

Improvements to Biological Research Collections (BRC)

PROGRAM SOLICITATION

NSF 09-548

REPLACES DOCUMENT(S):

NSF 06-569



National Science Foundation

Directorate for Biological Sciences
Division of Biological Infrastructure

Full Proposal Target Date(s):

July 24, 2009

Fourth Friday in July, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

A revised version of the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), [NSF 11-1](#), was issued on October 1, 2010 and is effective for proposals submitted, or due, on or after January 18, 2011. Please be advised that the guidelines contained in [NSF 11-1](#) apply to proposals submitted in response to this funding opportunity. Proposers who opt to submit prior to January 18, 2011, must also follow the guidelines contained in [NSF 11-1](#).

Cost Sharing: The PAPPG has been revised to implement the National Science Board's recommendations regarding cost sharing. Inclusion of voluntary committed cost sharing is prohibited. In order to assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section of the proposal. The description should be narrative in nature and must not include any quantifiable financial information. Mandatory cost sharing will only be required when explicitly authorized by the NSF Director. See the PAPP Guide Part I: *Grant Proposal Guide (GPG)* Chapter II.C.2.g(xi) for further information about the implementation of these recommendations.

Data Management Plan: The PAPPG contains a clarification of NSF's long standing data policy. All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. FastLane will not permit submission of a proposal that is missing a Data Management Plan. The Data Management Plan will be reviewed as part of the intellectual merit or broader impacts of the proposal, or both, as appropriate. Links to data management requirements and plans relevant to specific Directorates, Offices, Divisions, Programs, or other NSF units are available on the NSF website at: <http://www.nsf.gov/bfa/dias/policy/dmp.jsp>. See Chapter II.C.2.j of the GPG for further information about the implementation of this requirement.

Postdoctoral Researcher Mentoring Plan: As a reminder, each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. Please be advised that if required, FastLane will not permit submission of a proposal that is missing a Postdoctoral Researcher Mentoring Plan. See Chapter II.C.2.j of the GPG for further information about the implementation of this requirement.

Revision Notes:

This version of the solicitation has been revised with the following changes:

- Budget limit for collaborative proposals has been raised to \$2,000,000.
- Emphasis on high priority for networking/collaborative proposals.
- General editorial changes for clarity.
- Added "Improvements to" in the title for program goal clarity.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Improvements to Biological Research Collections (BRC)

Synopsis of Program:

The Improvements to Biological Research Collections Program provides funds for improvements to network, secure, and organize established natural history collections for sustained, accurate, and efficient accessibility of the collection to the biological research community.

The BRC program is encouraging collaborative proposals to network collections on regional and continental scales, especially collaborations that bring large and small collections together into networks. The BRC program also provides for enhancements to existing collections to improve collections, computerize specimen-related data, develop better methods

of specimen curation and collection management through activities such as symposia and workshops.

Biological collections supported include those housing natural history specimens and jointly curated collections such as preserved tissues and other physical samples, e.g. DNA libraries and digital images. Such collections provide the materials necessary for research across broad areas of biological sciences.

Cognizant Program Officer(s):

- W. Carl Taylor, BRC Program Director, Directorate for Biological Sciences, Division of Biological Infrastructure, telephone: (703) 292-8470, fax: (703) 292-9063, email: dbibrc@nsf.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: 6 to 15 per year pending availability of funds.

Anticipated Funding Amount: \$6,000,000 annually pending availability of funds. Up to \$500,000 total for individual awards of 1 to 3 years; up to \$2,000,000 total for collaborative awards of 1 to 5 years.

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

- Proposals are accepted from U.S. organizations, including colleges and universities that maintain research collections, natural history museums including herbaria, and other collections administered by independent organizations or by state, county, or local governments; non-federal and non-profit research organizations that maintain collections; and field stations, marine laboratories, botanical gardens, zoological parks, and aquaria that maintain research collections that document biological diversity. The size of an organization is not a factor in determining eligibility.

PI Limit:

None Specified

Limit on Number of Proposals per Organization: 1

In any single round of the BRC competition, only one proposal may be submitted from any individual collection within an organization. Organizations that house multiple collections, submitting proposals from more than one collection, should engage in internal planning activities in order to prioritize the needs of the several collections such that the organization does not submit a multiplicity of proposals to any one BRC competition.

Limit on Number of Proposals per PI:

None Specified

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable
- **Preliminary Proposal Submission:** Not Applicable
- **Full Proposals:**
 - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. 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.
 - 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/publications/pub_summ.jsp?ods_key=grantsgovguide)

B. Budgetary Information

- **Cost Sharing Requirements:** Inclusion of voluntary committed cost sharing is prohibited.
- **Indirect Cost (F&A) Limitations:** Not Applicable
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

- **Full Proposal Target Date(s):**
 - July 24, 2009
 - Fourth Friday in July, Annually Thereafter

Proposal Review Information Criteria

Merit Review Criteria: National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of

this solicitation for further information.

Award Administration Information

Award Conditions: Standard NSF award conditions apply.

Reporting Requirements: Standard NSF reporting requirements apply.

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I. INTRODUCTION

Collections of biological specimens are necessary for many types of research in biological sciences, including two of the most essential activities, the identification of species and documentation of biodiversity. Of particular importance is the contribution that BRC provides in meeting needs for improvements in infrastructure and computerization of large and disparate datasets. Typically collections are housed at organization with programs in systematics and other biodiversity-related research. These organizations have collections that have been built over many years and contain thousands to millions of specimens. Natural history collections contain records of life on earth that are unique and irreplaceable, including specimens of extinct species and temporal information on changes in the ranges of native and introduced species. In addition to the natural history collections, recent advances in biological sciences have created new kinds of ancillary materials such as DNA samples, digital images, or frozen tissues that are collected or created by researchers, deposited at a public site, and distributed to the research community. These materials are generally linked to actual specimens.

Our planet is rapidly being modified by human development, and natural history collections are an irreplaceable source of biological information. The Improvements to Biological Research Collections Program is a critical component in the rapidly expanding research activities related to biodiversity in particular, and to biological sciences in general. Recently, several reports indicated a dearth of information from collections available online, and little interoperability of the data. Therefore, this program is placing a high priority on projects to integrate collection information that provide resources for scientific research.

II. PROGRAM DESCRIPTION

The Improvements to Biological Research Collections (BRC) Program funds infrastructure improvement for existing, diverse, multi-taxon, specimen-based natural history collections which serve a broad community of biological researchers. Collaborative proposals among institutions that promote networking of collections will be given highest priority. These proposals should have a scientific rationale and should be interoperable with other networked collections to build a larger continental resource. The program will consider specimen data-basing, geo-referencing, imaging, innovative enhancements for diverse collections, or workshops and symposia. Projects involving the application of new and improved curatorial techniques and tools related to specimen preservation, storage, and information retrieval are encouraged. Proposals concerning the preservation and organization of tissues, DNA, images, and collection data that can be linked to voucher specimens will be considered. This program does not support building a new collection, single-taxon collections devoted to a narrow research focus, or collecting new specimens to augment collections since these are integral activities of research projects supported by other programs in the biological sciences.

Voucher collections, such as those maintained by some academic departments, field stations, and marine laboratories are also eligible if it is shown that use of the collections justify the investment, there is a long-term commitment to maintain the collection, and curatorial support is adequate. BRC supported projects include those that deal with complete specimens of organisms, parts of organisms, or direct artifacts of organisms (e.g., recorded sounds, fossilized footprints). Also eligible are organism-based collections that maintain associated specimens and data documenting the environmental context of the primary organism (e.g. soil and water samples, temperature and precipitation records, specimen-based geographic information) or the genomic context of the organism (e.g. frozen tissue, DNA). Ancillary collections must be properly vouchered to a specimen of the organism. Projects to computerize card files of observational records or literature sources (that is, the computerization of existing card files of literature sources, observation records, or other library items) are not eligible for

support. Please note that NSF does not normally provide support for 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, and therefore does not provide support for collections of materials used in these research areas.

Types of Support

Computerization projects generally include the equipment (hardware, software) and supplies (storage media), as well as salary for new personnel specifically required to complete a scientifically sound and well-circumscribed project. Awards for enhancement of the infrastructure of a research collection such as the purchase of new specimen cases and installation costs include curatorial supplies and new curatorial and technical assistance specifically designed to effect the proposed improvements for the duration of the proposed project. Specialized items that are components of a large system (e.g. specimen cabinets and compactors) are considered as equipment under the BRC program guidelines. Research to develop improved curatorial practices or more efficient collection management practices may also be supported. It is expected that such projects will lead to improved, direct user access to collection data via standard Internet protocols. BRC does not provide support to defray ordinary operating expenses, or for the purchase of specimens, or for creating/establishing a new collection, or support related to the improvement of libraries or archives. Organizations receiving specimens collected through other research activities (e.g. Biodiversity Surveys & Inventories; Tree of Life; or PEET) should have an agreement with the researcher[s] to prepare the specimens and database them (including geo-referencing) in a format compatible with the receiving collection prior to deposit.

Support provided by the BRC program is restricted to costs for the proposed project which are above the financial capabilities of the collection, based on the normal operating expenses received from the organization. Projects proposed for BRC support should be innovative, clearly focused, have a strong scientific rationale, and be designed to be completed within the time frame proposed. Collaborative proposals that link collection information among institutions and enhance accessibility and networking will be given highest priority, should be interoperable with other online resources and should address sustaining the network beyond the award duration. Plans for long term maintenance of the collection should be addressed in the project description. BRC does not support the acquisition of specimens through purchase, nor does it fund collecting expeditions, nor the improvement of libraries or archives. Building renovation associated with collection improvement will not be supported by BRC, but may be provided by the submitting organization as an indication of organizational commitment to the long-term housing of the collections.

In any single round of the BRC competition, only one proposal may be submitted from any individual collection within an organization. Organizations that house multiple collections, submitting proposals from more than one collection, should engage in internal strategic planning activities in order to prioritize the needs of the several collections such that the organization does not submit a multiplicity of proposals to any one BRC competition.

III. AWARD INFORMATION

Proposals submitted to the BRC Program typically are for projects that range from one to five years. The BRC program expects approximately \$6 million annually pending availability of funds. Up to \$500,000 total for individual awards of 1 to 3 years; up to \$2,000,000 total for collaborative awards of 1 to 5 years. Numbers of awards and average award size/duration are subject to the availability of funds. Also, please see the NSF website for the Biological Research Collection program at http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5448&org=DBI for a current listing of awards and examples of the range and scope of projects supported.

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

- Proposals are accepted from U.S. organizations, including colleges and universities that maintain research collections, natural history museums including herbaria, and other collections administered by independent organizations or by state, county, or local governments; non-federal and non-profit research organizations that maintain collections; and field stations, marine laboratories, botanical gardens, zoological parks, and aquaria that maintain research collections that document biological diversity. The size of an organization is not a factor in determining eligibility.

PI Limit:

None Specified

Limit on Number of Proposals per Organization: 1

In any single round of the BRC competition, only one proposal may be submitted from any individual collection within an organization. Organizations that house multiple collections, submitting proposals from more than one collection, should engage in internal planning activities in order to prioritize the needs of the several collections such that the organization does not submit a multiplicity of proposals to any one BRC competition.

Limit on Number of Proposals per PI:

None Specified

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Preparation 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 nsfpubs@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/publications/pub_summ.jsp?ods_key=grantsgovguide). 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 nsfpubs@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.4 of the Grant Proposal Guide provides additional information on collaborative proposals.

The following information provides instructions that supplement the Grant Proposal Guide and NSF Grants.gov Application Guide.

Project Summary (maximum: one page)

Summarize the proposed collection improvement, computerization, techniques research, or other activity and its impact on the use of the collection and its information resources by science and other sectors of society, long-term management, and public outreach capabilities of the collection.

Project Description (maximum: 15 pages, inclusive of tables and illustrations)

1. Results from Prior NSF Support (maximum: 5 of the 15 pages of text): Summarize the results of the most recent collection improvement award that the collection has received from NSF in the preceding 5 years, even if the current Principle Investigator (PI) was not associated with the collection at that time. If the collection has not received an award in the previous 5 years, then a previous award to the PI within the past 5 years that was not collection-related but that is most closely allied to the current proposal should be described.
2. Special requirements for BRC projects include evidence of the collection's importance to research or biological conservation on a regional, national, or international scale, long-term commitment by the home organization to the collection in terms of staffing and operational support, and information related to the management of the collection. All proposals must demonstrate an organizational commitment to adequate staffing and operating support that will result in long-term maintenance of the specimens, collections and associated data. Support from BRC will not be provided to defray ordinary operating expenses. The proposal should state how the value of the collection will be enhanced by support from the BRC Program and how its contributions will further advances in the biological sciences.

Information should be provided for the following:

- a. Taxonomic breadth. When applicable, proposals must clearly specify the taxonomic groups housed in the collections for which support is being sought and provide estimates of the numbers of specimens or lots, numbers of species, and information on the geographic areas, oceanographic regions, or stratigraphic horizons from which specimens were collected.
 - b. Value of the collection for scientific research and resource management. Indicators of value, in addition to taxonomic breadth, include measures of use by the scientific community such as numbers of specimen loans, visitors to the collection, data requests, and publications based on the specimens in the collection, the number of type specimens, age of the collection, and presence of extinct or rare species. Internet accessibility to collection data (including web hits), growth and use of the collection over at least the last five years should be described.
 - c. Urgency. Urgent needs for support should be clearly identified. Long-term protection of specimens with their associated data is the primary concern of the BRC Program. Of particular importance to the program is the ability to meet special needs that arise from rapid expansion or unique opportunities. Common sources of such needs are biotic surveys of endangered habitats that produce large numbers of specimens, opportunities to salvage a collection that otherwise would be lost, and the creation of new types of collections (such as frozen tissues) that accompany other areas of growth in science (such as genomics).
 - d. Education and outreach. Biological collections contribute to our understanding and appreciation of the diversity of life, and serve many functions in addition to providing materials essential to biological research. They provide resources for the training of biologists working on extant and fossil taxa, as well as materials for classroom displays, museum exhibits and other outreach programs for the general public. Contributions of the collections to education and outreach activities should be clearly identified in the proposal.
3. The following supporting data should be included in a concise tabular format:
 - a. size, composition, and areas of taxonomic, geographic and/or geologic concentration;
 - b. rate of growth over the past five years;
 - c. degree and range of use in research, education and other activities over the past five years (e.g. number and type of loans, number of visitors, data requests and other pertinent statistics, arranged according to professional or student use);
 - d. research impact over the past five years (e.g. tabulate the number of publications or other products, arranged by professional or student, that are based on specimens in the collection, and provide up to five particularly significant examples).
 4. A management plan must be included within the project description of the proposal. The plan must delineate the tasks and responsibilities, and outline a timetable for completion of the project. If a collection is being relocated due to new facility construction or renovation of an existing facility, a construction timeline including the expected date of construction completion must be included in the management plan. Letters of support from appropriate organizational representatives are encouraged. For support related to the acquisition of orphaned collections, documentation of ownership must be provided. These letters can be provided in the Special Information and Supplementary Documentation section. Also, clearly describe a sound, scientific rationale for incorporating the particular collection, providing evidence of how the addition will strengthen the existing collection.
 5. In organizations that house multiple collections, submitting more than one proposal, the plan for prioritizing the needs of the several collections and the longer term commitments should be included. This information can be provided in the Special Information and Supplementary Documentation section.
 6. Requests for personnel support should include a detailed task analysis to justify the personnel funding required for the duration of

the proposed project. For those projects involving the installation of major storage systems or other major pieces of equipment a timetable for installation, floor plans, and floor loading analyses must be provided. This information can be provided in the Special Information and Supplementary Documentation section.

7. Proposals related to development of electronic databases must describe the hardware and software to be used, the data model and elements of the database, mechanisms for quality control of data entry, capacity for expansion, internet accessibility, strong evidence of awareness of community information management standards, computerization and interoperability approaches, and plans for permanent maintenance of the database. All data entered during a BRC-funded project must be made available over the internet during the course of the project (exceptions may include sensitive data such as localities for endangered species) and provisions must be made to account for the long term, publicly available, preservation of data. Quality assurance for species identifications, testing the accuracy of data entry, statements on georeferencing protocols, and a searchable database or metadata format should be included in the description.
8. Proposals must address the anticipated broader impacts of the proposed activities beyond the scientific community use. Use by the scientific community is part of the intellectual merit of the proposal. Broader impacts should address education, importance to groups outside the scientific community, such as the public or land use managers, increased outreach to underrepresented groups in the field, etc. Examples of broader impacts can be found on the NSF web site at: <http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf>.
9. All proposals must include a description of the collection's policies (including those concerning loans, accessions, deaccessions, and collecting permits), protocols and user charges or fees that govern acquisitions, loans, and access to the specimens and the Internet-based availability of the information associated with them.
10. All submitting organizations must demonstrate their commitment to collection staffing and normal operating support that are adequate for the regular use, growth, care, and management of the collection. Normal collection operations include specimen acquisition resulting from the research activities of the collection's curators and other associated staff or from the acceptance of donated materials, maintenance of those collections, answering loan and data requests, pursuing specimen-based research, and accommodating visiting researchers. Support from the BRC Program may not be requested to defray these ordinary operating costs. Such documentation should be presented in the form of a one page maximum letter documenting the organization's long-term commitment to care and maintenance of the collection. This letter may be included in the Special Information and Supplementary Documentation section.
11. Individuals whose role is discussed in the project description as providing assistance or collaboration to the project (but not included in the budget) must verify their participation with a document placed in Special Information and Supplementary Documentation section using the following format only.

To: BRC Program Director,

By signing below, I acknowledge that I will provide the assistance or am listed as a collaborator as indicated in the proposal, entitled " _____ " with _____ as the Principal Investigator. I agree to perform the tasks assigned to me and/or provide resources available to me in a timely manner.

Signed: _____

Date: _____

12. Dissemination of Results: Description of the plans for advising the biological research community and the general public of the avenues of access to a collection and its associated data, publication of a new curatorial or collection management practice, or the outcome of discipline-wide workshops should be included as appropriate.

B. Budgetary Information

Cost Sharing: Inclusion of voluntary committed cost sharing is prohibited

Other Budgetary Limitations: Maximum budget that can be requested from NSF is up to \$500,000 total for individual awards of 1 to 3 years; up to \$2,000,000 total for collaborative awards of 1 to 5 years.

Budget Preparation Instructions: Provide a cost-breakdown and narrative justification for budgeted items. At least two vendor quotes for items of equipment and supplies that total more than \$10,000 should have been obtained. Reasons for choosing a particular vendor should be described in this section. Present discrete task analyses to justify the number, duration and percent effort of current personnel, and for those additional personnel specifically required for the duration of the proposed project. Other costs should be related to the proposed project. Specialized items that are components of a larger system (e.g. specimen cabinets and compactors) are considered as equipment under the BRC program guidelines.

C. Due Dates

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

July 24, 2009

Fourth Friday in July, Annually Thereafter

D. FastLane/Grants.gov Requirements

- **For Proposals Submitted Via FastLane:**

Detailed technical instructions regarding the technical aspects of 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 funding opportunity.

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. Further instructions regarding this process are available on the FastLane Website at: <https://www.fastlane.nsf.gov/fastlane.jsp>.

- **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 where they will be reviewed if they meet NSF proposal preparation requirements. 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 of interest with the proposal.

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, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

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

Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website at: <http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf>.

Mentoring activities provided to postdoctoral researchers supported on the project, as described in a one-page supplementary document, will be evaluated under the Broader Impacts criterion.

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

Integration of Research and Education

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

Integrating Diversity into NSF Programs, Projects, and Activities

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

Additional Review Criteria:

Key Review Criteria:

- Collaborative projects for interoperable networking
- Taxonomic breadth (if applicable)
- Value of the collection
- Urgency
- Evidence of planning by, and priorities of, the parent organization
- Education and outreach
- Interoperability, openness and long-term preservation of electronic databases
- Attention to standard protocols of the field
- Management plan and task analyses

- o Long-term maintenance of the collection

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review 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.

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 deadline or target date, or receipt date, whichever is later. 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 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.B. 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 (GC-1); * or Research Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the *NSF Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

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, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report 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 project outcomes report must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- W. Carl Taylor, BRC Program Director, Directorate for Biological Sciences, Division of Biological Infrastructure, telephone: (703) 292-8470, fax: (703) 292-9063, email: dbibrc@nsf.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.

IX. OTHER INFORMATION

The NSF Website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this Website by potential proposers is strongly encouraged. In addition, National Science Foundation Update is a free e-mail subscription service designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Regional Grants Conferences. Subscribers are informed through e-mail when new publications are issued that match their identified interests. Users can subscribe to this service by clicking the "Get NSF Updates by Email" link on the [NSF web site](#).

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

ABOUT THE NATIONAL SCIENCE FOUNDATION

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

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

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

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

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

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

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

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

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

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The

information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and NSF-51, "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0058. 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
National Science Foundation
Arlington, VA 22230

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