Provide a clear statement elaborating which of the proposed activities are likely to be institutionalized by the end of the grant period, and which of the proposed activities will require further sources of support in order to be continued.

- f. **Evaluation:** Describe an evaluation plan to assess the project's success in meeting its goals and objectives. Each project should include an external evaluator to develop an evaluation plan. The external evaluator should not be a project Co-PI. The evaluation plan should include formative and summative pieces. The formative component(s) of the evaluation should be used as a tool to inform the Principal Investigator of project progress toward meeting goals, objectives and the impact of the project on participants. The summative component(s) of the evaluation should be used as a tool to create a picture of project progress toward meeting goals, objectives and the impact on participants over time.

Both the formative and summative evaluations should include qualitative and quantitative components. The qualitative and quantitative components should capture the perspectives and benefits for the fellow and the K-12 Teacher. It is also recommended that the involvement of faculty advisors and K-12 administrators participating in the project be evaluated. The evaluation plan should describe performance indicators and other specific measures that will be used by the project team to assess the project's success in meeting its goals and objectives. Although each project should propose its own types of specific

qualitative and quantitative measures, some later standardization is anticipated so that NSF can conduct a program-wide evaluation of effectiveness.

- g. **List of Faculty Participants:** Include departmental and, if appropriate, institutional affiliation of all faculty participants expected to mentor fellows or to otherwise play an important role in the project. Indicate how the fellows' research advisors will be involved and how they will provide feedback to the fellows. Fellows' research advisors are expected to observe how fellows present their research findings, scientific concepts and methodology to K-12 students. In addition, research advisors are encouraged to attend fellows' presentations on their GK-12 experience at the end of their tenure. Research advisors are encouraged to engage with the fellows in discussions regarding career development opportunities. They are also encouraged to collaborate with the GK-12 external evaluator in the assessment of fellows' development of professional skills (communication, teaching, team building).
- h. **School District Involvement:** Include a brief summary of school district participation and a list of participating school districts. A statement from the superintendent(s) of the participating K-12 school district(s) must also be included with the application. The statement(s) with the original signature may be electronically scanned and incorporated as a PDF file into the Supplementary Documentation (see item 7 below).

**Additional Elements for Continuing Proposals:**

In the Results from Prior NSF Support (section V.A.3.a.) Continuing proposals should also describe the earlier GK-12 project(s), outcomes, ongoing progress and lessons learned. If appropriate, indicate how these serve as a base for or will be incorporated into the proposed project. Include specific outcomes for fellows, GK-12 teachers and students; the nature of current partnerships (especially with schools); the interest and contributions of faculty and administrators including those that are not members of the leadership team; and a summary of the supporting infrastructure.

Indicate the project's potential as a national model and as contributor to research on STEM graduate education. For example, indicate how your project is contributing to building a research community that can address current trends in STEM graduate education and how your project is broadening the diversity of students in STEM graduate education.

In the Organization, Management and Institutional Commitment (section V.A.3.e.), describe the infrastructure already developed to support the GK-12 project, include any plans for changing it, the reasons for the planned changes, and the partnership's plans for maintaining this infrastructure once the partnership has become self-sustaining. Indicate strategies and commitments for sustainability of funding beyond NSF support.

- 4. **REFERENCES CITED:** Any literature cited should be specifically related to the proposed project, and the Project Description should make clear how each reference has played a role in the motivation for or design of the project.
- 5. **BIOGRAPHICAL SKETCHES:** This section must not exceed 2 pages per individual. For each of the personnel listed by name on the budget page and each person included on the list of faculty participants (section V.A.3.g), provide a Biographical Sketch highlighting information that will help in understanding the qualifications that this individual will bring to the GK-12 project. This Biographical Sketch should include information about recent training activities such as the number and names of graduate students who carried out research under the faculty member's direction in each of the last three years. List the titles of courses taught by the faculty member during the past three years and include other relevant activities, such as organization of workshops or special courses. Include information related to activities conducted in collaboration with K-12 schools or other educational organizations. List current and past collaborators including those with whom the faculty member has co-authored papers within the past four years.
- 6. **CURRENT AND PENDING SUPPORT:** For each PI and Co-PI, you must indicate time commitments for all current and pending support from all agencies. This is not limited to NSF or other federal agency support.
- 7. **SUPPLEMENTARY DOCUMENTATION:** This section should not exceed 10 pages. It must include a statement from the institution of higher education and the superintendent(s) of the local K-12 school district(s) involved. The local superintendent(s) or chief school officer(s) who can represent the school district and honor its financial commitments must sign this statement. This statement should include some background about participating schools and demographics of the student population; specific STEM needs of participating schools or of the district in general; specific conditions in the K-12 schools in which fellows are expected to operate (e.g. availability of technology and/or

scientific materials); coordinated plans of the district to receive GK-12 fellows into its schools; financial commitments or other support to be provided for GK-12 teachers (e.g. release time, conference attendance, workshop participation, professional development units); and incentives, recognition and awards to be provided to GK-12 teachers for their participation in the GK-12 project.

## B. Budgetary Information

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### Cost Sharing:

Cost sharing is not required by NSF in proposals submitted under this Program Solicitation.

### Other Budgetary Limitations:

The costs of participants' (fellows, GK-12 teachers) travel, stipends, the costs of workshops, and the cost of education for fellows should be listed under Participant Support Costs. Separate the costs for fellows and GK-12 teachers in the Budget Justification. Also indicate the number of fellows and teachers anticipated. None of these costs should be included in the base used to calculate Indirect Costs.

### Budget Preparation Instructions:

Provide a Summary Proposal Budget for each year of support requested. FastLane will create the cumulative budget automatically. For proposals submitted via Grants.gov, please include a cumulative budget.

Recognizing the importance of infrastructure support and the significant involvement of faculty and GK-12 teachers, up to 30% of the budget may be designated for direct costs other than fellows' stipends, GK-12 Teacher stipends and cost-of-education allowances. These funds are intended to supplement institutional and school district resources in support of GK-12 activities.

Funds may be requested for personnel to develop and construct special instruments, for the purchase of computer software, or for other special-purpose materials related to the project. Use of inquiry-based educational materials such as those developed under NSF support is encouraged. The total requested for software and special-purpose materials may not exceed \$10,000.

Funds may be requested for professional development, training or workshop participation for GK-12 teachers. These expenses should be listed under Participant Support Costs.

Funds should be included for the PI and up to three participants to attend an annual meeting convened by NSF in the Washington, D.C. area. The participants should include at least one fellow and one GK-12 Teacher. Travel for PIs should be listed under Domestic Travel. Travel for fellows and teachers should be listed under Participant Support Costs.

Budget Justification: This section must not exceed 3 pages. A brief justification for funds in each budget category should be provided. List next to each item commented upon in the Budget Justification the corresponding letter and number of that item on the Budget Page.

## C. Due Dates

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Proposals must be submitted by the following date(s):

### Letters of Intent (*required*):

May 05, 2006

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

June 19, 2006

## D. FastLane/Grants.gov Requirements

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- **For Proposals Submitted Via FastLane:**

Detailed technical instructions for proposal 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](mailto: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 solicitation.

**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. Proposers are no longer required to provide a paper copy of the signed Proposal Cover Sheet to NSF. Further instructions regarding this process are available on the FastLane Website at: <http://www.fastlane.nsf.gov/>

- **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](mailto: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. PROPOSAL REVIEW INFORMATION**

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### **A. NSF Proposal Review Process**

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Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program Officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority-serving institutions, or adjacent disciplines to that principally addressed in the proposal.

The National Science Board approved revised criteria for evaluating proposals at its meeting on March 28, 1997 ([NSB 97-72](#)). All NSF proposals are evaluated through use of the two merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

On July 8, 2002, the NSF Director issued [Important Notice 127](#), Implementation of new Grant Proposal Guide Requirements Related to the Broader Impacts Criterion. This Important Notice reinforces the importance of addressing both criteria in the preparation and review of all proposals submitted to NSF. NSF continues to strengthen its internal processes to ensure that both of the merit review criteria are addressed when making funding decisions.

In an effort to increase compliance with these requirements, the January 2002 issuance of the GPG incorporated revised proposal preparation guidelines relating to the development of the Project Summary and Project Description. Chapter II of the GPG specifies that Principal Investigators (PIs) must address both merit review criteria in separate statements within the one-page Project Summary. This chapter also reiterates that broader impacts resulting from the proposed project must be

addressed in the Project Description and described as an integral part of the narrative.

Effective October 1, 2002, NSF will return without review proposals that do not separately address both merit review criteria within the Project Summary. It is believed that these changes to NSF proposal preparation and processing guidelines will more clearly articulate the importance of broader impacts to NSF-funded projects.

The two National Science Board approved merit review criteria are listed below (see the [Grant Proposal Guide](#) Chapter III.A for further information). 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 he/she is qualified to make judgments.

**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 and original 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?

NSF staff 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.

**Additional Review Criteria:**

For both New and Continuing proposals:

In light of the GK-12 program's objectives, reviewers will be asked to consider the above two merit review criteria with emphasis placed on:

- Integration of the disciplinary or interdisciplinary research theme(s) with the education activities of the fellows in K-12 schools as an intellectual focus for the project.
- Intellectual basis, quality and effectiveness of the planned education and training activities for fellows and GK-12 teachers to ensure professional development for both.
- Expected benefits to fellows, their institutions of higher education, K-12 students and their schools, and GK-12 teachers.
- Team composition and extent of collaboration between the proposing institution(s) of higher education and the participating K-12 school district(s).
- Effectiveness of the plans and procedures for the recruitment and selection of fellows and GK-12 teachers, including attention to diversity.
- Consistency of project designs with mathematics and science standards established by national organizations, states, and school districts.
- Potential of the project to incorporate GK-12 like activities as permanent features in the training of STEM graduate students.
- Plans for evaluation, assessment of project performance and dissemination of results.

Priority will be given to New proposals from institutions that have not received a previous GK-12 award.

Additional criteria for Continuing projects include:

- The quality and outcomes of the previous GK-12 project(s) and its dissemination.
- The likelihood for sustainability; the presence of a clear plan for incorporating GK-12 opportunities into the institution's STEM graduate education, including the necessary supporting infrastructure.
- The potential of the project for serving as a national model and for contributing to scholarly research about graduate education in STEM.

## **B. Review Protocol and Associated Customer Service Standard**

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All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/solicitation will be reviewed by 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.

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 Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

In most cases, proposers will be contacted by the Program Officer after his or her recommendation to award or decline funding has been approved by the Division Director. This informal notification is not a guarantee of an eventual award.

NSF is striving to be able to tell proposers whether their proposals have been declined or recommended for funding within six months. The time interval begins on the closing date of an announcement/solicitation, or the date of proposal receipt, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

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**

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### **A. Notification of the Award**

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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 Division 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.A. for additional information on the review process.)

### **B. Award Conditions**

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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 (NSF-GC-1); \* or Federal Demonstration Partnership (FDP) Terms and Conditions \* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC). Electronic mail notification is



the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

Consistent with the requirements of OMB Circular A-16, *Coordination of Geographic Information and Related Spatial Data Activities*, and the Federal Geographic Data Committee, all NSF awards that result in relevant geospatial data must be submitted to Geospatial One-Stop in accordance with the guidelines provided at: [www.geodata.gov](http://www.geodata.gov).

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, available electronically on the NSF Website at [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpm](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpm). The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Website at <http://www.gpo.gov/>.

\*These documents may be accessed electronically on NSF's Website at <http://www.nsf.gov/awards/managing/>. Paper copies of these documents may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [pubs@nsf.gov](mailto:pubs@nsf.gov).

## C. Reporting Requirements

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For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

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

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for the PI and all Co-PIs. 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. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, 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.

## VIII. CONTACTS FOR ADDITIONAL INFORMATION

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General inquiries regarding this program should be made to:

- Sonia Ortega, Program Director, Directorate for Education & Human Resources, Division of Graduate Education, 875 S, telephone: (703) 292-8697, fax: (703) 292-9048, email: [sortega@nsf.gov](mailto:sortega@nsf.gov)
- Carolyn L. Piper, Assistant Program Director, Directorate for Education & Human Resources, Division of Graduate Education, 875 S, telephone: (703) 292-8697, fax: (703) 292-9048, email: [cpiper@nsf.gov](mailto:cpiper@nsf.gov)

Members of the NSF wide GK-12 Committee represent their respective NSF organizations. They contribute funds as well as intellectual and labor capital to the program. In addition to the GK-12 staff, members of the GK-12 committee are:

- Deh-I Hsiung, Directorate for Education and Human Resources
- Roosevelt Johnson, Directorate for Education and Human Resources
- Joan Prival, Directorate for Education and Human Resources
- Celestine Pea, Directorate for Education and Human Resources
- Julio Lopez-Ferrao, Directorate for Education and Human Resources
- Sally O'Connor, Directorate for Biological Sciences
- Harriet Taylor, Directorate for Computer and Information Sciences and Engineering
- Mary Poats, Directorate for Engineering
- Elizabeth Rom, Directorate for Geosciences
- Henry Blount, Directorate for Mathematics and Physical Sciences
- Dana Lehr, Directorate for Mathematics and Physical Sciences
- Tyrone Mitchell, Directorate for Mathematics and Physical Sciences

- John Perhonis, Directorate for Social, Behavioral and Economic Sciences
- Bernhard Lettau, Office of Polar Programs

General inquiries regarding this program should be made to the GK-12 staff at [gk-12@nsf.gov](mailto:gk-12@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](mailto:support@grants.gov).

For questions related to the use of FastLane, contact:

- Yvette D. Jackson, Information Technology Specialist, Directorate for Education & Human Resources, Division of Graduate Education, 875 S, telephone: (703) 292-4925, fax: (703) 292-9048, email: [yjackson@nsf.gov](mailto:yjackson@nsf.gov)
- FastLane Help Desk, telephone: 1-800-873-6188, email: [fastlane@nsf.gov](mailto:fastlane@nsf.gov)

## IX. OTHER PROGRAMS OF INTEREST

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The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at <http://www.nsf.gov/cgi-bin/getpub?gp>. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. Any changes in NSF's fiscal year programs occurring after press time for the *Guide to Programs* will be announced in the NSF *E-Bulletin*, which is updated daily on the NSF Website at <http://www.nsf.gov/home/ebulletin>, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's *MyNSF News Service* (<http://www.nsf.gov/mynsf/>) to be notified of new funding opportunities that become available.

### Research and Evaluation on Education in Science and Engineering (REESE)

The Division of Graduate Education (DGE) joins the Division of Research, Evaluation, and Communication (REC) in calling your attention to the opportunity to request support for research and evaluation projects focused on graduate education. This opportunity is embedded in a new program titled Research and Evaluation on Education in Science and Engineering (REESE) managed by the Division of Research, Evaluation, and Communication (REC) in the Directorate for Education and Human Resources (EHR). The Program Solicitation can be viewed at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf06537](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf06537).

The program seeks proposals that have the potential to strengthen graduate education in science, technology, engineering, and mathematics (STEM). As examples, we encourage proposals that can contribute to our knowledge about how to broaden participation in graduate-level education programs and proposals that investigate new trends and challenges in graduate STEM education. For many types of research projects, successful proposals will require expertise in the disciplines being studied as well as research methodology. This may mean selecting a team of co-PIs that bridge knowledge of STEM disciplines with expertise in education research or social science research methods.

The program seeks to build a research community that can more effectively address current issues, trends and questions in STEM graduate education, such as:

- Efforts to improve the retention and graduation rates of STEM graduate students;
- Methods of increasing participation by high-achieving students;
- The impact of increased mentoring on the success of graduate students;
- The development of emerging STEM research fields, particularly cross-disciplinary ones;
- Changes in skills expected for STEM professionals and how these are communicated in graduate programs;
- The effectiveness of graduate education experiences in promoting student cognitive growth, and personal and career development;
- The effects of growing international cooperation in research and graduate education;

- Uses of new technologies (including new cyber infrastructure developments) in both education and research; and
- The diffusion of new methods and programs of graduate education in emerging STEM disciplines.

REESE will consider both synthesis projects (e.g., summaries and analyses of research to date, workshops, planning and design projects) for one to two years generally not to exceed \$200,000 and larger empirical projects periods not to exceed 3 year. Small projects will permit investigators to develop rigorous research designs, techniques, and methods and to forge partnerships with researchers representing appropriate disciplines and areas of expertise. Applicants should review the REESE program solicitation to ensure that eligibility requirements are met. Investigators are encouraged to contact DGE program officers to discuss graduate topics of interest and REESE program officers to discuss research approaches and requirements of the REESE program. The Dear Colleague Letter for DGE/REESE may be viewed at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf06019](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf06019)

### Online Evaluation Resource Library (OERL)

The Online Evaluation Resource Library, funded by NSF, provides guidelines for how to improve evaluation practice using Web site resources. It provides a large collection of sound plans, reports and instruments from past and current project evaluations in several content areas.

OERL resources include instruments, plans, and reports from evaluations that have proven to be sound and representative of current evaluation practices. It also includes alignment tables that contain criteria and a glossary to help with the development of your own plans, reports and instruments.

Principal investigators and GK-12 project evaluators are encouraged to consult OERL at: <http://oerl.sri.com/>.

## ABOUT THE NATIONAL SCIENCE FOUNDATION

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The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Awardees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation does not assume responsibility for such findings or their interpretation.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities and persons with disabilities to compete fully in its programs. In accordance with Federal statutes, regulations and NSF policies, no person on grounds of race, color, age, sex, national origin or disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NSF, although some programs may have special requirements that limit eligibility.

*Facilitation Awards for Scientists and Engineers with Disabilities (FASSED)* provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF-supported projects. See the GPG Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

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: [pubs@nsf.gov](mailto:pubs@nsf.gov)

or telephone: (703) 292-7827

• **To Locate NSF Employees:** (703) 292-5111

## PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

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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; 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 applicant 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 needing information as part of the review process or in order to coordinate programs; 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," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). 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 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 this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Division of Administrative Services, National Science Foundation, Arlington, VA 22230.

OMB control number: 3145-0058.

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