

Graduate Research Fellowship Program (GRFP)

PROGRAM SOLICITATION

NSF 09-603

REPLACES DOCUMENT(S):

NSF 08-593



National Science Foundation

Directorate for Education & Human Resources
Division of Graduate Education

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

November 02, 2009

Interdisciplinary fields of Study

November 04, 2009

Mathematical Sciences; Computer and Information Sciences and Engineering

November 05, 2009

Social Sciences; Psychology; Geosciences

November 06, 2009

Life Sciences

November 10, 2009

Chemistry; Physics and Astronomy

November 12, 2009

Engineering

REVISION NOTES

Application deadlines have changed.

1. Fields of Study have been revised.
2. The description of eligibility requirements was clarified with respect to non-eligible fields of study and previous graduate education.
3. The conditions for use of the international travel allowance have been modified.
4. A definition of interdisciplinary research was included to assist applicants.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Graduate Research Fellowship Program (GRFP)

Synopsis of Program:

The National Science Foundation aims to ensure the vitality of the human resource base of science, technology, engineering, and mathematics in the United States and to reinforce its diversity by offering approximately 1,654 graduate fellowships in this competition pending availability of funds. The Graduate Research Fellowship provides three years of support for graduate study leading to research-based master's or doctoral degrees and is intended for students who are in the early stages of their graduate study. The Graduate Research Fellowship Program (GRFP) invests in graduate education for a cadre of diverse individuals who demonstrate their potential to

successfully complete graduate degree programs in disciplines relevant to the mission of the National Science Foundation.

Cognizant Program Officer(s):

- Applications, contact: GRF Operations Center, telephone: (866) 673-4737, email: help@nsfgrfp.org
- For Program, contact: Gisele Muller-Parker, telephone: (703) 292-7468, email: gtmuller@nsf.gov

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

- 47.076 --- Education and Human Resources

Award Information

Anticipated Type of Award: Fellowship Grant

Estimated Number of Awards: 1,654 new awards will be offered pending availability of funds.

Anticipated Funding Amount: \$66,987,000 for new fellowships in FY 2010 pending the availability of funds.

Eligibility Information

Organization Limit: Fellowship applications must be submitted by the prospective Fellow. Applicants must register with Fastlane (<https://www.fastlane.nsf.gov/>) prior to submitting an application and must affiliate with an accredited United States university, college, or non-profit academic institution or appropriate international institution of higher education offering advanced degrees in science, technology, engineering, and mathematics prior to activating the Fellowship award.

Applicant Eligibility:

Refer to Section IV. Additional Eligibility Information.

Limit on Number of Applications per PI: 1

- Applicants are limited to only one application in this competition.

Applicant Preparation and Submission Instructions

A. Application Preparation Instructions

- **Letters of Intent:** Not Applicable
- **Preliminary Proposal Submission:** Not Applicable
- **Application Instructions:** This solicitation contains information that deviates from the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full text of this solicitation for further information.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required under this solicitation.
- **Indirect Cost (F&A) Limitations:**
No indirect costs are allowed.
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

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

November 02, 2009

Interdisciplinary fields of Study

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Mathematical Sciences; Computer and Information Sciences and Engineering

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Social Sciences; Psychology; Geosciences

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Life Sciences

November 10, 2009

Chemistry; Physics and Astronomy

November 12, 2009

Application Review Information Criteria

Merit Review Criteria: National Science Board approved criteria apply.

Award Administration Information

Award Conditions: Standard NSF award conditions apply.

Reporting Requirements: See reporting requirements in full text of solicitation.

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I. INTRODUCTION

The purpose of the Graduate Research Fellowship Program (GRFP) is to ensure the vitality of the scientific and technological workforce in the United States and to reinforce its diversity. The program recognizes and supports outstanding graduate students in the relevant science, technology, engineering, and mathematics (STEM) disciplines who are pursuing research-based master's and doctoral degrees. NSF Fellows are expected to become knowledge experts who can contribute significantly to research, teaching, and innovations in science and engineering. These individuals will be crucial to maintaining and advancing the nation's technological infrastructure and national security as well as contributing to the economic well being of society at large.

The Graduate Research Fellowship Program is designed to provide opportunities for advanced education that prepares students for a broad range of disciplinary and interdisciplinary careers through its strategic investments in intellectual capital. Applicants, therefore, are urged to visit the NSF web page at <http://www.nsf.gov> for more information and guidance about current and emerging themes for the NSF directorates and offices.

II. PROGRAM DESCRIPTION

The Graduate Research Fellowship Program awards fellowships for graduate study leading to research-based master's or doctoral degrees in the fields of science, technology, engineering, and mathematics (STEM) relevant to the mission of the National Science Foundation (See [NSF-Supported Fields of Study](#)). This list is not meant to be exhaustive or restrictive but, rather, to be used as an aid in placing applications in the most appropriate review panel.

NSF Graduate Research Fellowships are intended for individuals in the early stages of their graduate study. All applicants are expected to have adequate preparation to begin graduate level study and research by Summer or Fall of 2010. In most cases, this will be demonstrated by a bachelor's degree earned prior to Fall 2010.

Applicants may pursue graduate study at an institution in the United States or affiliate with a foreign institution that grants a graduate degree. Prospective Fellows are responsible for all logistical arrangements required for affiliation with the foreign institution including living arrangements and securing any necessary passports or visas.

The Graduate Research Fellowship Program supports a comprehensive holistic plan for graduate education and takes into account the individual interests and competencies of the Fellows. Thus, an applicant must provide a detailed profile of his or her relevant educational and research experiences and plans for graduate education in such a way as to demonstrate the potential to become an emerging knowledge expert in STEM disciplines.

Prospective applicants are advised that submission of an application implies a commitment to the pursuit of graduate study in a research-based program in any of the STEM fields supported by NSF (See: [NSF-Supported Fields of Study](#)). Acceptance of a fellowship award is an explicit acceptance of this commitment and assurance that the Fellow will be duly enrolled in an acceptable graduate degree program by the beginning of the following academic year.

NSF welcomes and encourages applications from all U.S. citizens, nationals and permanent residents including: those who belong to underrepresented populations in the sciences, those with disabilities, and people from all geographic and economic backgrounds attending any accredited institution while pursuing NSF-supported fields of study.

III. AWARD INFORMATION

The NSF expects to award 1,654 Graduate Research Fellowships under this program solicitation pending availability of funds.

For each matriculated Fellow, the affiliated institution receives a \$40,500 award per Fellow tenure year to cover the costs described below. Fellows Abroad receive direct NSF grant awards up to the same amount per year on tenure.

The Graduate Research Fellowship stipend currently is \$30,000 for a 12-month tenure period, prorated monthly at \$2,500 for shorter periods as approved by NSF.

The cost of education allowance currently is \$10,500 per tenure year and is to be used by the affiliated institution to cover the costs of educating the Fellow. The affiliated institution is responsible for tuition and required fees in excess of the cost of education allowance. For Fellows Abroad, all tuition and assessed fees will be reimbursed to the Fellow up to a maximum of \$10,500 per tenure year. In these cases, the Fellow is responsible for educational expenses beyond the GRFP cost of education allowance. Refer to the Information for Graduate Fellows document for restrictions on the use of the cost-of-education allowance.

Fellows are allowed an additional one-time \$1,000 International Research Travel Allowance upon submission of an approved travel request. The planned travel must involve a structured research or research dissemination activity approved by NSF.

Fellows and applicants receiving Honorable Mention are provided enhanced access to cyberinfrastructure resources, including supercomputing time, through the TeraGrid. Please refer to <http://www.teragrid.org> for more information on cyberinfrastructure resources.

All awards will be for a maximum of three years usable over a five-year period. The anticipated award date is late March 2010.

Honorable Mention

The NSF accords Honorable Mention to meritorious applicants who do not receive fellowship awards. Honorable Mention is considered a significant academic achievement and provides access to cyberinfrastructure resources through the TeraGrid for a period of one year following notification of the Honorable Mention.

IV. ELIGIBILITY INFORMATION

Organization Limit: Fellowship applications must be submitted by the prospective Fellow. Applicants must register with Fastlane (<https://www.fastlane.nsf.gov/>) prior to submitting an application and must affiliate with an accredited United States university, college, or non-profit academic institution or appropriate international institution of higher education offering advanced degrees in science, technology, engineering, and mathematics prior to activating the Fellowship award.

Applicant Eligibility:

Refer to Section IV. Additional Eligibility Information.

Limit on Number of Applications per PI: 1

- Applicants are limited to only one application in this competition.

Additional Eligibility Info:

The three eligibility requirements for the Graduate Research Fellowship Program -- 1) citizenship, 2) degree requirements, and 3) field of study -- are described below. Applicants are advised to read the entire program solicitation carefully to be sure that the requirements are interpreted properly. Applicants must exercise judgment in assessing eligibility.

Eligibility will be determined only by review of a complete, submitted application.

1. Citizenship

Applicants must be United States citizens or nationals, or permanent resident aliens of the United States.

The term "national" designates a native resident of a commonwealth or territory of the United States, such

as American Samoa, Guam, Puerto Rico, U.S. Virgin Islands, or the Northern Mariana Islands. It does not refer to a citizen of another country who has applied for U.S. citizenship.

2. Degree Requirements

Fellowships are intended for individuals in the early stages of their graduate study. Below are general guidelines for determining eligibility according to the degree requirements criterion.

- Applicants are expected to have adequate preparation to begin graduate study and research by summer or fall 2010. In most cases, this will be demonstrated by receipt of a bachelor's degree earned prior to Fall 2010.
- Individuals are typically eligible to apply:
 - During the senior year of college
 - After graduating from college and prior to entering graduate school
 - During the first year of graduate school
 - Prior to completing the first term of the second year of graduate school.
- **Applicants must have completed no more than twelve (12) months of full-time graduate study or its equivalent as of August 1, 2009. Full time graduate study is as defined by the universities attended.**
- Applicants who have completed **part-time graduate study** must have completed no more than twenty-four (24) semester hours or thirty-six (36) quarter hours or their equivalent as of August 1, 2009. This credit hour limit applies only to part-time graduate students; there is no credit hour limit for full-time students, only the 12 month limit.
- All post-baccalaureate, graduate-level study in any NSF-supported field of study (see NSF-supported Fields of Study) is counted toward the allowed twelve months of completed graduate study. This includes all Master's and Ph.D. programs in these disciplines.

Applicants in joint BS/MS programs are typically eligible to apply prior to completion of any further graduate study.

- In four-year joint programs, applicants may apply in the fourth year and after completion of the program. Completion of any graduate study not part of the joint program will disqualify an applicant.
- In five-year joint programs, applicants may apply in the fourth and fifth years of the program and after completion of the program. Completion of any further graduate study outside of the joint program will disqualify an applicant.

Definition of Completed Graduate Study

Applicants may have completed no more than twelve months of full-time graduate study or its equivalent by August 1, 2009.

All post-baccalaureate, graduate level graduate study in any NSF-supported field is counted towards the allowed twelve months of graduate study. Relevant graduate study includes:

- All Master's programs (including research-based or coursework-based programs, and "terminal" programs as well as those that are contiguous with a Ph.D. program)
- All Doctoral programs
- Post-baccalaureate, graduate-level coursework in any NSF-supported field completed outside a degree program
- Post-baccalaureate, graduate-level coursework in a non-NSF-supported field that is nevertheless related to the proposed graduate program (i.e., that does not represent a significant change of field). A "significant change of field" is typically a major field of study change (higher level categories listed in the NSF Fields of Study, see Appendix).
- Both full-time and part-time graduate programs

Graduate study is considered "completed" when a term/semester/quarter is finished and grades have been assigned.

Research-based work experience in an academic or similar environment that is closely related to the current or proposed program of graduate study may be considered equivalent to graduate coursework for eligibility purposes. A combination of relevant work experience and completed coursework may render an applicant ineligible.

Extenuating circumstances

In some cases, applicants who have completed more than twelve months of graduate study may be considered eligible if there are certain extenuating circumstances. Acceptable extenuating circumstances typically place an applicant who has completed more than twelve months of graduate study in a position comparable to someone who has completed no more than twelve months of graduate study in the proposed field.

Extenuating circumstances may include:

- An interruption in graduate study of more than two years prior to November 2009 due to medical, personal, or family reasons.
 - If the interruption includes workplace research experience that is related to the proposed graduate study, it might not be considered an extenuating circumstance.
- A significant change of field
 - A "significant change of field" is typically a major field of study change (higher level categories listed in the NSF Fields of Study, see Appendix).

The following are **not** considered significant changes of field:

- Changing focus within the same major field of study
- Starting a new graduate program at a new institution or with a new advisor, but continuing in the same major field of study as in the previous graduate study
- Changing from a non-NSF-supported field or program (e.g. public health or clinical

psychology) to an NSF-supported program when there is demonstrable continuity between the previous and proposed graduate study (i.e. the change is not at the level of the higher level categories listed in the NSF Fields of Study, see Appendix).

- Changing major fields of study but with demonstrable continuity between the previous and proposed graduate study. Interdisciplinary programs of study may qualify as a significant change if the new program of study includes a majority of effort in fields other than those in the previous program of study

All extenuating circumstances are considered on a case-by-case basis and are determined only upon review of a complete, submitted application.

Categories of applicants that are always ineligible:

- Those who have earned a Ph.D. in a science, mathematics, or engineering field, or any medical degree, such as an M.D., D.D.S., or D.V.M. after October 1, 2004
- Those who have already received and held tenure as an NSF Graduate Research Fellow (previously known as an NSF Pre-Doctoral Fellow).
- Those who do not have US citizen, US national or permanent resident alien status by the application deadline.

3. Field of Study

Fellowships are awarded for graduate study leading to research-based master's or doctoral degrees in the fields of science, technology, engineering, and mathematics supported by the National Science Foundation (See NSF-Supported Fields of Study in Section X of this solicitation and the [NSF Proposal and Awards Policies and Procedures Guide](#)). The guidelines below should be used to assess eligibility according to the field of study criterion.

- Applications for interdisciplinary programs of study and research are eligible for the Graduate Research Fellowship, provided the applicant meets all other eligibility guidelines and requirements. Refer to special instructions on preparing applications for Interdisciplinary Fields of Study.
- Research with disease-related goals, including work on the etiology, diagnosis or treatment of physical or mental disease, abnormality, or malfunction in human beings or animals, is normally not supported. Animal models of such conditions or the development or testing of drugs or other procedures for their treatment also are not eligible for support. However, research in bioengineering, with diagnosis- or treatment-related goals, that applies engineering principles to problems in biology and medicine while advancing engineering knowledge is eligible for support. Bioengineering research to aid persons with disabilities also is eligible. For further information about the National Science Foundation, see the [Proposal & Award Policies & Procedures Guide](#) Introduction Section A, About the National Science Foundation.
- Clinical and counseling psychology are not supported in this program. Clinical study includes patient-oriented research, epidemiological and behavioral studies, outcomes research and health services research. It is defined as investigations to provide evidence leading to a scientific basis for consideration of a change in health policy or standard of care, and includes pharmacologic, non-pharmacologic, and behavioral interventions for disease prevention, prophylaxis, diagnosis, or therapy. Community- and other population-based intervention trials are also included.
- Applications in a policy science are eligible only if the applicant is pursuing a research-based master's or Ph.D. degree.
- Applications in a science and engineering education field (e.g., physics education) are eligible only if the applicant is pursuing a research-based master's or Ph.D. degree focusing on education of an NSF-Supported Field of Study (see Appendix, Section X of this solicitation).

Categories of study that are always ineligible:

- Clinical (see above), counseling, business or management fields, social work, education (except in science and engineering education in an NSF-supported discipline), or history (except in history of science).
- Practice-oriented professional degree programs, joint science-professional degree programs (MD/PhD and JD/PhD), or medical, dental, law, and public health programs.

The Graduate Research Fellowship Operations Center is responsible for processing applications and responding to questions about the program. For questions concerning these guidelines, contact the Graduate Research Fellowship Operations Center, (866) 673-4737, international (202) 331-3542, or help@nsfgrfp.org. However, a final eligibility decision will be determined only on the basis of a completed submitted application.

Women in Engineering and Computer and Information Science Awards

The Women in Engineering and Computer and Information Science awards are for women who intend to pursue graduate research degrees in Engineering or Computer and Information Science and Engineering. Additional funding for these awards is provided by the Directorate for Computer and Information Science and the Directorate for Engineering. Eligibility, application, and review criteria are the same as for applicants in other fields.

V. APPLICATION PREPARATION AND SUBMISSION INSTRUCTIONS

A. Application Preparation Instructions

Fellowship applications must be submitted electronically using the NSF FastLane Graduate Research Fellowship Program Application Module at <http://www.fastlane.nsf.gov/grfp/> according to the field of study deadline. An applicant must first register as a FastLane

user at that web site. The *official* transcript(s) is (are) due by the relevant field of study deadline and must be submitted to the GRF Operations Center at the address shown in this section. See the **Applicant User Guide** for instructions on completing and submitting an application.

The **FastLane Application Module** includes the following information: Personal Profile, Education and Work Experience, Planned Graduate Program, Personal Statement, Previous Research Experience, Proposed Plan of Research, and References. Do not send other extraneous information or materials such as CDs, manuscripts, resumes, medical reports, or news clippings. These items will not be reviewed with your application. Images may be included in the page limits but will be reproduced only in black and white.

Applicants must follow the instructions in the user guide and applicant module for completing each section of the application. The essays must be written using standard 8.5" x 11" page size, 12-point, Times New Roman font, 1" margins, and must be single spaced or greater. The Personal Statement, Previous Research Experience, and Proposed Graduate Study essays each have a maximum length of two pages, including all references, citations, charts, figures, and images. The Optional Program Eligibility essay is limited to one page. Failure to comply fully with these requirements could eliminate the application from consideration by review panels. Additionally, applications that are incomplete (missing required transcripts and/or reference letters, or that do not have "submitted" status by the application deadline) are ineligible for panel review. Applicants are advised to submit applications early to avoid possible FastLane system delays on the deadline dates.

Supplemental Application Materials are described below.

- **Official Academic Transcripts (Must be received by field of study deadline)**

Academic transcripts (except for Fall 2009 terms) are required for all institutions listed in the applicant module. Required transcripts include academic transcripts from the baccalaureate institution and transcripts for all completed graduate work. Transcripts must be received by the field of study application deadline and submitted to the GRF Operations Center in hard copy via postal mail, express service, or courier to:

GRF Operations Center
Suite T-50,
1818 N Street NW
Washington, DC 20036
Telephone: 866-673-4737

- **Graduate Record Examinations (GRE) Test Scores (Optional -- Due November 30, 2009)**

It is recommended that applicants have both the GRE General and Subject Test scores reported. Only GRE scores from tests taken between October 1, 2004 and November 30, 2009 submitted by ETS will be accepted for the 2010 NSF Graduate Research Fellowship competition. GRE scores may be reported only by using the application module. Applicants should NOT submit scores themselves directly.

- **Three Reference Letters (Due December 1, 2009)**

Applicants are required to submit three reference letters. Reference writers should use letterhead, if possible, and include the following information: Name and Title of reference writer, Department, and Institution or Organization. The reference letter should provide details explaining the nature of the relationship to the applicant, comments on the applicant's potential and prior research experiences, statements about the applicant's academic potential and prior research experiences, statements about the applicant's proposed research, and any other information to enable review panels to evaluate the application according to the NSF Merit Review Criteria of Intellectual Merit and Broader Impacts.

Graduate Record Examination Registration

NSF will pay Subject Test registration fees for applicants who register for the November 7, 2009 administration under two conditions: (1) the NSF Fellowship application is the primary purpose, and (2) the GRE registration form for the November test is received at ETS no later than October 2, 2009.

The following condition is imposed on the reporting of the November 7, 2009 GRE Subject Test scores when NSF pays the test fee. Prior to May 1, 2010 these scores will be reported only for the NSF Graduate Research Fellowship Program, to the fellowship applicant, and to the applicant's undergraduate institution.

Mail the Request for Payment of GRE Subject Test Fee form along with the GRE Subject Test registration form to:

ETS - GRE
Box 382013
Pittsburgh, PA 15251-8013

Test takers with disabilities: follow instructions at ets.org/disability. Mail necessary forms to:

ETS - GRE Disability Services

PO Box 6054

Princeton, NJ 08541-6054

No online registration is available.

Application Completion Status

The FastLane GRFP Application Module will display the completion status of the fellowship application. The status function will indicate whether the application and the supplemental information, such as transcripts, reference letters, and GRE scores have been received. Applicants are strongly encouraged to make use of this feature and the Manage Reference feature to ensure all application materials have been received. Applicants must use the FastLane user ID and password to access this information.

Interdisciplinary Applications

NSF welcomes applications for interdisciplinary programs of study and research. Interdisciplinary research is defined as "a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice" (National Academy of Sciences 2004 report: Facilitating interdisciplinary Research). To accommodate the special review needs of interdisciplinary applications, applicants must indicate the

relative effort for each field of study represented in their application by selecting from the list of [NSF-Supported Fields of Study](#). This list is used to help direct applications to the most appropriate review panel(s). Interdisciplinary applications in which no one field of study predominates should be classified as "Interdisciplinary Fields of Study" and submitted by the Interdisciplinary Fields of Study deadline of November 2, 2009. The applicant should, nonetheless, list all of the disciplines represented in their application along with relative effort for each discipline. For applications in which one major discipline predominates, applicants are instructed to identify that one as the primary field of study in the FastLane Application Module along with all other fields of study represented in their application, and to submit their application by the deadline for the primary field of study. Proper response to these instructions will help insure that applications are evaluated by the most appropriate panel of reviewers.

Transformative Research. As stated by the NSF FY 2006-2011 Strategic Plan, NSF is committed to supporting research that will maintain the nation as a global leader in fundamental and transformational science and engineering. Transformative Research involves ideas, discoveries, or tools that radically change our understanding of an important existing scientific or engineering concept or educational practice or leads to the creation of a new paradigm or field of science, engineering, or education. Such research challenges current understanding or provides pathways to new frontiers. Characteristics of transformative research are that it: a) challenges conventional wisdom, b) leads to unexpected insights that enable new techniques or methodologies, or c) redefines the boundaries of science, engineering, or education. Applicants are encouraged to submit applications that embody potentially transformative research.

B. Budgetary Information

Cost Sharing: Cost sharing is not required under this solicitation.

Indirect Cost (F&A) Limitations:

No indirect costs are allowed.

Other Budgetary Limitations: NSF awards \$40,500 each year to the affiliated institution to cover the GRF stipend and cost of education allowance for each Graduate Research Fellow on Tenure at that institution. Fellows Abroad receive direct grant awards for up to the same amount.

The Graduate Research Fellowship Program fellowship stipend currently is \$30,000 for a 12-month tenure period, prorated monthly at \$2,500 for shorter periods as approved by NSF.

The cost-of-education allowance currently is \$10,500 per tenure year per fellow. For Fellows Abroad, all tuition and assessed fees are reimbursed to the Fellow up to a maximum of \$10,500 per tenure year.

Fellows are eligible for a one-time \$1,000 International Research Travel Allowance.

C. Due Dates

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

November 02, 2009

Interdisciplinary fields of Study

November 04, 2009

Mathematical Sciences; Computer and Information Sciences and Engineering

November 05, 2009

Social Sciences; Psychology; Geosciences

November 06, 2009

Life Sciences

November 10, 2009

Chemistry; Physics and Astronomy

November 12, 2009

Engineering

D. Fastlane Requirements

Applicants are required to prepare and submit all applications for this program solicitation through the FastLane system. Detailed instructions for application preparation and submission via FastLane are available at: <http://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 solicitation.

VI. APPLICATION REVIEW INFORMATION

The Graduate Research Fellowship Program (GRFP) is designed to provide opportunities for pre-doctoral education that prepares

students for a broad range of disciplinary and cross-disciplinary careers through its investment in intellectual capital. Applicants are expected to propose a holistic plan for graduate education that demonstrates the potential to successfully complete a research-based graduate degree and the potential to become an emerging knowledge expert in science, technology, engineering, and mathematics.

A. NSF Application Review Process

Applications will be reviewed by panels of disciplinary and interdisciplinary scientists, mathematicians, and engineers and other professional experts in graduate education. Applications will be assigned to panels based on the applicant's chosen field(s) of study and the discipline(s) represented. Thus, applicants are advised to select the fields of study in the FastLane applicant module that are most closely aligned to the proposed graduate program of study and research plan. Applications to interdisciplinary fields of study are reviewed by interdisciplinary panelists based on the disciplines indicated by the applicant and review of the application by the GRFP staff.

Each application, therefore, will be reviewed independently on the basis of merit using all available information in the completed application. In considering applications, reviewers will be instructed to address the two Merit Review Criteria as approved by the National Science Board – Intellectual Merit and Broader Impacts (Grant and Proposal Guide, NSF 08-01). Applicants, therefore, must address each criterion in their written statements to provide reviewers with the information necessary to respond fully to both.

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 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?

To evaluate the intellectual merit criterion, panelists will consider: the strength of the academic record, the proposed plan of research, the description of previous research experience, references, Graduate Record Examinations (GRE) General and Subject Tests scores, and the appropriateness of the choice of institution relative to the proposed plan for graduate education and research.

To help panelists evaluate the broader impacts criterion, applicants should provide characteristics of their background, including personal, professional, and educational experiences, to indicate their potential to fulfill the broader impacts criterion.

B. Application Review and Selection Process

Applications submitted in response to this program 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.

Please see Section A. above for a description of the review process.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the fellowship award is made to the applicant by the Division of Graduate Education. Applicants whose applications are not selected for fellowship award will be advised as promptly as possible.

B. Award Conditions

An NSF Fellowship award consists of the award letter that includes the applicable terms and conditions and fellowship management instructions. All Fellowship awards are made subject to the provisions (and any subsequent amendments) contained in the document Information for Graduate Research Fellows.

NSF Graduate Research Fellowship Program applicants will be notified in late March or early April, 2010 of their selection. The applicant must accept or decline the Fellowship within 30 days of notification by logging into the Graduate Research Fellowship Program link at: <http://www.fastlane.nsf.gov/grfp/> with the applicant User ID and password. Failure to comply with the deadline may result in revocation of the fellowship offer.

Other Opportunities for Fellowship Awardees and Honorable Mention Recipients

Fellows and Honorable Mention recipients may request cyberinfrastructure resources through the TeraGrid. Details on resources available are described at: <http://www.teragrid.org>. Requests must be for cyberinfrastructure resources in support of research undertaken toward completion of the graduate program of study.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities (students and faculty) to work on NSF-supported projects. Fellowship awardees and Honorable Mention recipients with disabilities may apply for assistance by contacting grfp@nsf.gov.

Research Involving Human Subjects

Projects involving research with human subjects must ensure that subjects are protected from research risks in conformance with the relevant federal policy known as the Common Rule (Federal Policy for the Protection of Human Subjects, 45 CFR 690). All projects involving human subjects must either (1) have approval from the organization's Institutional Review Board (IRB) before fellowship award or (2) must affirm that the IRB or an appropriate knowledgeable authority previously designated by the organization (not the Applicant) has declared the research exempt from IRB review, in accordance with the applicable subsection, as established in section 101(b) of the Common Rule. Applicants and Fellows are required to comply with this policy and adhere to the organization's protocol for managing research involving human subjects.

Proposals Involving Vertebrate Animals

Any project proposing use of vertebrate animals for research or education shall comply with the Animal Welfare Act [7 U.S.C. 2131 et seq.] and the regulations promulgated thereunder by the Secretary of Agriculture [9 CFR 1.1-4.11] pertaining to the humane care, handling, and treatment of vertebrate animals held or used for research, teaching or other activities supported by Federal awards. In accordance with these requirements, proposed projects involving use of any vertebrate animal for research or education must be approved by the submitting organization's Institutional Animal Care and Use Committee (IACUC) before an award can be made. For this approval to be accepted by NSF, the organization must have a current Public Health Service (PHS) Approved Assurance.

Projects involving the care or use of vertebrate animals at a foreign organization or foreign field site also require approval of research protocols by the U.S. grantee's IACUC. If the project is to be funded through an award to a foreign organization or through an individual fellowship award that will support activities at a foreign organization, NSF will require a statement of compliance that the activities will be conducted in accordance with all applicable laws in the foreign country and that the International Guiding Principles for Biomedical Research Involving Animals (see <http://www.cioms.ch/>) will be followed.

Legal Rights to Intellectual Property

The National Science Foundation claims no rights to any inventions or writings that might result from its fellowship or traineeship grants. However, fellows and trainees should be aware that the NSF, another Federal agency, or some private party may acquire such rights through other support for particular research. Also, fellows and trainees should note their obligation to include an Acknowledgment and Disclaimer in any publication.

C. Reporting Requirements

Annual Activity Report

Fellows are required to submit an Activity Report annually, regardless to tenure status, using NSF's FastLane electronic fellowship management and reporting system. The system permits electronic submission and updating of activity reports, including information on research accomplishments and findings, presentations, publications, teaching and research assistantships, awards and recognitions, and other scholarly accomplishments.

Annual Tenure Declaration

Fellows must declare their intent to affiliate with an institution and to utilize the fellowship for the following year annually using the NSF FastLane fellowship management and reporting system. Failure to declare intent by the deadline established violates the terms and conditions for NSF fellowship awards.

Fellows Abroad

Starting Certificate: Fellows Abroad must submit the Fellowship Starting Certificate (NSF Form 349) to initiate stipend payments and annually thereafter. The Starting Certificate must indicate the contact information for the Science Advisor at the affiliated institution.

Faststart Direct Deposit Form: Fellows Abroad must submit the Faststart Direct Deposit Form (NSF Form 1379) to the Division of Financial Management at NSF in order for the U.S. Treasury Department to transmit payment data electronically to the Fellow's U.S. bank account.

Program Evaluation

The Division of Graduate Education (DGE) may conduct an on-going evaluation to determine how effectively the GRF program is achieving its goal to respond to the nation's need for a globally prepared diverse science and engineering workforce. Additionally, it is highly desirable to have a structured means of tracking Fellows beyond graduation to gauge the extent to which they follow a career path consistent with the intent of the program and to assess the impact the NSF fellowship has had on their graduate education experience. Accordingly, Fellows may be contacted during and after the completion of this award for updates on various aspects of their employment history, professional activities and accomplishments, and other information helpful in evaluating the impact of the program. Fellows and affiliated institutions should be prepared to cooperate in program-level evaluations conducted by the NSF and/or contracted evaluators.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Applications, contact: GRF Operations Center, telephone: (866) 673-4737, email: help@nsfgrfp.org
- For Program, contact: Gisele Muller-Parker, telephone: (703) 292-7468, email: gtmuller@nsf.gov

For questions related to the use of FastLane, contact:

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

The Graduate Research Fellowship Operations Center is responsible for processing applications and responding to requests for information. General inquiries regarding the Graduate Research Fellowship Program should be made to:

Graduate Research Fellowship Operations Center, telephone: 866-NSF-GRFP, 866-673-4737 (toll-free from the US and Canada) or 202-331-3542 (international). email: help@nsfgrfp.org

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>.

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 MyNSF, formerly the Custom News Service, at (<http://www.nsf.gov/home/cns/start.htm>) to be notified of new funding opportunities that become available.

International Research Fellowship Program (NSF 06-582)

Alliances for Broadening Participation in STEM (ABP) (NSF 09-515)

Discovery Corps Fellowships (NSF 07-516)

CEDAR, GEM, and SHINE Postdoctoral Research (NSF 06-584)

Integrative Graduate Education and Research Traineeship (IGERT) (NSF 09-519)

Research Experience for Undergraduates (NSF 09-598)

Postdoctoral Research Fellowships in Biology (NSF 09-573)

SBE Minority Postdoctoral Research Fellowships and Follow-up Research Starter Grants (NSF 09-595)

Graduate Teaching Fellows in K-12 Education (GK-12) (NSF 09-549)

ABOUT THE NATIONAL SCIENCE FOUNDATION

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

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

NSF receives approximately 40,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

Facilitation Awards for Scientists and Engineers with Disabilities provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <http://www.nsf.gov>

- **Location:**

4201 Wilson Blvd. Arlington, VA 22230

- **For General Information** (NSF Information Center): (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**
 - Send an e-mail to: nsfpubs@nsf.gov
 - or telephone: (703) 292-7827
- **To Locate NSF Employees:** (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and NSF-51, "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0023. Public reporting burden for this collection of information is estimated to average 12 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton
 Reports Clearance Officer
 Division of Administrative Services
 National Science Foundation
 Arlington, VA 22230

X. APPENDIX

NATIONAL SCIENCE FOUNDATION GRADUATE RESEARCH FELLOWSHIPS

NSF-Supported Fields of Study

CHEMISTRY

5230 Analytical
 5250 Bio-inorganic
 5240 Bio-organic
 5260 Biophysical
 9994 Environmental
 5290 Inorganic
 5330 Organic
 5350 Physical
 5331 Polymer
 5370 Theoretical
 0001 Chemistry, other (specify)

COMPUTER AND INFORMATION SCIENCE AND ENGINEERING (CISE)

0006 Artificial Intelligence (including Robotics, Computer Vision, and Human Language Processing)
 7210 Computer Science - Languages and Systems
 0007 Computer Science - Theoretical Foundations
 7270 Computer Systems Design (including Signal Processing)
 0008 Databases, Information Retrieval, and Web Search
 0009 Graphics and Visualization
 7260 Human Computer Interaction
 7250 Information Technology and Organizations
 7290 Networks and Communications
 0010 Scientific Computing and Informatics
 7220 Software Engineering

0012 Computer Architecture and Grids
0020 Information Security and Assurance
0001 CISE, other (specify)
0011 Operating Systems and Middleware

ENGINEERING

6210 Aeronautical and Aerospace
6240 Agricultural
6251 Bioengineering

6252 Biomedical
6330 Chemical Engineering
6350 Civil Engineering
6388 Computer Engineering
6390 Electrical and Electronic
6741 Energy
6470 Engineering Mechanics
6532 Engineering Science
9996 Environmental
6580 Industrial Engineering
6476 Materials
6620 Mechanical
6660 Metallurgical
6740 Nuclear
6245 Ocean
6716 Petroleum
6480 Polymer
6585 Systems Engineering
0001 Engineering, other (specify)

GEOSCIENCES

5710 Aeronomy
5720 Atmospheric Chemistry
5750 Chemical Oceanography
5770 Climate Dynamics
5740 Geochemistry
5780 Geology
5800 Geophysics
5810 Hydrologic Sciences
5820 Large-scale Dynamics Meteorology
5830 Magnetospheric Physics
5840 Marine Geology and Geophysics
5850 Mesoscale Dynamic Meteorology
5870 Paleoclimate
5860 Paleontology
5880 Physical Meteorology
7799 Physical Oceanography
5890 Solar - Terrestrial
0001 Geosciences, other (specify)

LIFE SCIENCES

0399 Agriculture
0140 Agronomy
4510 Anatomy
4530 Animal Behavior
4531 Animal Science
0999 Biochemistry
1870 Biological Oceanography
1299 Biophysics
1599 Botany (including Plant Physiology)
1820 Cell Biology
1860 Computational Biology
1840 Developmental Biology
1830 Ecology

1831 Population and community ecology

1832 Ecosystem ecology
4570 Entomology
9992 Environmental Sciences
1850 Evolutionary Biology
4590 Fish and Wildlife
0250 Forestry
2499 Genetics
0300 Horticulture
3293 Immunology
1874 Marine Biology
3299 Microbiology
1880 Molecular Biology
1829 Neurosciences
1890 Nutrition
2970 Pharmacology
3899 Physiology
1545 Plant Pathology
4540 Soil Science
1822 Structural Biology

3290 Virology
4699 Zoology
0001 Life Sciences, other (specify)

MATHEMATICAL SCIENCES

7010 Algebra or Number Theory
7030 Analysis
7050 Applications of Mathematics (including Biometrics and Biostatistics)
7110 Geometry
7130 Logic or Foundations of Mathematics
7140 Operations Research
7150 Probability and Statistics
7170 Topology
0001 Mathematics, other (specify)

PHYSICS AND ASTRONOMY

4999 Astronomy
4930 Astrophysics
8040 Atomic and Molecular
8050 Condensed Matter Physics
8160 Nuclear
8180 Optics
8110 Particle Physics
8200 Physics of Fluids
8210 Plasma
8220 Solid State
8260 Theoretical Physics
0001 Physics, other (specify)

PSYCHOLOGY

4125 Cognitive
4120 Cognitive Neuroscience
0006 Computational Psychology
4130 Developmental
4150 Experimental or Comparative
4189 Industrial/Organizational
4155 Neuropsychology
4165 Perception and Psychophysics
4170 Personality and Individual Differences
0007 Psycholinguistics
4158 Physiological
4162 Quantitative
4190 Social
0001 Psychology, other (specify)

SOCIAL SCIENCES

0695 Cultural Anthropology
0694 Linguistic Anthropology
0696 Medical Anthropology
0697 Physical Anthropology
0610 Archaeology
0011 Cliometric History
0010 Communications
0006 Decision Making
9818 Demography
0009 Econometrics
0013 Economics (except Business Administration)
8799 Geography
9099 History of Science
9499 International Relations
0008 Law and Social Science
9299 Linguistics
9098 Philosophy of Science
9399 Political Science
9799 Public Policy
0007 Risk Analysis
0012 Science Policy
0014 Sociology (except Social Work)
9699 Urban and Regional Planning
0001 Social Sciences, other (specify)

- Warning: Individuals pursuing research in a policy science are eligible for funding only if they are pursuing research-based Master's or Ph.D. degrees.
- Warning: Research with disease-related goals is not eligible for support by NSF. Applicants in this field will be judged ineligible if their Proposed Plan of Research has disease-related goals and/or is insufficiently focused on basic research questions.
- Warning: Clinical and counseling psychology are not supported in this program; applicants in this field will be judged ineligible if their Proposed Plan of Research focuses on mental disease, abnormality or malfunction.

