

Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences (UBM)

Program Solicitation

NSF 06-541

Replaces Document NSF 04-546



National Science Foundation

Directorate for Biological Sciences

Emerging Frontiers

Directorate for Education and Human Resources

Division of Undergraduate Education

Directorate for Mathematical and Physical Sciences

Division of Mathematical Sciences

Office of Multidisciplinary Activities

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

May 18, 2006

REVISIONS AND UPDATES

This revision:

1. Provides additional guidance on information that should be included in the project description.
2. Requests that projects be designated as one of two categories: 5-year duration, large scope projects that involve institutional curricular change, or 3-year duration, small scope projects that focus on student mentoring and research experiences.
3. Provides additional guidance on budget for each scope of project.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences (UBM)

Synopsis of Program:

The goal of the Undergraduate Biology and Mathematics (UBM) activity is to enhance undergraduate education and training at the intersection of the biological and mathematical sciences and to better prepare undergraduate biology or mathematics students to pursue graduate study and careers in fields that integrate the mathematical and biological sciences. The core of the activity is long-term research experiences for interdisciplinarily balanced teams of at least four undergraduates. Projects should focus on research at the intersection of the mathematical and biological sciences. Projects should provide students exposure to contemporary mathematics and biology, addressed with modern research tools and methods. That is, projects must be genuine research experiences rather than rehearsals of research methods. Projects must

involve students from both areas in collaborative research experiences and include joint mentorship by faculty in both fields. In addition, it is expected that projects will strengthen the research and education capacity, infrastructure, and culture of the participating institutions. To this end, projects should create models for education in the mathematical and biological sciences and influence the direction of academic programs for a broad range of students. UBM is a joint effort of the Education and Human Resources (EHR), Biological Sciences (BIO), and Mathematical and Physical Sciences (MPS) Directorates at the National Science Foundation (NSF).

Cognizant Program Officer(s):

- Mary Ann Horn, Program Director, Directorate for Mathematical & Physical Sciences, Division of Mathematical Sciences, 1025 N, telephone: (703) 292-4879, email: mhorn@nsf.gov
- John R. Haddock, Program Director, Directorate for Education & Human Resources, Division of Undergraduate Education, 835 N, telephone: (703) 292-8670, email: jhaddock@nsf.gov
- Samuel M. Scheiner, Program Director, Directorate for Biological Sciences, Division of Environmental Biology, 635 N, telephone: (703) 292-8481, fax: (703) 292-9064, email: sscheine@nsf.gov

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

- 47.074 --- Biological Sciences
- 47.076 --- Education and Human Resources
- 47.049 --- Mathematical and Physical Sciences

Eligibility Information

- **Organization Limit:** None Specified.
- **PI Eligibility Limit:** None Specified.
- **Limit on Number of Proposals:** None Specified.

Award Information

- **Anticipated Type of Award:** Standard Grant
- **Estimated Number of Awards:** 6 to 9
- **Anticipated Funding Amount:** \$3,200,000 in FY2006 pending availability of funds

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Full Proposal Preparation Instructions:** This solicitation contains information that supplements 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 by NSF.
- **Indirect Cost (F&A) Limitations:**

An administrative allowance, limited to 25% of the participant support stipend amount (Line F.1. on the proposal budget) only, is allowed for UBM awards as partial reimbursement of indirect costs. That amount should be entered on Line I (Total Indirect Costs) on the proposal budget.

- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

- **Full Proposal Deadline Date(s)** (due by 5 p.m. submitter's local time):
May 18, 2006

Proposal Review Information

- **Merit Review Criteria:** National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

Award Administration Information

- **Award Conditions:** Standard NSF award conditions apply.
- **Reporting Requirements:** Standard NSF reporting requirements apply.

TABLE OF CONTENTS

Summary of Program Requirements

I. Introduction

II. Program Description

III. Eligibility Information

IV. Award Information

V. Proposal Preparation and Submission Instructions

- A. Proposal Preparation Instructions
- B. Budgetary Information
- C. Due Dates
- D. FastLane Requirements

VI. Proposal Review Information

- A. NSF Proposal Review Process
- B. Review Protocol and Associated Customer Service Standard

VII. Award Administration Information

- A. Notification of the Award
- B. Award Conditions
- C. Reporting Requirements

VIII. Contacts for Additional Information

IX. Other Programs of Interest

I. INTRODUCTION

The goal of the Undergraduate Biology and Mathematics (UBM) activity is to enhance undergraduate education and training at the intersection of the biological and mathematical sciences and to better prepare undergraduate biology or mathematics students to pursue graduate study and careers in fields that integrate the mathematical and biological sciences. UBM aims to broaden undergraduate research experiences and enhance capacity for, infrastructure in support of, and commitment to excellence in undergraduate education. It is a joint effort of the Education and Human Resources (EHR), Biological Sciences (BIO), and Mathematical and Physical Sciences (MPS) Directorates at the National Science Foundation (NSF).

There has been an explosion of knowledge in the life sciences over the past twenty years that cuts across all levels from molecules to ecosystems. Current research is often characterized by integrative and interdisciplinary approaches. At the center of this explosion of knowledge is a revolution in instrumentation, computational abilities, information systems, and mathematical tools.

There has been a parallel growth in understanding in the mathematical sciences. Theoretical advances in complexity, dynamical systems, and uncertainty, coupled with advances in modeling and in computational methods, have helped mathematicians and statisticians put ideas into action. This has enabled expansion in the use of mathematics and statistics beyond the traditional fields of physical science and engineering. As that expansion has taken hold, the life sciences and other fields are posing new kinds of questions for the mathematical sciences, stimulating further the growth of mathematical ideas.

Thus, the intersection of the biological and mathematical sciences is a fertile field for both sets of disciplines, where results in each area lead to advances in the other. However, there are comparatively few people able to work in this intersection. UBM aims to transcend traditional boundaries in educating biological and mathematical scientists. It should expand the community of faculty capable of working at the intersection of the disciplines and better prepare students for more advanced work in both the biological sciences and the mathematical sciences. Projects must involve students from both areas in collaborative research experiences and include joint mentorship by faculty in both fields. Projects should create models for education in the mathematical and biological sciences and influence the direction of academic programs for a broad range of students.

Individually, UBM projects will have a significant impact on the undergraduate programs of participating institutions. Collectively, they will strengthen the nation's research enterprise by providing new mechanisms for attracting a larger, more diverse group of students to careers that involve both the mathematical and biological sciences.

II. PROGRAM DESCRIPTION

UBM provides opportunities for funding of undergraduate education and training efforts that integrate the biological sciences and mathematical sciences. Such efforts are expected to:

- Be grounded in research activities involving both mathematical and biological sciences;
- Connect to regular academic studies, influencing the direction of academic programs for a broad range of students;
- Involve students from both areas in significant research experiences that connect to research at the intersection of the disciplines; and
- Show commitment to joint mentorship by faculty in both fields.

Proposals may be of either large scope (Institutional projects) or small scope (Group projects).

Institutional projects are expected to be of five years duration, should assemble a diverse team of senior personnel, and in addition to research experiences and mentoring should address institutional curricular change that broadly engages the biological and mathematical sciences. These long-term projects will be reviewed in the third year and continuation of funding in years four and five will depend on a successful outcome.

Group projects are expected to be of three years duration, and should emphasize joint mentoring and research experiences for undergraduate students at the interface of biological and mathematical science.

Research activities should focus on areas funded by the Division for Mathematical Sciences and the Directorate for Biological Sciences. NSF does not normally support bioscience 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.

Within this context, there is room for a variety of activities, ranging from undergraduate research participation, through curriculum and faculty development, as well as internships outside the academic institution. All projects must include:

- Student involvement in original research at the intersection of the biological and mathematical sciences;
- Annual recruitment of students organized into multiple teams. Each team should consist of four or more students, and include a balance of students from the mathematical and biological sciences, working and learning together;
- Long-term involvement of each student with project activities - more than a semester or a summer - to provide immersion, intense involvement in research, and mutual reinforcement between the research and classroom activities;
- Extensive, interdisciplinary mentoring, conducted jointly by faculty from each discipline;
- A diversity of students with attention to ethnic and gender diversity;

Institutional proposals must additionally include:

- Use of program models to motivate curriculum changes and faculty development; and

- The ability to affect programs and students beyond those directly involved in the project.

UBM will include annual meetings of awardees to share information and encourage student/faculty exchanges among awardees. Opportunities for partnering across institutions and for developing international collaborations are welcome. Fieldwork may be appropriate. While the core of UBM research projects and educational activities is the intersection of the biological and mathematical sciences, it is open to projects that include other disciplines as appropriate such as the physical sciences, social sciences, computer sciences, and engineering. However, UBM funds can only be used for students or other personnel from the biological or mathematical sciences.

Dissemination of information about project outcomes to a broader audience is also important. UBM aims to create new models for approaches to interdisciplinary education and training. UBM projects should strengthen educational capacity, infrastructure, and culture at participating institutions, as reflected in the number and inclusiveness of participating mentors and students and the quality of their research experience. Educational culture is linked to campus resource investment and to the value placed on participation by mentors in the undergraduate research enterprise by the institution. Educational culture also embraces the fostering of student learning and professional development and an appreciation for the integration of research and education. UBM projects should contribute substantially to an enhanced and sustainable undergraduate educational enterprise that strengthens mathematical training or education for those students studying biology, and interdisciplinary training for those studying mathematics.

The program encourages collaborations that bring together biological and mathematical scientists from associate, baccalaureate, masters, or Ph.D. granting institutions, minority serving institutions, national and regional organizations, and that may involve industrial or government laboratories.

Eligible Student Participants: Undergraduate student participants supported with NSF funds must be citizens or permanent residents of the United States or its possessions. An undergraduate student is a student who is enrolled in a degree program (part-time or full-time) leading to a baccalaureate or associate degree. Students who are transferring from one institution to another and are enrolled at neither institution during the intervening summer may participate. High school graduates who have not yet enrolled and students who have received their bachelor's degrees generally are not eligible. While undergraduates at all stages are eligible, students will be involved in genuine interdisciplinary research and must be accordingly qualified. The heart of the UBM project must be a research experience, not simply a classroom experience. Thus, the proposal should outline the process that will be used to select student participants, including ensuring that the students have the proper prerequisites. Collaborations between universities, four-year colleges, and two-year colleges are encouraged.

III. ELIGIBILITY INFORMATION

The categories of proposers identified in the [Grant Proposal Guide](#) are eligible to submit proposals under this program announcement/solicitation.

IV. AWARD INFORMATION

NSF anticipates making 6 to 9 standard grants, including 2 to 3 institutional awards and 4 to 6 group awards.

The anticipated funding amount is \$3.2 million in FY 2006 pending the availability of funds.

The duration of projects may be up to five years (for Institutional projects), or up to three years (for Group projects), and we strongly encourage projects of these durations. Institutional projects longer than three years will be reviewed in the third year, and further funding will depend on the outcome of this review.

Total award sizes for Institutional projects should not exceed an average of \$200,000 per year. For example, an award for a project of five years duration is limited to a maximum of \$1 million. Total award sizes for Group projects should not exceed \$80,000 per year. For example an award for a project of three years duration is limited to a maximum of \$240,000.

Estimated program budget, number of awards and average award size/duration are subject to the availability of funds.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Instructions:

Proposals submitted in response to this program announcement/solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF *Grant Proposal Guide* (GPG). The complete text of the GPG is available electronically on the NSF Website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

The following instructions supplement the GPG guidelines.

1. **Cover Sheet.** The title of the project should begin "UBM- Institutional:", or "UBM-Group:..." depending on type of proposed project.
2. **Project Description.** The project description is not to exceed 15 pages in length and should contain the following items:
 - a. Results from Prior NSF Support (if applicable).
 - b. Overview. Provide a brief description of the objectives of the proposed UBM project (including the central theme(s) of the research projects), the targeted student participants, the intellectual focus and innovative strategies, the organizational structure and timetable, and institutional endorsement of the UBM activity. Endorsement letter(s) from appropriate institutional administrators should be included as supplementary documents.
 - c. Nature of Student Activities. Proposals should address the approach to undergraduate research training, including description of current or planned courses that will expose student participants to both the mathematical and the biological sciences important for their research immersion experience, detailed descriptions or examples of the interdisciplinary research projects that teams of students will pursue, and plans for presentation and dissemination of research results, including any travel to scientific meetings. Any other activities (e.g., seminars, group discussions, lectures, workshops) should be discussed as well as the activities for providing a group experience. A schedule of the year-round activities should be provided.
 - d. Connection to Regular Academic Studies. Institutional proposals should describe the ways in which the UBM activity will influence academic programs for a broader range of students, including curriculum development and changes to strengthen mathematical training for biology students, and interdisciplinary training for mathematics students.
 - e. Research Environment and Mentoring Activities. Proposals should describe the collaborative structure for joint mentoring of student teams by mathematical and biological sciences faculty. For senior personnel who will serve as research mentors, proposals must describe the mentoring activities planned and the past experience and record of involvement with undergraduate research.
 - f. Student Recruitment and Selection. The recruitment plan should be described with as much specificity as possible. NSF is particularly interested in increasing the participation in research of women, underrepresented minorities, and persons with disabilities. Underrepresented minorities are African-Americans, Hispanics, Native Americans, and Native Pacific Islanders. Only undergraduate students who are citizens or permanent residents of the United States or its possessions can be supported with NSF funds.
 - g. Project Management. A clear management plan should be described, including mechanisms for dealing with possible changes in faculty participation over the course of the project.
 - h. Project Evaluation and Reporting. A plan for qualitative and quantitative evaluation of the proposed project must be provided. The objective of the evaluation process is to measure qualitatively and quantitatively the success of the project in achieving its goals, particularly the degree to which students have strengthened their capacity to do research at the intersection of the mathematical and biological sciences. The evaluation plan should include metrics on such key issues as the number of mathematics and biology majors supported, the biology and mathematics research fields served, and the impact on the programs at the organizations involved. Demographic data on the students supported must also be reported. Although not

required, the principal investigator may wish to engage educational research specialists in planning and implementing the project evaluation. Additionally, it is highly desirable to have a structured means of tracking participating students beyond graduation with the aim of gauging the degree to which the research experience has been a lasting influence as they follow their career paths.

Evaluation may involve periodic measures throughout the project to ensure that it is progressing satisfactorily according to the project plan, and may involve pre- and post-project measures aimed at determining the degree of student learning that has been achieved as a result of the project. **In particular, for Institutional projects a mid-term assessment (at the end of the third year) is deemed critical.** For guidance, proposers may wish to consult the NSF on-line document, "User-Friendly Handbook for Project Evaluation" (NSF 02-57), <http://www.nsf.gov/pubsys/ods/getpub.cfm?nsf02057>).

3. **Biographical Sketches.** The GPG guidelines for biographical material apply; however, senior personnel are encouraged to include publications with undergraduate co-authors (with the student labeled by an asterisk) and other activities or accomplishments relevant to a successful UBM activity. Senior personnel are the principal investigator, any co-principal investigators, and any other faculty/professionals who are anticipated to serve as research mentors.
4. **Project Budget.** Project costs should include student stipends, and may include laboratory use fees, housing (if appropriate during the summer months) and travel for student participants. Enter those amounts on the appropriate participant support category on Line F on the proposal budget. The budget may also include items such as faculty salaries, salaries for graduate students or post-doctoral scholars to the extent that they serve as auxiliary mentors for the undergraduates, support for coordination activities, and equipment and other direct costs (e.g., materials, publication costs). Funds should also be budgeted for travel to an annual awardees meeting. As a guide to budget development, participant support costs (Line F) plus the administrative allowance (Line I - Total Indirect Costs) should be at least 50% of the total budget request, and faculty salaries should be limited to 2 weeks annual support except for the lead P.I., who may request 1 month each year.

Proposers are reminded to identify the program announcement/solicitation number (06-541) in the program announcement/solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost Sharing:

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

Indirect Cost (F&A) Limitations:

An administrative allowance, limited to 25% of the participant support stipend amount (Line F.1. on the proposal budget) only, is allowed for UBM awards as partial reimbursement of indirect costs. That amount should be entered on Line I (Total Indirect Costs) on the proposal budget.

Other Budgetary Limitations:

Total award sizes are limited to an average of \$200,000 per year for Institutional awards, and \$80,000 per year for Group awards; for example, an Institutional award with a five-year duration is limited to a maximum of \$1 million, and a Group award with a three-year duration is limited to a maximum of \$240,000.

C. Due Dates

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

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

May 18, 2006

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this announcement/solicitation through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program announcement/solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this announcement/solicitation.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the [Grant Proposal Guide](#) for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Proposers are no longer required to provide a paper copy of the signed Proposal Cover Sheet to NSF. Further instructions regarding this process are available on the FastLane Website at: <http://www.fastlane.nsf.gov>

VI. PROPOSAL REVIEW INFORMATION

A. NSF Proposal Review Process

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

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

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

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

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

The two National Science Board approved merit review criteria are listed below (see the [Grant Proposal Guide](#) Chapter III.A for further information). The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which he/she is qualified to make judgments.

What is the intellectual merit of the proposed activity?

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

What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning?

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

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

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

Additional Review Criteria:

All proposals will be evaluated on the extent to which they include commitment and collaboration of both mathematical and biological scientists in the project, and the degree of student participation and immersion in the proposed activities.

B. Review Protocol and Associated Customer Service Standard

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

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

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

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program Division administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided

automatically to the Principal Investigator. (See section VI.A. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (NSF-GC-1); * or Federal Demonstration Partnership (FDP) Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

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

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

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

C. Reporting Requirements

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

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for the PI and all Co-PIs. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project reporting system, available through FastLane, for preparation and submission of annual and final project reports. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, publications, and other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system.

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries regarding this program should be made to:

- Mary Ann Horn, Program Director, Directorate for Mathematical & Physical Sciences, Division of Mathematical Sciences, 1025 N, telephone: (703) 292-4879, email: mhorn@nsf.gov
- John R. Haddock, Program Director, Directorate for Education & Human Resources, Division of Undergraduate Education, 835 N, telephone: (703) 292-8670, email: jhaddock@nsf.gov
- Samuel M. Scheiner, Program Director, Directorate for Biological Sciences, Division of Environmental Biology, 635 N, telephone: (703) 292-8481, fax: (703) 292-9064, email: sscheine@nsf.gov

For questions related to the use of FastLane, contact:

- Carmen Franceschi, Program Assistant, Directorate for Mathematical & Physical Sciences, Division of Mathematical

IX. OTHER PROGRAMS OF INTEREST

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

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

Related Programs:

- Research Experiences for Undergraduates ([NSF 05-592](#))
- Undergraduate Mentoring in Environmental Biology ([NSF 05-558](#))
- Research in Undergraduate Institutions ([NSF 00-144](#))
- Centers For Learning and Teaching ([NSF 05-613](#))
- Science of Learning Centers ([NSF 05-509](#))
- Science, Technology, Engineering, and Mathematics Talent Expansion Program ([NSF 06-502](#))
- Louis Stokes Alliances for Minority Participation (LSAMP) Program ([NSF 05-585](#))
- Robert Noyce Scholarship Program ([NSF 06-528](#))
- Course, Curriculum, and Laboratory Improvement (CCLI) ([NSF 06-536](#))

ABOUT THE NATIONAL SCIENCE FOUNDATION

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

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

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

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

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

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230
- **For General Information** (NSF Information Center): (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**

Send an e-mail to: pubs@nsf.gov

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; project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to applicant institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies needing information as part of the review process or in order to coordinate programs; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to an information collection unless it displays a valid OMB control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Division of Administrative Services, National Science Foundation, Arlington, VA 22230.

OMB control number: 3145-0058.

[Policies and Important Links](#)

[Privacy](#)

[FOIA](#)

[Help](#)

[Contact NSF](#)

[Contact Web Master](#)

[SiteMap](#)



The National Science Foundation, 4201 Wilson Boulevard, Arlington, Virginia 22230, USA
Tel: (703) 292-5111, FIRS: (800) 877-8339 | TDD: (800) 281-8749

Last Updated:
06/09/05
[Text Only](#)