Microbial Observatories (MO) and Microbial Interactions and Processes (MIP)

Program Solicitation
NSF 05-600

Replaces Document(s):
NSF 04-586

National Science Foundation

Directorate for Biological Sciences
Division of Molecular and Cellular Biosciences

USDA Cooperative State Research, Education and Extension Service

Full Proposal Target Date(s):

October 27, 2005

October 09, 2006

October 08, 2007

REVISION NOTES

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

In response to this program solicitation, proposers may opt to submit proposals via Grants.gov or via the NSF FastLane system. In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.3 of the Grant Proposal Guide provides additional information on collaborative proposals.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Microbial Observatories (MO) and Microbial Interactions and Processes (MIP)

Synopsis of Program:

Microorganisms are the oldest, most diverse and most abundant forms of life on Earth. However, the identity, physiology and interactions of the vast majority of these microbes, as well as the processes they mediate in the environment, remain unknown or poorly understood. Advances in molecular biology, genomics and bioinformatics, and cultivation technologies herald a new age of exploration of the microbial world. The Microbial Observatories (MO) and Microbial Interactions and Processes (MIP) activities will support research to discover and characterize novel microorganisms, microbial consortia, communities, activities and other novel properties, and to study their roles in diverse environments.

The Microbial Observatories activity is a continuation of MO competitions held since 1999 (for a list of prior awards, see http://www.nsf.gov/bio/pubs/awards/mo.htm). The long-term goal of this activity is to develop a network of sites or "microbial observatories" in different habitats to study and understand microbial diversity over time and across environmental gradients. Projects supported are expected to establish or participate in an established, Internet-accessible knowledge network to disseminate information resulting from these activities. In addition, educational and outreach activities such as formal or informal training in microbial biology, and activities that will broaden the participation of underrepresented groups in microbial research and education are expected. Beginning with the October 2005 target date, the USDA/CSREES will partner with NSF to support MO projects relevant to agroecosystems.

Microbial Interactions and Processes (MIP) expands the range of the MO competition to support microbial diversity research projects that need not be site-based, and that are smaller and/or shorter in duration than MO projects. MIP projects will be considered for funding by NSF only. This expanded activity will fund integrative studies that explore novel microorganisms, their interactions in consortia and communities, and aspects of their physiology, biochemistry and genomics in relationship to the processes that they carry out in the environment.

Cognizant Program Officer(s):

- Matthew D Kane, Program Director, 655 S, telephone: (703) 292-7186, fax: (703) 292-9061, email: mkane@nsf.gov
- John L Sherwood, National Program Leader, CSREES, U.S. Department of Agriculture, telephone: (202) 690-1659, fax: (202) 401-1782, email: jsherwood@csrees.usda.gov

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

- 47.074 --- Biological Sciences

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 10 awards each for MO and MIP per year.

Anticipated Funding Amount: $4,500,000 for new awards, pending availability of funds.

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

- For NSF, the categories of proposers identified in the Grant Proposal Guide are eligible to submit

proposals under this program solicitation. For CSREES, except where otherwise prohibited by law, State agricultural experiment stations, all colleges and universities, other research institutions and organizations, Federal agencies, national laboratories, private organizations or corporations, and individuals are eligible to submit proposals under this program solicitation.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable
- Full proposals submitted via FastLane:
  - Grant Proposal Guide (GPG) Guidelines apply
- Full proposals submitted via Grants.gov:
  - NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: http://www.nsf.gov/bfa/dias/policy/docs/grantsgovguide.pdf/) To obtain copies of the Application Guide and Application Forms Package: click on the Apply tab on the Grants.gov website, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required by NSF.
- **Indirect Cost (F&A) Limitations:** For NSF awards, see the GPG for NSF policy on indirect costs. For CSREES awards, Section 710 of the FY 2005 Consolidated Appropriations Act (Public Law 108-447) limits indirect costs to 20 percent of the total Federal funds provided under each award. To accommodate differences in allowable indirect costs between CSREES and NSF, proposers may be required at the time of award to submit separate budgets with indirect cost rates appropriate to the awarding agency.
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this announcement for further information.

C. Due Dates

- **Full Proposal Target Date(s):**

  October 27, 2005

  October 09, 2006

October 08, 2007

Proposal Review Information Criteria

Merit Review Criteria: National Science Board approved criteria apply.

Award Administration Information

Award Conditions: Additional award conditions apply. Please see the full text of this announcement for further information.

Reporting Requirements: Additional reporting requirements apply. Please see the full text of this announcement for further information.

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I. INTRODUCTION

Of the tens of millions of species of living organisms on Earth, only about 1.75 million have been scientifically described. The vast majority of undescribed species are prokaryotic (bacteria, archaea) and eukaryotic microorganisms (algae, protozoa, fungi). This reservoir of organismal diversity remains largely unexplored despite a range of colonizable habitats, biochemical and molecular processes, genomic variation, and consortial/symbiotic behavior far greater than that shown in larger, multicellular organisms. Prokaryotic and eukaryotic microbes are key elements of food webs, may inhibit or trigger significant ecological events (e.g. harmful algal blooms), and are responsible, directly or indirectly, for the health or diseases of larger organisms. Microorganisms produce numerous bioactive compounds, some of which are the basis for novel pharmaceuticals or other commercially useful products. Microbial communities are known to play fundamentally important roles in biogeochemical cycles. Studies of microbial evolution at the genetic and genomic levels provide important clues about how

microbial attributes appear, and are exchanged among cells and species in nature. To discover and understand the diversity of microorganisms, their interactions and novel processes remain major challenges in biology.

In September 2002, a workshop was held for PIs that had been funded by the Microbial Observatories and Life in Extreme Environments (LExEn) programs. The chief recommendations from that workshop (for full report see: http://simo.marsci.uga.edu/MainWeb/pages/MOLExEnWorkshop.pdf) were that the MO activity should be continued, but that a complementary opportunity for smaller microbial diversity projects that were not necessarily site-based was also critically needed. In response to that recommendation, in FY 2003 the MO activity was broadened to include Microbial Interactions and Processes (MIP). In September of 2004, a workshop was held which included PIs funded by the MO/MIP Program and additional scientists with expertise in the ecology of agriculturally significant microorganisms. Recommendations from that workshop (for a full report, see http://www.tbi.montana.edu/events/mo.html) were that USDA/CSREES and NSF should initiate a collaborative, interagency program which would expand the scope of the MO/MIP program to support characterization of microbial communities relevant to agroecosystems. Accordingly, NSF and/or the USDA/CSREES will support relevant MO projects. MIP projects will only be eligible for support by NSF.

II. PROGRAM DESCRIPTION

The guiding themes of the Microbial Observatories (MO) and Microbial Interactions and Processes (MIP) program are: (1) discovery of large numbers of as yet undescribed microorganisms and microbial consortia from diverse habitats; and (2) characterization of novel biochemical, metabolic, physiological, genomic and other properties and processes of newly described or poorly understood microbes and microbial communities. Both MO and MIP proposals must describe how the work will make a substantial impact on scientific understanding of the diversity of microorganisms and microbial communities and their role in diverse environments. By contrast, explicitly discouraged are those that lack a dimension beyond species discovery and routine phylogenetic characterization, or those addressing the molecular and cellular biology of a microorganism in the absence of a direct environmental context.

Examples of additional aspects of microbial diversity research that **either MO or MIP** proposals might address include but are not limited to:

- Studies to determine the phylogenetic, physiological, metabolic and genomic properties and mechanisms responsible for microbial growth, adaptation and survival in natural and managed environments;
- Studies of the mechanistic basis of interactions among microbes in communities and multispecies biofilms, and of microbes with co-habitating non-microbial species, including mechanisms for the exchange of genetic material;
- Studies of the diversity of microbial processes for anaerobic and aerobic flow of energy and cycling of nutrients, including aquatic, soil/rhizosphere, foliar and sediment ecosystems;
- Studies that characterize the microbial diversity and composition of microbial communities associated with healthy and diseased hosts or how microbial diversity and community composition change with different management systems;
- Patterns of microbial distribution in time and space, and in response to specific environmental gradients; and
- Integrative studies of the diversity, physiology, biochemistry and genomics of microorganisms and microbial communities and the processes that they carry out in the environment.

Development and application of genomics, functional genomics and proteomics approaches to these studies are encouraged. Proposals in either the MO or MIP category that show evidence of collaborative arrangements between academic and/or commercial groups to conduct more detailed investigations on particular microbes or microbial communities also are encouraged.

The MO and MIP program encourages laboratory-to-laboratory interactions between U.S. and foreign organizations or institutions to address program goals. NSF funds may be requested to support foreign investigators and students to work in U. S. laboratories and for U.S. investigators and students to work in international laboratories. However, foreign counterparts should secure support for their projects from their own national programs. Projects funded by USDA/CSREES may contribute financial support to collaborators in other countries but the award must be made to a U.S. institution.

The NSF and USDA/CSREES expect to hold an annual meeting of all MO and MIP awardees engaged in microbial discovery activities. The purpose of this meeting will be to facilitate an exchange of ideas and information; to promote interaction among investigators and sites; and to build links between research programs with related or complementary objectives. Each project should include sufficient funds in its budget request to cover the costs for one representative [preferably the Principal Investigator and/or Co-Principal Investigator(s)] to attend this meeting.

Principal Investigators may not submit to other NSFor USDA/CSREES programs or competitions for simultaneous review the same proposal or proposals that significantly overlap. See the Grant Proposal Guide for further information.

MO proposals should also include aspects of the following elements:

- Four or five year exploration of a particular site or habitat for previously undescribed microbes; and, where necessary, developing methods to sample, quantify, monitor, culture and experimentally manipulate previously undescribed microbes and microbial consortia;

- Establishment or participation in an established Internet-accessible knowledge network to disseminate the information resulting from this activity, including Internet-accessible databases to facilitate the exchange of information among persons and groups likely to be interested in these findings, and through which more detailed investigations on particular microbial species or assemblages may be conducted, either at the site or elsewhere; and

- Educational and outreach activities, such as formal/informal training for persons interested in microbial biology research, and activities that will broaden the participation of underrepresented groups.

Investigators with access to long-term environmental data and existing infrastructure - including long-term ecological research sites, biological field stations, agricultural experiment stations, marine and freshwater laboratories, or other similar facilities - are encouraged to submit proposals to the MO category. However, funds may not be requested or used for construction or renovation of facilities.

III. AWARD INFORMATION

NSF and/or the USDA/CSREES will support relevant MO projects, whereas MIP projects will only be eligible for support by NSF.The NSF expects to fund approximately 10 awards in each category per year, depending on the quality of submissions and the availability of funds. **For MO projects**, NSF awards are expected to be for five years, while CSREES awards are expected to be for four years (with the possibility of a one-year no cost-extension), and total award size (all years, whether single institution or collaborative) is expected to range between $500,000 and $2,000,000. **For MIP projects**, awards are expected to be for up to four years and total award size is expected to range up to $500,000. All awards will be made as grants subject to specified reporting procedures. **The NSF and CSREES will determine which agency will support each award.** These decisions will be based on the mission of the agency (NSF: **all areas** of fundamental scientific and national interest; CSREES: food, environment or agricultural relevance) and the availability of funds. **CSREES will support projects in the MO category only.**

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

- For NSF, the categories of proposers identified in the Grant Proposal Guide are eligible to submit proposals under this program solicitation. For CSREES, except where otherwise prohibited by law, State agricultural experiment stations, all colleges and universities, other research institutions and organizations, Federal agencies, national laboratories, private organizations or corporations, and individuals are eligible to submit proposals under this program solicitation.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

Additional Eligibility Info:

Organization Limit: For NSF, the categories of proposers identified in the Grant Proposal Guide are eligible to submit proposals under this program solicitation. For CSREES, except where otherwise prohibited by law, State agricultural experiment stations, all colleges and universities, other research institutions and organizations, Federal agencies, national laboratories, private organizations or corporations, and individuals are eligible to submit proposals under this program solicitation.

PI Eligibility Limit: None Specified.

Limit on Number of Proposals: None Specified.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

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

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov. Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: (http://www.nsf.gov/bfa/dias/policy/docs/grantsgovguide.pdf). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

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

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.3 of the Grant Proposal Guide provides additional information on collaborative proposals.

The following information/guidelines supplement the GPG. Please note that the title for Microbial Observatories proposals should begin with "MO:" and the title for Microbial Interactions and Processes proposals should begin with "MIP:"

Applicants selected for funding by CSREES will be requested to submit paper copies of their proposals with all associated CSREES forms. These Application Forms may be downloaded from the CSREES website at http://www.csrees.usda.gov/funding/forms.html. Successful applicants will be notified at the time of award to prepare and submit applicable forms along with a paper copy of their proposal.

Project Description for MO Proposals. For MO proposals, the project description should describe the strategies, protocols and timetables to be used in experimental procedures, as well as in collecting, preparing, documenting and distributing the microbes to be examined in sufficient detail to allow informed judgement by expert reviewers. Also include: type(s) of site(s)

and how it relates to the questions posed; methods for collecting, processing, vouchering and storing samples of biological materials such as soil, water or sediment, specimens, tissues or DNA; the data to be recorded at the times of sampling; the repository for collections and accompanying data sets; the means by which collection and experimental data, along with other products, will be made available to the research community and other users.

Management Plan for MO Proposals. Each MO proposal should include a management plan of up to 3 pages in length in the Supplementary Documents section of the proposal. This section is in addition to the 15 pages of Project Description. The Management Plan should detail the duties and responsibilities of participants, including identification of a research team leader (usually the lead PI) and the operation of associated partners and knowledge networks. If the research is to be conducted in whole or in part on one or more organized sites for environmental research, then the Plan must describe how the MO research will be coordinated with other activities at the site(s), and that approval of the Director(s) of the site(s) has been secured. The Management Plan should also indicate that all relevant permits and permissions have been, or will be obtained prior to an award. Arrangements made with existing stock centers or community databases for distributing research resources and data resulting from the MO projects must be described. Any costs associated with their distribution should be requested in MO proposals unless the other parties agree in writing to bear such costs. Specific arrangements made with other parties for the further exploration of selected types of discoveries should be spelled out. Any supporting documents regarding items discussed in the Management Plan should also be included in the "Supplementary Docs" section of the FastLane submission.

Electronic Products. Describe the electronic database and other information (e.g., catalogs, descriptions, phylogenetic analyses, associated genetic, biochemical, molecular and environmental data, or other innovative products) that will result from the project. In projects that involve existing research sites, discuss the use of existing electronic networks in databasing and dissemination of the research results. Description of database and information provision over the Internet should include networking protocols, the integration of the specimen databases with other electronic information resources, and the means by which the availability of the products of the research will be sustained into the future. Letters from directors of computer centers or other units that house Internet servers may document the last item. Include letters in the "Supplementary Docs" section of the FastLane submission.

Coordination among MO Projects. If an MO project is already funded for work at the proposed site or a related habitat, (check the NSF FastLane website for award listings), the PI should provide a plan for coordinating activities with the funded project. If two or more proposals with substantially overlapping goals and scope remain in consideration for funding after initial merit review, the PIs of those proposals may be asked to collaborate, and to submit a coordination plan prior to the final funding decision.

Projects involving work in foreign countries. For studies in countries other than the United States, include in the project description a discussion of established collaborations with scientists and students from the host country, and how these individuals will be involved in the project, as well as the arrangements for the in-country housing of specimens and data. Arrangements to allocate specimens between host country organization(s) or institution(s) and U.S. organization(s) or institution(s) may be made, but type specimens and quality representative specimens should remain in the host country. Prior to an award, PIs must provide confirmation that they have obtained necessary research agreements and all legally required collecting, import, and export permits. These documents include those needed not only to remove specimens from the field, but also those required to export or import them across national boundaries, including compliance with CITES regulations. Provide letters of collaboration and/or collecting-permit documents in hand at time of submission in the "Supplementary Docs" section of the FastLane submission.

Projects in the oceans and U.S. Great Lakes. Proposals that require the scheduling of NSF-UNOLS ship time must include a completed NSF-UNOLS Request Form (NSF Form 831). The UNOLS form may be obtained from the NSF Division of Ocean Sciences Ship Operations Program or directly from the UNOLS website (at http://www.unols.org/). If the project requires time aboard non-UNOLS vessels, the proposal budget must reflect the direct cost of ship time. Use of UNOLS or other ship time also requires that permits to enter sovereign waters, in compliance with international laws of the sea, be obtained with the assistance of the U.S. Department of State if the researchers plan to collect specimens in any nation's sovereign waters. The Ship Operations Program of the NSF can assist in these negotiations. Contact information can be found on the NSF website for the Directorate for Geosciences, Division of Ocean Sciences at http://www.geo.nsf.gov/oce.

Projects in Antarctica or Greenland. Proposals that involve field work in Antarctica must include information about the logistic and operational requisites of the proposed research, and any environmental impacts. Instructions on proposal preparation for research in Antarctica are provided in the Program Solicitation and Proposal Guide for the Antarctic Program of the Office of Polar Programs (OPP), currently NSF 05-567 (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf05567&org=NSF). Obtain information on working in Antarctica from the OPP prior to preparation of a proposal. All research projects in Greenland must be approved in advance by the Government of Denmark. Applications for projects in which U.S. citizens and U.S. nationals are involved in any way (logistic, operational and/or financial support) shall be submitted to the Danish Government through diplomatic channels (i.e., through the U.S. Department of State and the American Embassy, Copenhagen) to the Danish Ministry of Foreign Affairs. The Arctic Research Program of OPP can assist in the submission of these applications, and should be contacted for instructions prior to preparation of a proposal.

International Polar Year (IPY). The international community of polar researchers and funding agents has begun planning for an International Polar Year (IPY) to take place March 2007-March 2009 (see http://dels.nas.edu/us-ipy and http://www.ipy.org). Where appropriate, proposals are encouraged to identify their relevance to IPY activities.

Vertebrate Animals. If the proposed research includes the collection of vertebrate animals, the Principal Investigator must respond to the required documentation for proposals involving vertebrate animals (see GPG for more information). Provide documentation in the "Supplementary Docs" section of the FastLane submission.

Letters and Permits. Provide information such as letters of collaboration, collecting permits, and environmental impact statements in the "Supplementary Docs" section of the FastLane submission.

B. Budgetary Information

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

Indirect Cost (F&A) Limitations: For NSF awards, see the GPG for NSF policy on indirect costs. For CSREES awards, Section 710 of the FY 2005 Consolidated Appropriations Act (Public Law 108-447) limits indirect costs to 20 percent of the total Federal funds provided under each award. To accommodate differences in allowable indirect costs between CSREES and NSF, proposers may be required at the time of award to submit separate budgets with indirect cost rates appropriate to the awarding agency.

Other Budgetary Limitations: Each project should include sufficient funds in its overall budget request to cover the costs for at least one representative [preferably the Principal Investigator and/or Co-Principal Investigator(s)] to attend the MO & MIP annual meeting at NSF in Arlington, Virginia.

C. Due Dates

- **Full Proposal Target Date(s):**

  October 27, 2005

  October 09, 2006

  October 08, 2007

D. FastLane / Grants.gov Requirements

- **For Proposals Submitted Via FastLane:**

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

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

- **For Proposals Submitted Via Grants.gov:**

  Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website.

The Grants.gov's Grant Community User Guide is a comprehensive reference document that provides technical information about Grants.gov. Proposers can download the User Guide as a Microsoft Word document or as a PDF document. The Grants.gov User Guide is available at: http://www.grants.gov/CustomerSupport. In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

Submitting the Proposal: Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program and, if they meet NSF proposal preparation requirements, for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts with the proposer.

A. NSF Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.The two NSB-approved merit review criteria are listed below. The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgements.

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

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Adhoc Review or Panel Review.

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

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the date of receipt. The interval ends when the Division Director accepts the Program Officer's recommendation.

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

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

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program 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 also are administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1). 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.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/home/grants/grants_gac.htm. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.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/cgi-bin/getpub?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.

Special Award Conditions: Special specimen collection conditions apply. The awardee shall ensure that award activities carried on both inside and outside the U.S. and its territories and possessions are coordinated, as necessary, with appropriate Government authorities, and that appropriate licenses, permits or other necessary approvals are obtained prior to undertaking proposed activities. NSF does not assume responsibility for awardee compliance with the laws and regulations of the country in which the work is to be conducted.

CSREES Awards Within the limit of funds available for such purpose, the awarding CSREES official shall make grants to those responsible, eligible applicants whose applications are judged most meritorious under the procedures set forth in this program solicitation. All funds granted by CSREES under this solicitation shall be expended solely for the purpose for which the funds are granted in accordance with the approved application and budget, the regulations, the terms and conditions of the award, the applicable Federal cost principles, and the assistance regulations of the USDA (7 CFR parts 3015 and 3019).

Specific management information relating to an applicant shall be submitted on a one-time basis as part of the responsibility determination prior to the award of a grant identified under this solicitation, if such information has not been provided previously under this or another CSREES program. CSREES will provide copies of forms recommended for use in fulfilling these requirements as part of the preaward process. Although an applicant may be eligible based on its status as one of these entities, there are factors which may exclude an applicant from receiving Federal financial and nonfinancial assistance and benefits under this program (e.g., debarment or suspension of an individual involved or a determination that an applicant is not responsible based on submitted organizational management information)

A CSREES award document shall include at a minimum the following:

1. Legal name and address of performing organization or institution to whom the CSREES Administrator has awarded a grant under the terms of this solicitation;
2. Title of project;
3. Name(s) and institution(s) of Principal Investigators chosen to direct and control approved activities;
4. Identifying grant number assigned by CSREES;
5. Project period, specifying the amount of time CSREES intends to support the project without requiring recompetition for funds;
6. Total amount of CSREES financial assistance approved by the CSREES Administrator during the project period;
7. Legal authority(ies) under which the grant is awarded;
8. Appropriate Catalog of Federal Domestic Assistance (CFDA) number;
9. Applicable award terms and conditions (see http://www.csrees.usda.gov/business/awards/awardterms.html. for CSREES award terms and conditions);
10. Approved budget plan for categorizing allocable project funds to accomplish the stated purpose of the grant award; and
11. Other information or provisions deemed necessary by CSREES to carry out its respective granting activities or to accomplish the purpose of a particular grant.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period. (Some programs or awards require more frequent project reports). Within 90 days after expiration of a grant, the PI also is required to submit a final project report.

Failure to provide the required annual or final project reports will delay NSF review and processing of any future funding increments as well as any pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

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

The Principal Investigator shall provide a summary in the "Special Requirements" section of each annual and final project report of all licenses, permits or other necessary approvals associated with specimen collection. The information should include all relevant details, such as the granting authority, date acquired, duration and results.

CSREES grantees are required to submit annual and summary evaluation reports via the CSREES Current Research Information System (CRIS). CRIS is an electronic, Web-based inventory system that facilitates both grantee submissions of project outcomes and public access to information on Federally-funded projects. Specific technical reporting requirements will be provided to CSREES grantees at the time of award.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Matthew D Kane, Program Director, 655 S, telephone: (703) 292-7186, fax: (703) 292-9061, email: mkane@nsf.gov

- John L Sherwood, National Program Leader, CSREES, U.S. Department of Agriculture, telephone: (202) 690-1659, fax: (202) 401-1782, email: jsherwood@csrees.usda.gov

For questions related to the use of FastLane, contact:

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

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: support@grants.gov.

- John L Sherwood - National Program Leader CSREES, U.S. Department of Agriculture Phn: (202) 690-1659 Fax: (202) 401-1782 Email: jsherwood@csrees.usda.gov STOP 2241, 1400 Independence Avenue, SW. Washington, DC 20250-2241

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, MyNSF (formerly the Custom News Service)is an information-delivery system 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 or the user's Web browser each time new publications are issued that match their identified interests. MyNSF also is available on NSF's Website at http://www.nsf.gov/mynsf/.

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this new mechanism. Further information on Grants.gov may be obtained at http://www.grants.gov.

ABOUT THE NATIONAL SCIENCE FOUNDATION

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

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

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

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

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

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

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

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

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

  Send an e-mail to: 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; 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 3145-0058. 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 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
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