Graduate Research Fellowship Program (GRFP)

PROGRAM SOLICITATION
NSF 11-582

REPLACES DOCUMENT(S):
NSF 10-604

National Science Foundation

Directorate for Education & Human Resources
Division of Graduate Education

Directorate for Biological Sciences

Directorate for Computer & Information Science & Engineering

Directorate for Engineering

Directorate for Geosciences

Directorate for Mathematical & Physical Sciences

Directorate for Social, Behavioral & Economic Sciences

Office of Cyberinfrastructure

Office of Integrative Activities

Office of International Science and Engineering

Office of Polar Programs

Application Deadline(s) (submitted by 7 p.m. Eastern Standard Time):

November 14, 2011

Engineering

November 15, 2011

Mathematical Sciences; Computer and Information Sciences and Engineering; Chemistry; Physics and Astronomy; Materials Research

November 16, 2011

Social Sciences; Psychology; Geosciences; STEM Education and Learning

November 18, 2011

Life Sciences

IMPORTANT INFORMATION AND REVISION NOTES

1. Application deadlines have changed.
2. Refer to Section V.A., Interdisciplinary Applications, for the deadline for Interdisciplinary Fields of Study.
3. Fields of Study have been revised.
4. Eligibility criteria have changed.
5. Reference writer deadlines and format of letters have changed.
6. All transcripts must be submitted electronically via the NSF FastLane Graduate Research Fellowship Program Application Module.
7. Before submitting an application, applicants must certify that they meet the GRFP Eligibility criteria defined in this Solicitation. This is in addition to the certifications that the essays and proposed research contained in their applications are their own original work, and the certifications on use of controlled substances; delinquency on Federal debt; and debarment and suspension.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

NSF Graduate Research Fellowship Program (GRFP)

Synopsis of Program:

The purpose of the NSF Graduate Research Fellowship Program (GRFP) is to help ensure the vitality and diversity of the scientific and engineering workforce in the United States. The program recognizes and supports outstanding graduate students who are pursuing research-based master's and doctoral degrees in fields within NSF's mission. The GRFP provides three years of support for the graduate education of individuals who have demonstrated their potential for significant achievements in science and engineering research. The ranks of NSF Fellows include numerous individuals who have made transformative breakthroughs in science and engineering research, many who have become leaders in their chosen careers, and some who have been honored as Nobel laureates.

Cognizant Program Officer(s):

Please note that the following information is current at the time of publishing. See program website for any updates to the points of contact.

- Applications, contact: GRF Operations Center, telephone: (866) 673-4737, email: info@nsfgrfp.org
- Gisele T. Muller-Parker, telephone: (703) 292-8694, email: grfp@nsf.gov
- Doris L. Carver, telephone: (703) 292-8694, email: grfp@nsf.gov
- Gilbert John, telephone: (703) 292-8694, email: grfp@nsf.gov
- Richard McCourt, telephone: (703) 292-8694, email: grfp@nsf.gov

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

- 47.041 --- Engineering
- 47.049 --- Mathematical and Physical Sciences
- 47.050 --- Geosciences
- 47.070 --- Computer and Information Science and Engineering
- 47.074 --- Biological Sciences
- 47.075 --- Social Behavioral and Economic Sciences
- 47.076 --- Education and Human Resources
- 47.078 --- Office of Polar Programs
- 47.079 --- Office of International Science and Engineering
- 47.080 --- Office of Cyberinfrastructure
- 47.081 --- Office of Experimental Program to Stimulate Competitive Research

Award Information

Anticipated Type of Award: Fellowship

Estimated Number of Awards: 2,000 new Fellowships will be offered pending availability of funds.

Anticipated Funding Amount: $198,000,000 Each Fellowship consists of three years of support usable over a five- year period. For each year of support, NSF provides a stipend of $30,000 to the Fellow and a cost-of-education allowance of $10,500 to the degree-granting institution. For 2012, it is anticipated that the cost-of-education allowance will increase to $12,000, as indicated in the FY2012 Budget Request.

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 enroll in an accredited United States university, college, or non-profit academic institution of higher education offering advanced degrees in science and engineering by Fall 2012. Confirmation of acceptance in an NSF-approved graduate degree program is required at the time of fellowship acceptance, by May 1, 2012.

Applicant Eligibility:

Refer to Section IV. Additional Eligibility Information.

Limit on Number of Applications per Applicant: 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: Inclusion of voluntary committed cost sharing is prohibited.
- 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) (submitted by 7 p.m. Eastern Standard Time):

  November 14, 2011

  Engineering

  November 15, 2011

  Mathematical Sciences; Computer and Information Sciences and Engineering; Chemistry; Physics and Astronomy; Materials Research

  November 16, 2011

  Social Sciences; Psychology; Geosciences; STEM Education and Learning

  November 18, 2011

  Life Sciences

Application Review Information Criteria

Merit Review Criteria: National Science Board approved Merit Review Criteria (Intellectual Merit and Broader Impacts) apply.

Award Administration Information

Award Conditions: Fellowships are made subject to the provisions (and any subsequent amendments) contained in *NSF 11-031: NSF Graduate Research Fellowship Program Administrative Guide for Fellows and Coordinating Officials*.

Reporting Requirements: See reporting requirements in full text of solicitation and *NSF 11-031:NSF Graduate Research Fellowship Program Administrative Guide for Fellows and Coordinating Officials*.

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I. INTRODUCTION

The NSF Graduate Research Fellowship Program (GRFP) provides Fellowships to individuals selected early in their graduate careers based on their demonstrated potential for significant achievements in science and engineering. Three years of support is provided by the program for graduate study that is in a field within NSF's mission and leads to a research-based master's or doctoral degree.

The program goals are to select, recognize, and financially support individuals early in their careers with the demonstrated potential to be high achieving scientists and engineers, and to broaden participation in science and engineering of underrepresented groups, including women, minorities, and persons with disabilities. GRFP is a critical program in NSF's overall strategy in developing the globally-engaged workforce necessary to ensure the Nation's leadership in advancing science and engineering research and innovation. The ranks of NSF Fellows include numerous individuals who have made transformative breakthroughs in science and engineering research, many who have become leaders in their chosen careers, and some who have been honored as Nobel laureates. A high priority for NSF and GRFP is increasing the diversity of the science and engineering workforce, including geographic distribution and the participation of women, minorities, persons with disabilities, and veterans.

Applicants are urged to visit the NSF web page at http://www.nsf.gov/ for more information and guidance about current and emerging themes for NSF.

II. PROGRAM DESCRIPTION

The Graduate Research Fellowship Program awards Fellowships for graduate study leading to research-based master's and doctoral degrees in the fields of science and engineering relevant to the mission of the National Science Foundation (See Fields of Study). This list provides applicants guidelines on appropriate eligible fields and is used as an aid in placing applications in the most appropriate review panel.

NSF Graduate Research Fellowships are awarded to 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 2012. This is nearly always demonstrated by a bachelor's degree in a science and engineering field earned prior to Fall 2012. In addition, Fellowship awardees must be enrolled in an accredited US university, college, or non-profit academic institution of higher education offering advanced degrees in science and engineering by Fall 2012. Confirmation of acceptance in an NSF-approved graduate degree program is required at the time of Fellowship acceptance, by May 1, 2012.

Applicants may pursue research-based graduate study at an accredited institution located in the US which grants a graduate degree in an NSF-supported field. While applicants must enroll in a US-based institution, NSF encourages graduate students to establish collaborative relationships with international researchers. US graduate students should have the opportunity to take advantage of expertise, facilities, data, and field sites located abroad; to develop an international network of collaborators early in their career; to address problems of a global nature that require international cooperation; and to be prepared to operate successfully in international teams as they join the US science and engineering workforce.

GRFP supports individuals proposing a comprehensive holistic plan for graduate education that takes into account individual interests and competencies. Thus, an applicant must provide a detailed profile of her or his relevant educational and research experiences and plans for graduate education in such a way as to demonstrate potential for significant achievements in science and engineering.

Prospective applicants are advised that submission of an application implies a commitment to the pursuit of graduate study in a research-based program in a science and engineering field supported by NSF (See Fields of Study). Acceptance of a Fellowship award is an explicit agreement that the Fellow will be duly enrolled in an NSF-approved graduate degree program in the field of study indicated in their application by the beginning of the following academic year. Changes in field of study that may occur later in the graduate career require NSF approval for continued Fellowship support.

III. AWARD INFORMATION

The NSF expects to award 2,000 Graduate Research Fellowships under this program solicitation pending availability of funds.

For each matriculated Fellow, the institution receives up to a $40,500 award per Fellow tenure year (12-month increments) to cover the costs described below. For 2012, it is anticipated that the cost-of-education allowance will increase to $12,000, as indicated in the FY2012 Budget Request.

The Graduate Research Fellowship stipend is currently $30,000 for a 12-month tenure period, prorated in whole month increments of $2,500.

The cost-of-education allowance to the institution is currently $10,500 per tenure year and is to be used by the institution toward the costs of educating the Fellow during that time period. For 2012, it is anticipated that the cost-of-education allowance will increase to $12,000, as indicated in the FY2012 Budget Request. During tenure, the institution is required to exempt Fellows from paying tuition and fees normally charged to students of similar academic standing, unless such charges are optional or are refundable (i.e., the institution is responsible for tuition and required fees in excess of the cost of education allowance). Refer to *NSF 11-031: NSF Graduate Research Fellowship Program Administrative Guide for Fellows and Coordinating Officials* for restrictions on the use of the cost-of-education allowance.

Fellows will receive announcements about GRFP support of their participation in international opportunities.

Fellows 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 Fellowships will be for a maximum of three years (in 12-month allocations, starting in summer or fall) usable over a five-year

period. The anticipated announcement date for the Fellowships is early April 2012.

Honorable Mention

The NSF accords Honorable Mention to meritorious applicants who do not receive Fellowship awards. This is considered a significant national academic achievement and provides access to cyberinfrastructure resources through the TeraGrid. Please refer to http://www.teragrid.org/ for more information on cyberinfrastructure resources.

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 enroll in an accredited United States university, college, or non-profit academic institution of higher education offering advanced degrees in science and engineering by Fall 2012. Confirmation of acceptance in an NSF-approved graduate degree program is required at the time of fellowship acceptance, by May 1, 2012.

Applicant Eligibility:

Refer to Section IV. Additional Eligibility Information.

Limit on Number of Applications per Applicant: 1

Applicants are limited to only one application in this competition.

Additional Eligibility Info:

Described in detail below are the three eligibility requirements for the Graduate Research Fellowship Program: (1) citizenship, (2) graduate plan of study degree requirements, and (3) field of study. 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 their eligibility.

Applicants must self-certify that they are eligible to receive the Fellowship.

Categories of applicants that are always ineligible:

- Those who do not hold US citizenship, national, or permanent resident status by the application deadline.
- Those who were previously awarded a fellowship from the NSF Graduate Research Fellowship Program and accepted it.
- Those who have declined the offer of the NSF Graduate Research Fellowship and who did not notify NSF by the published deadline for accepting the Fellowship.
- Those who have earned any graduate or professional degree, except applicants who have completed a joint BS/MS program and have not completed any further graduate study outside the joint program
- Current NSF employees.

1. Citizenship

Applicants must be United States citizens, nationals, or permanent residents of the United States by the application deadline.

The term "national" designates a native resident of a commonwealth or territory of the United States, such as American Samoa, Guam, Puerto Rico, US Virgin Islands, or the Northern Mariana Islands. It does not refer to a citizen of another country who has applied for US citizenship.

2. Degree Requirements

Fellowships are awarded to 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 2012. This is nearly always demonstrated by receipt of a bachelor's degree in a science or engineering field earned prior to Fall 2012.
- 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 Fall term of the second year of graduate school.
- Applicants must have completed no more than 12 months of full-time graduate study or its equivalent as of August 1, 2011. 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 24 semester hours or 36 quarter hours or their equivalent as of August 1, 2011. This credit hour limit applies only to part-time graduate students; there is no credit hour limit for full-time students.
- All post-baccalaureate, graduate-level study is counted toward the allowed 12 months of completed graduate study. This includes all Master's and doctoral programs.

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 outside 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 and Extenuating Circumstance

Applicants may have completed no more than 12 months of full-time graduate study or its equivalent by August 1, 2011. Pre-graduate participation in summer activities (e.g., bridge programs, field studies, lab rotations) offered by a graduate program prior to the start of the Fall graduate program are not included in this total.

All post-baccalaureate, graduate study is counted towards the allowed 12 months of graduate study. This includes the following:

- 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 completed outside a degree program
- Both full-time and part-time graduate programs.

Extenuating Circumstance

Applicants who have completed more than twelve months of graduate study and who have not earned a graduate degree may be considered eligible if they have had an interruption in graduate study of at least two consecutive years prior to November 2011. An eligibility essay is required in the application.

3. Field of Study

Fellowships are awarded for graduate study leading to research-based master's and doctoral degrees in the fields of science and engineering supported by the National Science Foundation (See Fields of Study, Appendix and the NSF Proposal and Awards Policies and Procedures Guide, NSF 11-1). The guidelines below should be used to assess eligibility according to the field of study criterion.

An individual's proposed research and area of study must both be in fields within NSF's mission (see Fields of Study in the Appendix). Applicants must self-certify that they are eligible to receive the Fellowship.

The following programs and areas of study and research are ineligible:

- Practice-oriented professional degree programs, joint professional degree-science programs (MD/PhD and JD/PhD), or medical, dental, law, and public health programs are not eligible. Examples of typical ineligible degree programs include MBA, MPH, MSW, and ED.
- Clinical (see below), counseling, business administration or management, social work, education (except in science and engineering education in an NSF-supported discipline), or history (except in history of science) areas of study are not supported.
    - Clinical study that is ineligible includes patient-oriented research, epidemiological and behavioral studies, outcomes research and health services research. For example, clinical study that is ineligible includes 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 ineligible.
- 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.

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 info@nsfgrfp.org.

V. APPLICATION PREPARATION AND SUBMISSION INSTRUCTIONS

A. Application Preparation Instructions

Fellowship applications and three reference letters 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 or unofficial transcript(s) is (are) due by the relevant Field of Study deadline and must be submitted electronically through the FastLane GRFP Application Module. See the Applicant User Guide for instructions on completing and submitting an application.

The FastLane GRFP Application Module includes the following information: Personal Profile, Education and Work Experience, Planned Graduate Program, Personal Statement, Previous Research Experience, Proposed Plan of Research, Transcripts, and References. Applicants should not send extraneous information or materials such as CDs, manuscripts, resumes, medical reports, or news clippings. These items will not be reviewed with an application. No additional information may be provided by links to web pages within the proposal, except as part of citations in the References Cited section. Images may be included in the page limits but will be reproduced only in black and white. Review of the application is based solely on materials received by the application deadline.

Applicants must follow the instructions in the Applicant User Guide and the FastLane GRFP Application 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 on all sides, and must be single spaced or greater. Only references and footnotes may be a smaller font, no less than 10-point Times New Roman. The Personal Statement, Previous Research Experience, and Proposed Plan of Research essays each have a maximum length of two pages, including all references, citations, charts, figures, and images. The Program Eligibility

essay is limited to one page. Failure to comply fully with these requirements will 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 or Unofficial Academic Transcripts (Must be received by Field of Study deadline)***

Academic transcripts are required for all institutions listed by the applicant in the FastLane GRFP Application Module, excluding Fall 2011. Required transcripts include academic transcripts from the baccalaureate institution and transcripts for all completed graduate work. Transcripts must be submitted electronically through the FastLane GRFP Application Module by the Field of Study application deadline.

- Three Reference Letters (Must be submitted by November 29, 2011 by 7 p.m. Eastern Standard Time)

Applications must include a total of three reference letters from non-family members to be eligible for review. Applicant-nominated reference writers submit their letters through the FastLane GRFP Application Module. Reference writers must use letterhead and include the following information: name and title of reference writer, department, and institution or organization. The reference letter is limited to two pages, and should provide details explaining the nature of the relationship to the applicant, comments on the applicant's potential for contributing to a globally-engaged United States science and engineering workforce, 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. Reference writers must provide an appropriate e-mail address for the applicant to enter into the FastLane GRFP Application Module. An exact e-mail address is crucial to matching the reference writer and the applicant in the FastLane GRFP Application Module. Applicants should ask reference writers well in advance of the application deadline, and it is recommended they provide copies of their application materials to the writers.

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 and reference letters, have been received. Applicants are strongly encouraged to make use of this feature to ensure all application materials have been received. Applicants must use the FastLane user ID and password to access this information. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov.

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. Applications classified under "Interdisciplinary Fields of Study" must be submitted by the deadline for the field of study with the highest effort. Proper response to these instructions will help insure that applications are evaluated by the most appropriate panel(s) of reviewers.

B. Budgetary Information

Cost Sharing: Inclusion of voluntary committed cost sharing is prohibited

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 Fellow stipend and cost-of- education allowance for each NSF Graduate Research Fellow "On Tenure" at that institution.

The NSF Graduate Research Fellowship Program fellowship stipend currently is $30,000 for a 12-month tenure period, prorated in monthly increments of $2,500.

The institutional cost-of-education allowance currently is $10,500 per tenure year per fellow. For 2012, it is anticipated that the cost-of-education allowance will increase to $12,000, as indicated in the FY2012 Budget Request.

C. Due Dates

- Application Deadline(s) (submitted by 7 p.m. Eastern Standard Time):

November 14, 2011

Engineering

November 15, 2011

Mathematical Sciences; Computer and Information Sciences and Engineering; Chemistry; Physics and Astronomy; Materials Research

November 16, 2011

Social Sciences; Psychology; Geosciences; STEM Education and Learning

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

A. NSF Application Review Process

Applications will be reviewed by panels of disciplinary and interdisciplinary scientists and engineers and other professional graduate education experts. 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 Field of Study in the FastLane GRFP Application module that is most closely aligned with the proposed graduate program of study and research plan.

Each application will be reviewed independently in accordance with the NSF Merit Review Criteria using all available information in the completed application. In considering applications, reviewers are instructed to address the two Merit Review Criteria as approved by the National Science Board - Intellectual Merit and Broader Impacts (NSF Proposal and Awards Policies and Procedures Guide, NSF 11-1). Therefore, applicants must address explicitly each criterion in their written statements in order to provide reviewers with the information necessary to evaluate the application with respect to both Criteria as detailed below.

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? If international activities are proposed, are the proposed activities relevant and do they benefit the applicant?

For example, panelists may consider the following with respect to the Intellectual Merit Criterion: the strength of the academic record, the proposed plan of research, the description of previous research experience or publication/presentations, references, and the appropriateness of the choice of institution relative to the proposed plan for graduate education and research.

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? Background information and examples of Broader Impacts activities are available at http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf.

For example, panelists may consider the following with respect to the Broader Impacts Criterion: the personal, professional, and educational experiences, the future plans and prior accomplishments in the integration of research and education, and the potential to reach diverse audiences and benefit society.

B. Application Review and Selection Process

Applications submitted in response to this program solicitation will be reviewed by Panel Review.

The application evaluation involves the review, rating, and ranking of applications by disciplinary and interdisciplinary scientists and engineers, and other professional graduate education experts.

The primary responsibility of each panel is to evaluate the merit of eligible GRFP applications by applying the National Science Board-approved Merit Review Criteria of Intellectual Merit and Broader Impacts, and to subsequently recommend applicants for NSF Graduate Research Fellowships. Panelists are instructed to review the applications holistically in the context of applying NSF's Merit Review Criteria and the GRFP emphasis on demonstrated potential for significant achievements in science and engineering. NSF determines the successful applicants from these recommendations, with Fellowships and Honorable Mention offered based on the GRFP portfolio within the context of NSF's mission.

After NSF Fellowship offers are made, applicants are able to view the verbatim reviewer comments, excluding the names of the reviewers, through a secure website at the NSF GRFP FastLane website.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

The Division of Graduate Education generally notifies applicants within six months after the deadline of the outcome of their applications. The NSF publishes lists of Fellowship and Honorable Mention recipients on the GRFP website at http://www.fastlane.nsf.gov/grfp/ in April 2012. This information is extracted from the applications and cannot be changed.

B. Award Conditions

An NSF Graduate Research Fellowship award consists of the notification letter that includes the applicable terms and conditions and Fellowship management instructions. All Fellowships are made subject to the provisions (and any subsequent amendments) contained in the document *NSF 11-031: Administrative Guide for Fellows and GRFP Coordinating Officials.*

NSF will award GRFP Fellowship Grants to the Institution providing funds for NSF Fellows who have "on tenure" status. The Institution will accept such grants, including any amendments to them and administer them in accordance with the terms of the Agreement and provisions (and any subsequent amendments) contained in the document *NSF 11-031: Administrative Guide for Fellows and GRFP Coordinating Officials.*

NSF Graduate Research Fellowship Program applicants will be notified in early April 2012 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 and acceptance of award conditions by the deadline will result in revocation of the Fellowship offer and render applicants ineligible to re-apply.

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.

Award Conditions

Awardees must formally accept and agree to the terms and conditions of the award. Acceptance of a Fellowship award is an explicit acceptance of this commitment and assurance that the Fellow will be duly enrolled in an NSF-approved graduate degree program in the field of study indicated in their application by the beginning of the following academic year. Awardees are expected to enroll in the program proposed in their application and follow the course of study in that program. Major changes in scope later in the graduate career require NSF approval. NSF 11-031: *Administrative Guide for Fellows and GRFP Coordinating Officials* includes the terms and conditions that apply to the Fellowship and subsequent institutional award, in addition to the eligibility requirements (citizenship, degree requirements and field of study) and Certifications in the application.

The GRFP fellowship cannot be accepted concurrently with another Federal fellowship.

Responsible Conduct of Research

Institutions are responsible for verifying that undergraduate students, graduate students, and postdoctoral researchers supported by NSF to conduct research have received training in the responsible and ethical conduct of research.

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 US 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

Acknowledgment of Support

All publications, presentations, and creative works based on activities conducted during the Fellowship must acknowledge NSF GRFP Support:

"This material is based upon work supported by the National Science Foundation Graduate Research Fellowship under Grant No. (NSF 11-582)."

Annual Activity Report

Regardless of tenure status, Fellows are required to submit an Activity Report annually, 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 activities related to broader impacts, presentations, publications, teaching and research assistantships, awards and recognitions, and other scholarly and service accomplishments.

Annual Tenure Declaration

By the Fellowship acceptance deadline individuals receiving the Fellowship offer must be accepted by and duly enrolled in by the beginning of the following academic year, an NSF-approved graduate degree program. Fellows must declare their intent to utilize the Fellowship for the following year annually using the NSF GRFP FastLane Fellowship management and reporting system. Failure to declare intent by the established deadline violates the terms and conditions for NSF Fellowship awards, resulting in revocation of the fellowship offer.

Program Evaluation

The Division of Graduate Education (DGE) is conducting an evaluation to determine how effectively the GRFP is achieving its aim of responding to the nation's need for a diverse, internationally competitive and globally-engaged 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 Graduate Research Fellowship has had on their graduate education experience. Accordingly, Fellows may be contacted during and after the completion of this Fellowship for updates on various aspects of their employment history, professional activities and accomplishments, participation in international research collaborations, and other information helpful in evaluating the impact of the program. Fellows and their institutions agree to cooperate in program-level evaluations conducted by the NSF and/or contracted evaluators.

VIII. AGENCY CONTACTS

Please note that the program contact information is current at the time of publishing. See program website (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=6201) for any updates to the points of contact.

General inquiries regarding this program should be made to:

- Applications, contact: GRF Operations Center, telephone: (866) 673-4737, email: info@nsfgrfp.org
- Gisele T. Muller-Parker, telephone: (703) 292-8694, email: grfp@nsf.gov
- Doris L. Carver, telephone: (703) 292-8694, email: grfp@nsf.gov
- Gilbert John, telephone: (703) 292-8694, email: grfp@nsf.gov
- Richard McCourt, telephone: (703) 292-8694, email: grfp@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: info@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.

Students are encouraged to gain professional experience in other countries through their university graduate programs, and to participate in international research opportunities offered by NSF at: http://www.nsf.gov/od/oise/stud-early-career.jsp. Other funding opportunities for students are available at http://www.nsfgrfp.org/.

ABOUT THE NATIONAL SCIENCE FOUNDATION

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

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

NSF receives approximately 55,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

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

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

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

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

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

- Location: 4201 Wilson Blvd. Arlington, VA 22230
- For General Information (NSF Information Center): (703) 292-5111
- TDD (for the hearing-impaired): (703) 292-5090
- To Order Publications or Forms:
  - Send an e-mail to: nsfpubs@nsf.gov
  - or telephone: (703) 292-7827
- To Locate NSF Employees: (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to

the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and NSF-51, "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0023. 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

Fields of Study

Note: Applicants are reviewed in panels based on their primary Field of Study. The "other" field of study category should only be selected by applicants if the proposed field of study is not covered by one of the following fields, and should not be used to designate a field of study that is more specific than the fields listed.

CHEMISTRY

Chemical Catalysis
Chemical Measurement and Imaging
Chemical Structure, Dynamics, and Mechanism
Chemical Synthesis
Chemical Theory, Models and Computational Methods
Chemistry of Life Processes
Environmental Chemical Systems
Macromolecular, Supramolecular, and Nanochemistry
Sustainable Chemistry
Chemistry, other (specify)

COMPUTER AND INFORMATION SCIENCE AND ENGINEERING (CISE)

Algorithms and Theoretical Foundations
Communication and Information Theory
Computational Science and Engineering
Computer and Information Security
Computer Architecture
Computer Systems, Networking, and Embedded Systems
Databases
Data Mining and Information Retrieval
Graphics and Visualization
Human Computer Interaction
Informatics
Machine Learning
Natural Language Processing
Robotics and Computer Vision
Software Systems and Software Engineering CISE, other (specify)

ENGINEERING

Aeronautical and Aerospace
Bioengineering
Biomedical
Chemical Engineering
Civil Engineering
Computer Engineering
Electrical and Electronic
Energy
Environmental
Industrial Engineering & Operations Research
Materials
Mechanical
Nuclear
Ocean
Optical Engineering
Polymer
Systems Engineering
Engineering, other (specify)

GEOSCIENCES

Atmospheric Chemistry
Aeronomy

Biogeochemistry
Biological Oceanography
Chemical Oceanography
Climate and Large-Scale Atmospheric Dynamics
Geobiology
Geochemistry
Geodynamics
Geophysics
Glaciology
Hydrology
Magnetospheric Physics
Marine Biology
Marine Geology and Geophysics
Paleoclimate
Paleontology and Paleobiology
Petrology
Physical and Dynamic Meteorology
Physical Oceanography
Sedimentary Geology
Solar Physics
Tectonics
Geosciences, other (specify)

LIFE SCIENCES

Biochemistry
Biophysics
Cell Biology
Developmental Biology
Ecology
Environmental Science
Evolutionary Biology
Genetics
Genomics
Microbiology
Molecular Biology
Neurosciences
Organismal Biology
Physiology
Proteomics
Structural Biology
Systematic Biology
Life Sciences, other (specify)

MATERIALS RESEARCH

Biomaterials
Ceramics
Chemistry of materials
Electronic materials
Materials theory
Metallic materials
Photonic materials
Physics of materials
Polymers
Materials Research, other (specify)

MATHEMATICAL SCIENCES

Algebra, Number Theory, and Combinatorics Analysis
Applied Mathematics
Biostatistics
Computational and Data-enabled Science
Computational Mathematics
Computational Statistics
Geometric Analysis
Logic or Foundations of Mathematics
Mathematical Biology
Probability
Statistics
Topology
Mathematics, other (specify)

PHYSICS AND ASTRONOMY

Astronomy and Astrophysics
Atomic, Molecular and Optical Physics
Condensed Matter Physics
Nuclear
Particle Physics
Physics of Living Systems
Plasma
Solid State
Theoretical Physics
Physics, other (specify)

PSYCHOLOGY

Cognitive
Cognitive Neuroscience
Computational Psychology
Developmental
Experimental or Comparative
Industrial/Organizational
Neuropsychology
Perception and Psychophysics
Personality and Individual Differences
Physiological
Psycholinguistics
Quantitative
Social
Psychology, other (specify)

SOCIAL SCIENCES

Archaeology
Biological Anthropology
Cultural Anthropology
Anthropology, other
Communications
Decision Making and Risk analysis
Economics (except Business Administration)
Geography
History and Philosophy of Science
International Relations
Law and Social Science
Linguistics
Linguistic Anthropology
Medical Anthropology
Political Science
Public Policy
Science Policy
Sociology (except Social Work)
Urban and Regional Planning
Social Sciences, other (specify)

STEM EDUCATION AND LEARNING RESEARCH

Engineering Education
Mathematics Education
Science Education
Technology Education
STEM Education and Learning Research, other (specify)