

# Microbial Observatories (MO)

(Replaces NSF 01-98)

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## [Program Solicitation](#)

**NSF-02-118**

DIRECTORATE FOR BIOLOGICAL SCIENCES

FULL PROPOSAL DEADLINE(S): July 23, 2002



NATIONAL SCIENCE FOUNDATION



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# SUMMARY OF PROGRAM REQUIREMENTS

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## GENERAL INFORMATION

**Program Title:** Microbial Observatories (MO)

**Synopsis of Program:** The National Science Foundation (NSF), Directorate for Biological Sciences (BIO) announces the fourth competition for Microbial Observatories. The long-term goal of this activity is to develop a network of sites or "microbial observatories" to discover novel microorganisms, microbial consortia, communities, activities and other novel properties, and to study their roles in diverse environments. Individual investigators or teams of investigators are encouraged to develop and conduct research at a site or habitat dedicated to discovery and study of these novel microbes over time and across environmental gradients. Development and application of new experimental approaches to these studies, including the use of genomic and functional genomic methods, is strongly encouraged.

Projects supported are expected to establish or participate in an established, Internet-accessible knowledge network to disseminate the 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 biology research and education, are expected.

### Cognizant Program Officer(s):

- Dr. Matthew Kane, Program Director, Systematic Biology, Environmental Biology, 635, telephone: 703-292-7186, e-mail: [mkane@nsf.gov](mailto:mkane@nsf.gov).
- Dr. Ronald Weiner, Program Director, Cell Biology, Molecular and Cellular Biosciences, 655, telephone: 703-292-7144, e-mail: [rweiner@nsf.gov](mailto:rweiner@nsf.gov).

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

- 47.074 --- Biological Sciences

## ELIGIBILITY INFORMATION

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

## AWARD INFORMATION

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 5-10
- **Anticipated Funding Amount:** \$2.5 million (see information below) pending funds availability in FY2003

# PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

## *A. Proposal Preparation Instructions*

- **Full Proposals:** Supplemental Preparation Guidelines
  - The program announcement/solicitation contains supplements to the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full program announcement/solicitation for further information.

## *B. Budgetary Information*

- **Cost Sharing Requirements:** Cost Sharing is not required.
- **Indirect Cost (F&A) Limitations:** none
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full program announcement/solicitation for further information.

## *C. Deadline/Target Dates*

- **Letters of Intent (*optional*):** None
- **Preliminary Proposals (*optional*):** None
- **Full Proposal Deadline Date(s):** July 23, 2002

## *D. FastLane Requirements*

- **FastLane Submission:** Required
- **FastLane Contact(s):**
  - Una Alford-Solomon, Program and Technology Analyst, Biological Sciences, Molecular and Cellular Biosciences, 655, telephone: 703-292-8440, e-mail: [biofl@nsf.gov](mailto:biofl@nsf.gov).
  - FastLane Help Desk, telephone: 1-800-673-6188, e-mail: [fastlane@nsf.gov](mailto:fastlane@nsf.gov).

## PROPOSAL REVIEW INFORMATION

- **Merit Review Criteria:** National Science Board approved criteria apply.

## AWARD ADMINISTRATION INFORMATION

- **Award Conditions:** Standard NSF award conditions apply.
- **Reporting Requirements:** Additional reporting requirements apply. Please see the full program announcement/solicitation for further information.

## **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 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 and novel microbial processes remain major challenges in biology.

## **II. PROGRAM DESCRIPTION**

The guiding themes of the Microbial Observatories (MO) competition are: (1) discovery of as yet undescribed microorganisms and microbial consortia from diverse habitats; and (2) characterization of the properties and activities of newly described or poorly understood microbes and microbial communities. The discovery of large numbers of organisms with novel biochemical, metabolic, genomic and other attributes will require 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. Therefore, proposals to this competition should include aspects of the following elements:

- Exploring 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;
- Establishing or participating in an established Internet-accessible knowledge network to disseminate the information resulting from this activity;
- Providing 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.

Examples of areas for further characterization 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 environments;

- Studies of the mechanistic basis of interactions among microbes and of microbes with co-habiting 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, and sediment ecosystems.

Development and application of genomic and functional genomic approaches to these studies is encouraged.

Investigators with access to long-term environmental data and existing infrastructure - including long-term ecological research sites, biological field stations, marine and freshwater laboratories, or other similar facilities - are encouraged to apply. Proposals 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.

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. Explicitly discouraged are those proposals that lack a dimension beyond species discovery and routine phylogenetic characterization. Funds may not be requested or used for construction or renovation of facilities.

If the proposed activity incorporates those groups of protists, algae and fungi that are high priority for the federal agency members of the Integrated Taxonomic Information System (ITIS) partnership (see <http://www.itis.usda.gov/itis/>), it may be eligible for assistance by ITIS or its member agencies. The proposal may be submitted under joint NSF/ITIS aegis for support of biodiversity information in these groups. Microbial observatory proposals that have NSF/ITIS relevance, and are recommended for funding in the Microbial Observatories competition, may, at the discretion of MCB, be forwarded to a joint NSF/ITIS steering committee to be considered for supplemental funding.

Principal Investigators may not submit for simultaneous review the same proposal or proposals that significantly overlap other NSF programs or competitions.

The National Science Foundation, Directorate for Biological Sciences expects to hold an annual meeting of all MO 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 proposal should include sufficient funds in its budget request to cover the costs of the Principal Investigator and Co-Principal Investigator(s) attendance at this meeting.

### **III. ELIGIBILITY INFORMATION**

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

Proposals under the MO competition will be accepted from U.S. institutions that are eligible for awards from the National Science Foundation, including colleges, universities, and other nonprofit research institutions such as botanical gardens, marine and freshwater institutes, and natural history museums facilities (see GPG, Chapter I, Section C). As noted above, those institutions that are already engaged in environmental observatory activities, or are prepared to document major institutional commitment to such activities either directly or through collaborative arrangements, and can support interdisciplinary activities involving field-oriented and laboratory investigations on prokaryotic and eukaryotic microbes, are encouraged to apply. The NSF encourages collaborations with scientists at foreign institutions; however, primary support for any foreign participants/activities must be secured through their own national programs.

Normally, NSF's Directorate for Biological Sciences does not support 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. Studies of animal models for such conditions, the design and testing of drugs or other procedures for their treatment are also not eligible for support. NSF does not normally support technical assistance, pilot plant efforts, research requiring security classification, the development of products for commercial marketing, or market research for a particular project or invention.

As part of characterizing the microorganismal diversity at a site, projects submitted to this competition may include studies of microbes that are pathogens of naturally occurring plant or animal populations, but not microorganisms that are pathogens of humans or of agricultural plants or animals.

### **IV. AWARD INFORMATION**

The NSF expects to fund approximately 5-10 awards depending on the quality of submissions and the availability of funds. The total award size (all years) is expected to range between \$0.5M and \$1M for a funding period not to exceed 5 years. Approximately \$2.5 million for standard grants and the first year of continuing grants, pending funds availability in FY2003, will be available for this competition. All awards will be made as grants subject to specified reporting procedures. Competitions in future years are anticipated pending availability of funds.

Funding decisions are expected to be made by December 2002 with awards expected to start no earlier than January, 2003.

### **V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS**

#### **A. Proposal Preparation Instructions**

##### **Full Proposal:**

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 Web Site at: <http://www.nsf.gov/cgi-bin/getpub?gpg>. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (301) 947-2722 or by e-mail from [pubs@nsf.gov](mailto:pubs@nsf.gov).

Guidelines are provided for specific sections of the proposal as follows:

Cover Sheet (NSF Form 1207). In the NSF FastLane system follow instructions on proposal preparation. When completing the Cover Sheet select NSF 02-118 Microbial Observatories as the program announcement, and your proposal will be automatically assigned to the correct NSF unit for consideration (MCB-Microbial Observatories).

Indicate clearly in the title of the proposal the general type(s) of microbe(s) to be studied (if known) and the site(s) to be investigated.

BIO Proposal Classification Form (PCF). Complete the BIO PCF, available on the NSF FastLane system. The PCF is an on-line coding system that allows the Principal Investigator to characterize his/her project when submitting proposals to the Directorate for Biological Sciences. Once a PI begins preparation of his/her proposal in the NSF FastLane system and selects a division, cluster, or program within the Directorate for Biological Sciences as the first or only organizational unit to review the proposal, and saves the cover sheet, the PCF will be generated and available through the Form Preparation screen. Additional information about the BIO PCF is available in FastLane at <http://www.fastlane.nsf.gov/a1/Biolnstr.htm>.

Project Summary. Summarize the proposed project, emphasizing its design, rationale and impact on our knowledge of microbial diversity and biology, and noting the societal and educational relevance of the work.

Project Description (maximum length 15 pages). The following elements should be included:

Prior NSF Support. Describe a single award, to the PI or any of the co-PI(s), that is most closely related to the observatory proposal.

Rationale. Describe the activities to be conducted, with special reference to the microbe or microbial groups and systems to be included, the questions to be asked, and the strategies for answering these questions. Also include the theoretical or practical importance of the microbes and microbial systems to progress in microbiology and other scientific fields, and the societal and educational benefits that will accrue from this research.

Research and Management Plans. The Research Plan 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. 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 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. Specific arrangements made with other parties for the further exploration of selected types of discoveries should be spelled out. It is expected that proposals will take advantage of available opportunities for meaningful integration of research with education and outreach activities, and present these as an integral part of the research plan.

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 conducted in whole or in part on one or more organized sites for environmental research, support from the Director(s) of such site(s) should be indicated in the Plan, with copies of relevant documents included in the "Special Information and Supplementary Information" section of the proposal.

The Management Plan should also document compliance with applicable laws, regulations and procedures. Evidence that all relevant permits and permissions have been obtained will be required prior to an award.

For awards that include specimen collection activities, 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 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 will be conducted.

Proposals for research projects in Antarctica or Greenland must include information about the logistical and operational requisites of the proposed research, and any environmental impacts. Special instructions on proposal preparation for research in Antarctica are provided in the Program Announcement and Proposal Guide for the Antarctic Program of the Office of Polar Programs (OPP). These special requirements are currently summarized in NSF 01-81, which can be found on the NSF Online Documents system at <http://www.nsf.gov>. 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 as stated in the Grant Policy Manual (NSF 95-26), Chapter 7, Article 763. The Grant Policy Manual is available on the NSF Online Documents system at <http://www.nsf.gov>. Applications for projects in which U.S. citizens and U.S. nationals are involved in any way (logistical, 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 (telephone 703-292-8029) can assist in the submission of these applications, and should be contacted for instructions prior to preparation of a proposal.

Proposals intended to monitor marine or U.S. Great Lake habitats may require the scheduling of NSF-UNOLS ship time. These proposals 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, National Science Foundation by calling (703)292-8581, or directly from the UNOLS World Wide Web site at <http://www.unols.org>. Print, scan and include the form by transferring it as a file through the "Supplementary Docs" module of the FastLane system (see the "Special Information and Supplementary documentation" section of this announcement). If the proposal 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 in the staff directory of the Geosciences Directorate, Division of Ocean Sciences web site at <http://www.geo.nsf.gov>.

Electronic Products. Describe the electronic database and other information (e.g., catalogues, descriptions, phylogenetic analyses, associated genetic, biochemical, molecular and environmental data, or other innovative products). The description of database activities must include information regarding hardware and software specifications, the data model, elements and structure of the database, the manner in which records will be captured in a quality-controlled manner, and capabilities for expansion. 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 World Wide Web 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 WWW servers may document the last item. Include letters in the "Supplementary Docs" section.

The Research and Management Plan must be included within the 15-page limit of the Project Description. None of its elements may be deferred to the "Special Information and Supplementary Documentation" section (see GPG, Chapter II, section C).

Biographical Sketch. Provide a biographical sketch only for the senior participants (i.e., PIs and co-PIs whose names are listed on the cover page of the proposal, and postdoctoral fellows participating in the project). The biographical sketch for each PI must list the full names and institutions of that person's collaborators and co-authors on papers, books, proposals or other works. The PI's doctoral major professor and post-doctoral advisor(s), but not members of advisory committees, should be listed, as well as all of the PI's own doctoral advisees.

Budget Justification. Include a breakdown of any foreign costs or support of foreign scientists or students. Provide a clear explanation of the need for each listed item of equipment, supplies, or travel, including the rationale for choosing the requested option over others that might be available.

Each proposal should include sufficient funds in its budget request to cover the costs of the Principal Investigator and Co-Principal Investigator(s) attendance at the MO annual meeting.

Special Information and Supplementary Documentation. The Special Information and Supplementary Documentation (see GPG, Chapter II, Section C) may include only copies of permits, letters of agreement from collaborators, letters and documentation from curators of institutions in which specimens will be deposited and from scientists who will work with particular materials.

Include Special Information and Supplementary Documentation in the FastLane submission by scanning the documents and transferring them as files through the "Supplementary Docs" module of the FastLane system.

Proposers are reminded to identify the program solicitation number (NSF-02-118) 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 is not required in proposals submitted under this Program Solicitation.

**Indirect Cost (F&A) Limitations:** none

**Other Budgetary Limitations:** Each proposal should include sufficient funds in its budget request to cover the costs of the Principal Investigator and Co-Principal Investigator(s) attendance at the MO annual meeting.

## **C. Deadline/Target Dates**

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

**Full Proposals by 5:00 PM local time:** July 23, 2002

Proposals must be submitted by 5:00 p.m., submitter's local time, July 23, 2002 via the NSF FastLane system. It is recommended that you submit earlier, if possible.

## **D. FastLane Requirements**

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

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 identities of 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.

**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 Mail 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.

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 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 one's 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 Web site at [http://www.nsf.gov/home/grants/grants\\_gac.htm](http://www.nsf.gov/home/grants/grants_gac.htm). Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (301) 947-2722 or by e-mail from [pubs@nsf.gov](mailto: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 Web site 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 Web site at <http://www.gpo.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.

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

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Approximately 30 days before expiration, NSF will send a notice to remind the PI of the requirement to file the final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

NSF has implemented an electronic project reporting system, available through FastLane. 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 Microbial Observatories should be made to:

- Dr. Matthew Kane, Program Director, Systematic Biology, Environmental Biology, 635, telephone: 703-292-7186, e-mail: [mkane@nsf.gov](mailto:mkane@nsf.gov).
- Dr. Ronald Weiner, Program Director, Cell Biology, Molecular and Cellular Biosciences, 655, telephone: 703-292-7144, e-mail: [rweiner@nsf.gov](mailto:rweiner@nsf.gov).

For questions related to the use of FastLane, contact:

- Una Alford-Solomon, Program and Technology Analyst, Biological Sciences, Molecular and Cellular Biosciences, 655, telephone: 703-292-8440, e-mail: [biofl@nsf.gov](mailto:biofl@nsf.gov).
- FastLane Help Desk, telephone: 1-800-673-6188, e-mail: [fastlane@nsf.gov](mailto:fastlane@nsf.gov).

## 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 web site at <http://www.nsf.gov/home/ebulletin>, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's [Custom News Service](#) (<http://www.nsf.gov/home/cns/start.htm>) to be notified of new funding opportunities that become available.

The Biotic Surveys and Inventories Program supports basic research and collecting activities that are designed to discover and document the biological species diversity of all forms of life on Earth. The Program supports collecting, identifying, vouchering, and naming the biota of a substantial geographic region, including oceanographic areas, as well as expeditionary work to discover and describe biotic diversity in poorly known areas. The Program Announcement (NSF 01-150) is available on the NSF website at: <http://www.nsf.gov/pubs/2001/nsf01150/nsf01150.html>.

The Biocomplexity in the Environment (BE) special competition promotes comprehensive, integrated investigations of environmental systems using advanced scientific and engineering methods. Five topical areas will be emphasized: 1. Dynamics of Coupled Natural and Human Systems (CNH); 2. Coupled Biogeochemical Cycles (CBC); 3. Genome-Enabled Environmental Science and Engineering (GEN-EN); 4. Instrumentation Development for Environmental Activities (IDEA); 5. Materials Use: Science, Engineering, & Society (MUSES). The Program Announcement (NSF 02-010) is available on the NSF website at: <http://www.nsf.gov/pubs/2002/nsf02010/nsf02010.html>.

The Microbial Genome Sequencing Project is a collaborative interagency effort, between the NSF and the USDA to conduct high-throughput sequencing of genomes of microbes that are of fundamental biological interest, as well as those that are important to the productivity and sustainability of agriculture and forestry, and to the safety and quality of the nation's food supply. Priority will be given to projects that will provide whole genome sequence data and mapping information on microorganisms to fill key gaps in our knowledge of microbial diversity, of microbes that play roles in diverse ecosystems, and/or microbes that have an impact on agriculture and food safety. The joint Program Announcement is accessible through a link on the NSF website at: <http://www.nsf.gov/pubs/proqdesc/2002/bio/pdbio0201.html>.

The Assembling the Tree of Life activity invites research proposals from multidisciplinary teams to conduct creative and innovative research that will resolve phylogenetic relationships for large groups of organisms on the Tree of Life. Teams of investigators also will be supported for projects in data acquisition, analysis, algorithm development and dissemination in computational phylogenetics and phyloinformatics. The Program Announcement (NSF 02-074) is available on the NSF website at: <http://www.nsf.gov/pubs/2002/nsf02074/nsf02074.html>.

The Postdoctoral Fellowship Program in Microbial Biology supports training and research on the basic biology of protozoan, microalgal, fungal, archaeal, bacterial, and viral species that are not generally considered to be model organisms. Studies of the interactions of these microbes among each other and with plants and animals, e.g., symbiosis, may also be supported. The Program Announcement (NSF 99-142) is available on the NSF website at: <http://www.nsf.gov/pubs/1999/nsf99142/nsf99142.html>.

Partnerships for Enhancing Expertise in Taxonomy (PEET). In partnership with academic institutions, botanical gardens, freshwater and marine institutes, and natural history museums, the National Science Foundation seeks to enhance taxonomic research and help prepare future generations of experts. Through its Special Competition in Systematic Biology, NSF will support competitively reviewed projects that target groups of poorly known organisms for modern monographic research. Projects must train new taxonomists (two per project minimally) and must translate current expertise into electronic databases and other products with broad accessibility to the scientific community. The Program Announcement (NSF 00-140) is available on the NSF website at <http://www.nsf.gov/pubs/2000/nsf00140/nsf00140.html>.

The Research in Undergraduate Institutions (RUI) activity supports research by faculty members of predominantly undergraduate institutions through the funding of (1) individual and collaborative research projects, (2) the purchase of shared-use research instrumentation, and (3) Research Opportunity Awards for work with NSF-supported investigators at other institutions. RUI proposals are evaluated and funded by the NSF programs in the disciplinary areas of the proposed research. The Program Announcement (00-144) is available on the NSF website at: <http://www.nsf.gov/pubs/2000/nsf00144/nsf00144.htm>.

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## 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.

Pursuant to 5 CFR 1320.5(b), 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, or to Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for National Science Foundation (3145-0058), 725 17th Street, N.W. Room 10235, Washington, D.C. 20503.

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