

# Biological Research Collections (BRC)

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## Program Solicitation

NSF 05-575

Replaces Document NSF 04-571



**National Science Foundation**  
Directorate for Biological Sciences  
Division of Biological Infrastructure

## Full Proposal Target Date(s):

July 15, 2005

Fourth Friday in July

annually thereafter

## SUMMARY OF PROGRAM REQUIREMENTS

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### General Information

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#### Program Title:

Biological Research Collections (BRC)

#### Synopsis of Program:

The Biological Research Collections Program provides support for biological collection enhancement, computerization of specimen-related data, research to develop better methods for specimen curation and collection management, and activities such as symposia and workshops to investigate support and management of biological collections. Biological collections supported include those housing natural history specimens and jointly curated collections such as frozen tissues and other physical samples, e.g. DNA libraries and digital images. Such collections provide the materials necessary for research in a broad area of biological sciences.

#### Cognizant Program Officer(s):

- Mark Farmer, BRC Program Director, Directorate for Biological Sciences, Division of Biological Infrastructure, telephone: (703) 292-8470, fax: (703) 292-9063, email: [dbibrc@nsf.gov](mailto:dbibrc@nsf.gov)

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

- 47.074 --- Biological Sciences

## Eligibility Information

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

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#### Award Information

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 20 to 25 - per year.
- **Anticipated Funding Amount:** \$6,000,000 annually contingent upon availability of funds. The maximum that may be requested in a proposal is \$500,000 per award.

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#### Proposal Preparation and Submission Instructions

##### A. Proposal Preparation Instructions

- **Full Proposal Preparation Instructions:** This solicitation contains information that supplements the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full text of this solicitation for further information.

##### B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required by NSF.
- **Indirect Cost (F&A) Limitations:** 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 15, 2005  
 Fourth Friday in July  
 annually thereafter

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#### Proposal Review Information

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

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#### 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 one of the most essential activities, the identification of species. The Biological Research Collections Program (BRC) is the principal source of federal support for enhancement of these collections. 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 organizations with programs in systematics and other biodiversity-related research. These organizations have collections that have been built over many years and contain thousands or even 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 research materials that are collected or created by researchers, deposited at a public site, and distributed to the research community. Examples would include genome samples such as arrayed BAC (Bacterial Artificial Chromosome) libraries or a collection of DNAs from endangered species linked to voucher specimens. The BRC will support improvement of these new types of collections as well.

Our planet is rapidly being modified by human development, and natural history collections are an enormously valuable source of biological information. The 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.

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**II. PROGRAM DESCRIPTION**

The Biological Research Collections Program provides support for biological collection enhancement, computerization of specimen-related data, research to develop better methods for specimen curation and collection management, and activities such as symposia and workshops to discuss management of biological collections and other subjects designed to improve service to the research community. Biological collections supported include those housing natural history specimens and jointly curated collections such as, frozen tissues, other physical samples (e.g. digital images) and DNA samples (e.g., BAC libraries). Such collections provide the materials necessary for a substantial amount of research on biodiversity, including that on evolutionary relationships, comparative genomics, ecosystem functioning, and biological conservation.

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 directly with 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). Collection portions of organisms must be properly vouchered. 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 BIO does not normally provide support for disease-oriented research, including work on the etiology, diagnosis or treatment of physical or mental disease, abnormality, or malfunction in human beings or animals.

## Types of Support

The Biological Research Collections Program provides support for collection enhancement which may include improvements in storage units or the incorporation of specimens from other organizations, collection computerization projects that digitally capture specimen-related data or improve the usefulness of the collection (e.g., by georeferencing data), research on methods to improve curation of specimens or management of collections, and scientific conferences, symposia, and workshops that investigate the management and broader impacts of collections and associated data. Projects should be designed so that the most reasonable economy of scale and cost- and time-efficiency can be achieved.

Most awards are for enhancement of the infrastructure of a research collection such as the purchase of new specimen cases and installation costs, curatorial supplies, 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. 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. 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 clearly focused, have a strong scientific rationale, and be designed to be completed within the time frame proposed. 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 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. ELIGIBILITY INFORMATION

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**Organization Limit:** 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 Eligibility Limit:** None Specified.

**Limit on Number of Proposals:** 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.

### IV. AWARD INFORMATION

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Proposals submitted to the BRC Program typically are for projects that range from one to three years. The BRC program expects approximately \$6 million annually contingent upon availability of funds. The maximum that may be requested in a proposal is \$500,000. 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](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.

### A. Proposal Preparation Instructions

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#### Full Proposal Instructions:

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

The following information provides instructions that supplement the Grant Proposal 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:













