

# Biological Databases and Informatics (BD&I)

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## Program Solicitation

NSF 05-577

Replaces Document NSF 02-058



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

## Full Proposal Target Date(s):

July 11, 2005

Second Monday in July Annually

## REVISIONS AND UPDATES

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This Program Solicitation replaces [NSF 02-058](#). Two significant changes have been made in this solicitation: (1) The proposal submission target date has been changed from twice a year to once a year. The new annual target date is the second Monday in July. (2) There is now a limit on the number of proposals an investigator can be included in -- only one proposal as a principal investigator or a co-principal investigator per round of competition.

## SUMMARY OF PROGRAM REQUIREMENTS

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### General Information

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#### Program Title:

Biological Databases and Informatics (BD&I)

#### Synopsis of Program:

The Biological Databases and Informatics (BD&I) program seeks to encourage new approaches to the management, analysis, and dissemination of biological knowledge for the benefit of both the scientific community and the broader public. The BD&I program is especially interested in the development of informatics tools and resources that have the potential to advance all fields of biology under the purview of the Directorate for Biological Sciences at the National Science Foundation.

#### Cognizant Program Officer(s):

- Manfred D Zorn, Program Director, Directorate for Biological Sciences, Division of Biological Infrastructure, 615 N, telephone: (703) 292-8470, email: [dbidba@nsf.gov](mailto:dbidba@nsf.gov)

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

- 47.074 --- Biological Sciences

## Eligibility Information

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- **Organization Limit:** The following organizations are eligible to submit a proposal in response to this solicitation: U. S. colleges and universities, and non-profit research organizations including independent museums, field stations, research laboratories, and professional societies. The BD&I program does not accept collaborative proposals. When a proposal involves a consortium of investigators from eligible organizations, a single organization must be designated as the lead with the rest designated as subawardees. Organizations ineligible under this solicitation to submit proposals (federal government laboratories, federally funded research and development centers, for-profit organizations, and state and local governments) may not receive subawards from this program. Investigators who are employed at ineligible organizations may participate as collaborators but their research support must be provided from non-NSF sources. Those investigators who hold a joint appointment with an eligible organization may participate through that affiliation except that they may not receive salary from the NSF funds. International collaboration is encouraged; however, financial support for any non-U.S. participant organization must be provided from within the participant's country or other non-NSF sources.
- **PI Eligibility Limit:** None Specified.
- **Limit on Number of Proposals:** An investigator can be included in only one proposal as a principal investigator or a co-principal investigator per round of competition in response to this solicitation.

#### Award Information

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- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 20 to 25
- **Anticipated Funding Amount:** \$7,000,000 NSF anticipates having approximately \$7 million annually, subject to the availability of funds.

#### Proposal Preparation and Submission Instructions

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##### 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:** Not Applicable.

##### C. Due Dates

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

July 11, 2005

Second Monday in July Annually

#### Proposal Review Information

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- **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

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

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## I. INTRODUCTION

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Advances in the biological sciences depend both upon the creation of new knowledge and upon effective information management. Developing an integrated understanding of organisms, development and evolution, documenting species diversity and tracking long-term environmental change are just a few examples of biological research areas that generate and require large amounts of information. Future biological discoveries based on information contained in community-accessible databases require that much, if not all, of our accumulated knowledge of biology is accessible in electronic form. Future progress in biological research will be highly dependent on the ability of the scientific community to both deposit and utilize stored information on-line. Thus, the information management challenge for the future will be to develop new ways to acquire, store and retrieve not only biological data per se, but also the biological context for these data.

The Directorate for Biological Sciences (BIO), through the Division of Biological Infrastructure (DBI), supports the design, development, implementation, and use of information resources and tools. All fields of science supported by BIO are eligible for support under the BD&I program. The BD&I program seeks to encourage new approaches to the management of biological knowledge that renders the collection, maintenance, dissemination and query of the data and information therein of greater utility to the scientific community. The BD&I program is especially interested in the development of informatics tools and resources that have the potential to advance all fields of biology under the purview of BIO at NSF.

BIO does not provide support for research with disease related goals, including work on the etiology, diagnosis and treatment of physical and mental disease, abnormality, or malfunction in human beings or animals. Animal models of such conditions and the development and testing of drugs and other procedures for their treatment also are not eligible for support.

The submission of duplicate or substantially similar proposals concurrently for review by more than one program without prior NSF approval may result in the return of such proposals without review. Research proposals to BIO cannot be duplicates of proposals to any other Federal agency for simultaneous consideration. The only exceptions to this rule applicable to the BD&I program are proposals from PIs who are beginning investigators (individuals who have not been a principal investigator (PI) or co-principal investigator (co-PI) on a federally funded award with the exception of doctoral dissertation, postdoctoral fellowship or research planning grants). For proposers who qualify under this exception, the box for "Beginning Investigator" must be checked on the proposal Cover Sheet.

## II. PROGRAM DESCRIPTION

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The Biological Databases and Informatics program seeks to support research that enables investigators to manage and make use of biological data and information for the discovery of new knowledge and the advancement of the field of biology.

The Program supports a range of activities along a continuum, from the formative, theoretical development of new algorithms, data structures and tools specific to the management of biological information, through the development of new information resources to the enhancement of established resources needed by whole communities of biological researchers. However, the highest priority of the BD&I program as reflected in this solicitation is on supporting proposals that address the formative stages of this continuum. Examples include theoretical research on data structures; new database architectures more tuned to the complexity of biology; planning and prototype development of new types of biological data- or knowledge-bases; and design of easy-to-use interfaces and tools for data input, manipulation, analysis and extraction.

The BD&I program encourages research on and/or the development of the following:

- New methods and tools for the construction and operation of, and access to, biological databases, including research into generic database infrastructures designed to be extendable to different biological domains;
- New data structures and new data-management systems for biological databases so they can manage new types of biological information;
- "Metadatabase" architectures for biology, for example, single query interfaces that present data from transparent queries across multiple databases;
- Algorithms and software related to the retrieval and use of heterogeneous biological information, for example, web services that integrate diverse information sources;
- Standardized nomenclature, conceptual information models, ontologies to describe biological concepts, and semantic content efforts;
- Databases and related software tools crucial for a broad area of biology; and
- Alternative economic models for long-term sustainable support of important community information resources.

The above examples are by no means exclusive. Any proposal that is designed to meet the goals of the Program will be considered. The program especially encourages imaginative and novel proposals to develop research tools and resources that will help open up a completely new way of managing and utilizing huge amounts and disparate kinds of biological information. In addition, proposals to conduct planning activities, nomenclature standardization, etc., are appropriate. The BD&I program seeks to encourage activities that are designed to promote greater interactions between the computational sciences and biology.

Recognizing that the use of computational and informatics tools and databasing of research results have become increasingly integral to activities supported by all BIO programs, the BD&I program will place a low priority on proposals that apply computational / informatics tools to address specific biological questions. These proposals should be submitted to the relevant BIO programs. Similarly, proposals to build databases largely geared towards the public dissemination of sub discipline-specific biological research results or specialized sets of data should be submitted to the relevant BIO programs that support that research.

### III. ELIGIBILITY INFORMATION

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**Organization Limit:** The following organizations are eligible to submit a proposal in response to this solicitation: U.S. colleges and universities, and non-profit research organizations including independent museums, field stations, research laboratories, and professional societies. The BD&I program does not accept collaborative proposals. When a proposal involves a consortium of investigators from eligible organizations, a single organization must be designated as the lead with the rest designated as subawardees. Organizations ineligible under this solicitation to submit proposals (federal government laboratories, federally funded research and development centers, for-profit organizations, and state and local governments) may not receive subawards from this program. Investigators who are employed at ineligible organizations may participate as collaborators but their research support must be provided from non-NSF sources. Those investigators who hold a joint appointment with an eligible organization may participate through that affiliation except that they may not receive salary from the NSF funds. International collaboration is encouraged; however, financial support for any non-U.S. participant organization must be provided from within the participant's country or other non-NSF sources.

**PI Eligibility Limit:** None Specified.

**Limit on Number of Proposals:** An investigator can be included in only one proposal as a principal investigator or a co-principal investigator per round of competition in response to this solicitation.

### IV. AWARD INFORMATION

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Estimated program budget, number of awards and average award size/duration are subject to the availability of funds. NSF expects to make 20 to 25 new standard or continuing grants per year depending on the quality of submissions and the availability of funds. Typical awards range from \$50,000 to \$500,000 per year for up to five years. NSF anticipates having approximately \$7 million annually, subject to the availability of funds. NSF is committed to make "enabling" awards. All well-justified requests will receive serious consideration, including those with a budget larger than a typical size. The anticipated

date of awards for proposals submitted by the July target date each year is in January of the following year.

## V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

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### 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 GPG.

#### Project Description (maximum length 15 pages):

Proposals should address the project goals, the anticipated product(s) of the work and implications for biological databases and informatics with specific reference to the anticipated impact on the community served by the proposed developments.

Proposals should discuss plans for making the products of research, e.g. software and databases, available to the biological sciences research community.

Proposals should address and, where relevant, demonstrate evidence of scientific community need for the proposed work.

Proposals should present a well-developed plan for the long-term support and maintenance of the databases or informatics tools generated by the project. Provide information on possible economic models of long term support which a project, intent on maturing to a community database or widely used tool, might adopt.

Proposals should describe the management of intellectual property rights related to the proposed project, including plans for sharing data, information, and materials resulting from the project. This plan should be specific about the nature of the results to be shared, and the timing and means of release.

In accordance with the broader impact review criterion, proposals should describe specific plans to address broader impacts of the proposed activity (see "Proposal Review Information" below for the definition of "broader impacts").

Note: Inclusion of a website to provide additional information about the proposed project is not allowed. Reviewers will be advised to review what is presented in the 15 pages and not to consider additional information provided on a website.

#### Budget:

For major equipment or software materials, a particular model or source and the current or expected price should be specified whenever possible. This section should also include details of other sources of support for the project, such as government, industry, or private foundations. Funds for facility construction or renovation may not be requested.

#### Facilities, Equipment, & Other Resources (maximum length 2 pages):

Include a brief description of available facilities, including space and computational equipment available for the project. Where requested equipment or materials duplicate existing items, explain the need for duplication.

#### Special Information and Supplementary Documentation:

In addition to any applicable documentation described in the GPG, projects requiring collaborative effort by an individual not employed at the submitting institution or subawardee's institutions should submit a signed letter of collaboration from the individual. Besides indicating a willingness to collaborate, the letter should provide a brief outline of the goals of the collaboration and estimate the time and effort the individual expects to devote to the collaboration. Biographical sketches are not required for such individuals, unless requested by NSF. A collaborator whose primary purpose is advisory (e.g., service on a committee that will provide advice to the project) does not need to provide such a letter. No general letters of endorsement are allowed.

#### Single Copy Documents:

A conflict of interest document – Prepare a list, in the form of a single alphabetized table, consisting of the full name (last, first, MI) of all people having a conflict of interest with any senior personnel and others whose biographical sketches are included in the proposal. Conflicts to be identified are (1) Ph.D. thesis advisors or advisees, (2) collaborators or co-authors for

the past 48 months including postdoctoral mentors and mentees, and (3) any other individuals or institutions with which the senior personnel has financial ties.

In addition to the conflict of interest document, other correspondence to the program not intended to be sent to reviewers such as a list of potential reviewers can be sent through the Single Copy Document section of FastLane.

Proposers are reminded to identify the program announcement/solicitation number (05-577) 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

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### Cost Sharing:

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

## C. Due Dates

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

### Full Proposal Target Date(s):

July 11, 2005

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## D. FastLane Requirements

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

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

## VI. PROPOSAL REVIEW INFORMATION

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### A. NSF Proposal Review Process

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

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

On July 8, 2002, the NSF Director issued [Important Notice 127](#), Implementation of new Grant Proposal Guide Requirements Related to the Broader Impacts Criterion. This Important Notice reinforces the importance of addressing both criteria in the

preparation and review of all proposals submitted to NSF. NSF continues to strengthen its internal processes to ensure that both of the merit review criteria are addressed when making funding decisions.

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

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

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

**What is the intellectual merit of the proposed activity?**

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

**What are the broader impacts of the proposed activity?**

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

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

***Integration of Research and Education***

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

***Integrating Diversity into NSF Programs, Projects, and Activities***

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

**Additional Review Criteria:**

In addition, reviewers of proposals to BD&I will focus on the following issues:

- responsiveness to the program scope;
- potential to advance biological research;
- effectiveness of the project's organizational plan to reflect technical advances and new scientific discoveries;
- extent to which the operation is focused on the research community's needs;
- soundness and openness of the information-sharing plan and management of intellectual property rights;
- quality of the training environment for junior scientists and/or mid-career scientist wishing to retool (if applicable); and
- commitment to promote participation of members of under-represented groups.

Where appropriate, reviewers will also consider:

- cohesiveness and soundness of the planned coordination for a multi-investigator project;
- efficiency and cost-effectiveness of the proposed approach for infrastructure development; and
- soundness of the plan for maintenance of databases or software after the NSF award period.

## B. Review Protocol and Associated Customer Service Standard

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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. Site visits may be conducted if necessary. .

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

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

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

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

## VII. AWARD ADMINISTRATION INFORMATION

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### A. Notification of the Award

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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

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

\*These documents may be accessed electronically on NSF's Website at <http://www.nsf.gov/awards/managing/>. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 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 Website at [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpm](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpm). The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Website at <http://www.gpo.gov>.

### C. Reporting Requirements

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

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

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

## VIII. CONTACTS FOR ADDITIONAL INFORMATION

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General inquiries regarding this program should be made to:

- Manfred D Zorn, Program Director, Directorate for Biological Sciences, Division of Biological Infrastructure, 615 N, telephone: (703) 292-8470, email: [dbidba@nsf.gov](mailto:dbidba@nsf.gov)

For questions related to the use of FastLane, contact:

- FastLane Helpdesk answers general technical questions, telephone: 800-673-6188, email: [fastlane@nsf.gov](mailto:fastlane@nsf.gov)
- The Divisional FastLane Contact answers policy/solicitation questions, Division of Biological Infrastructure, email: [biofl@nsf.gov](mailto:biofl@nsf.gov)

## IX. OTHER PROGRAMS OF INTEREST

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

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

Support for biological databases and informatics activities that address a specific biological research question should be obtained from other BIO programs within the National Science Foundation. Several research programs within the BIO Directorate support database applications within the context of research projects.

In addition, the [Science and Engineering Information Integration and Informatics program](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=9193&org=IIS) ([http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=9193&org=IIS](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=9193&org=IIS)) in the Information and Intelligent Systems Division (IIS) of the Directorate for Computer and Information Science and Engineering (CISE) supports computer science research on integration of information and informatics applications in all sciences. With the SEIII program, NSF intends to support a group of projects that will advance the understanding of technology to enable scientific discovery, and that will creatively integrate research and education for the benefit of technical specialists and the general population. In determining where to seek support, recognize that biological databases and informatics research and developments occur over a continuum, from database systems research to database application maintenance and data curation. The support of fundamental database research rests with the [Information and Data Management program](http://www.nsf.gov/div/index.jsp?div=IIS) (<http://www.nsf.gov/div/index.jsp?div=IIS>) in IIS/CISE. Support of software application maintenance and data management rests with the appropriate BIO Directorate research program.

## ABOUT THE NATIONAL SCIENCE FOUNDATION

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

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

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

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

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

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

## PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

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

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