

BIOLOGICAL DATABASES AND INFORMATICS

Program Announcement

**DIRECTORATE FOR BIOLOGICAL SCIENCES
DIVISION OF BIOLOGICAL INFRASTRUCTURE**

TARGET DATES: *SECOND MONDAY IN JULY ANNUALLY*
SECOND MONDAY IN JANUARY ANNUALLY



NATIONAL SCIENCE FOUNDATION



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SUMMARY OF PROGRAM REQUIREMENTS

GENERAL INFORMATION

Program Name: Biological Databases and Informatics

Short Description/Synopsis of Program:

The mission of the Biological Databases and Informatics Program is to encourage support of new approaches to the management of biological knowledge that render the collection, maintenance, dissemination and query of the data and information therein of greater utility to the scientific community.

COGNIZANT PROGRAM OFFICER(S):

Dr. Paul Gilna, Division of Biological Infrastructure, Room 615, Arlington, VA 22230, (703) 306-1469, e-mail: pgilna@nsf.gov.

APPLICABLE CATALOG OF FEDERAL DOMESTIC ASSISTANCE (CFDA) NO.:

47.074 – Biology

ELIGIBILITY

Limitation on the categories of organizations that are eligible to submit proposals:

The BDI program will accept applications from eligible institutions as described in the NSF “*Grant Proposal Guide*” (GPG), NSF 99-2, Chapter I, Section D, in categories 1 and 2 only.

Consortia of eligible individuals or organizations may also apply, but a single individual or organization must accept overall management responsibility. 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-U.S. sources.

PI eligibility limitations: None

Limitation on eligible topics:

Proposals for BDI work of a clinical or toxicological nature, or research with disease-related goals will not be considered. This includes work on the etiology, diagnosis, or treatment of physical or mental disease or abnormality or malfunction in human beings or animals. Animal models of such conditions and the development or testing of drugs or other procedures for their treatment also are not eligible for support.

Limitation on the number of proposals that may be submitted: None

AWARD INFORMATION

Type of award anticipated: Standard and Continuing Grants

Number of awards anticipated: Approximately 10

Amount of funds available: Approximately \$5 million annually

Anticipated date of award: For proposals received in July the anticipated date of awards is January of the following year. For proposals received in January the anticipated date of awards is July of the same year.

PROPOSAL PREPARATION & SUBMISSION INSTRUCTIONS

Letter of Intent requirements: None

Pre-proposal requirements: None

Proposal Preparation instructions: Standard NSF "*Grant Proposal Guide*" (GPG) instructions

Supplemental full proposal preparation instructions: See the Special Information and Supplementary Documentation section.

BUDGETARY INFORMATION

Cost sharing/matching requirements: None

Indirect cost (F&A) limitations: None

Other budgetary limitations: Funds for facility construction or renovation may not be requested

FASTLANE REQUIREMENTS

FastLane proposal preparation requirements: FastLane (<http://www.fastlane.nsf.gov>) submission required for full proposals

FastLane point of contact: For technical assistance with FastLane, please send an e-mail message to biofl@nsf.gov.

DEADLINE/TARGET DATES

Target Date: Second Monday in July Annually

Target Date: Second Monday in January Annually

PROPOSAL REVIEW INFORMATION

Merit Review Criteria: Standard National Science Board approved criteria and additional criteria

AWARD ADMINISTRATION INFORMATION

Grant Award Conditions: GC-1 or FDP III

Special grant conditions anticipated: See the Award and Administration section, Distribution of Materials

Special reporting requirements anticipated: None

INTRODUCTION

The National Science Foundation (NSF) believes that future advances in the biological sciences will depend both upon the creation of new knowledge and upon effective management of proliferating information. The biological sciences have become increasingly data rich. Mapping genomes, describing synaptic connections, documenting species diversity and tracking long-term environmental change are just a few examples of biological research programs that generate and require large amounts of archival information. Much of the biology of tomorrow will arise through discovery based on information contained in community-accessible databases. Much, if not all, of our accumulated knowledge of biology will be 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 those data in the context of biological knowledge. The Directorate for Biological Sciences (BIO), through the Division for Biological Infrastructure (DBI), announces a cross-disciplinary effort to support the design, development, implementation, and use of information resources and tools. All fields of science supported by BIO are eligible for support under this Biological Databases and Informatics (BDI) program.

The mission of the Biological Databases and Informatics Program is to encourage support of new approaches to the management of biological knowledge that render the collection, maintenance, dissemination and query of the data and information therein of greater utility to the scientific community.

Proposals for BDI work of a clinical or toxicological nature, or research with disease-related goals will not be considered. This includes work on the etiology, diagnosis, or treatment of physical or mental disease or abnormality or malfunction in human beings or animals. Animal models of such conditions and the development or testing of drugs or other procedures for their treatment also are not eligible for support.

PROGRAM DESCRIPTION

The terms “database development” and “biological informatics activities” describe a range of activities along a continuum, from formative, theoretical development of new algorithms, data structures and tools specific to the management of biological information to the development and utilization of established resources needed by whole communities of biological researchers. The emphasis of the BDI program as reflected in this announcement 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.

Improving the informational infrastructure of the biological sciences will require a number of activities. Therefore, the objectives of the BDI program are to encourage:

- development of new methods and tools for the construction, operation, and access of biological databases, including research into generic database infrastructures designed to be extendable to different biological domains;
- research into development of new data structures and new data-management systems for biological databases, for example, gene expression databases based on data from “gene-chip” technology;
- research and development of “metadatabase” architectures for biology, for example, single query interfaces that present data from queries across multiple databases;
- development of algorithms and software related to the retrieval and analysis of biological information;
- activities that will facilitate development of biological databases, such as to standardize nomenclature, conceptual information models, and semantic content efforts (e.g., workshops);
- development (including planning and subsequent design, prototypes, implementation, testing, and distribution) of databases and related software tools crucial for biological research;
- activities that will facilitate the exchange of ideas among those involved in biological database research;
- activities (such as workshops, training, and collaborations between computer scientists and biological researchers) that will enhance development and use of information resources; and
- exploration and research on alternative economic models for long term sustainable support of important community resources.

Guidance on Community Databases

Databases of biological information evolve into community databases when their scientific value makes them useful to biological researchers. While the mission of the BDI program encompasses all aspects of the above described continuum, this program announcement is geared towards facilitating the emergence of new types of database designs and informatics tools rather than databases of information *per se*. By definition, “Community Databases” have an established user-base and a well-established production mission and, as such, are expected to obtain financial support for this mission primarily from those programs (at NSF or elsewhere) that are most closely aligned to that user-base.

This BDI program announcement specifically distinguishes and encourages proposals in research and development aspects of novel biological database structures (or informatics tools) both large and small, and discourages proposals focused only on maintenance and operation of databases. Note however that this stipulation does not constrain the staff of such community databases from submitting proposals that respond to this announcement.

Planning Grants

Developing an adequate plan for work in biological databases and informatics activities often requires considerable preliminary effort. Accordingly, the NSF encourages applicants to consider submitting requests for support of planning and design activities.

Conferences and Workshops

BDI will help support national or international conferences, symposia, and workshops that enable leading scientists, engineers, scholars, policy makers, representatives of interested groups, and others to develop, evaluate, and share the planning and design of Biological Databases and Informatics activities. Meetings that are sponsored or co-sponsored by national associations or organizations, or that have concomitant support by other Federal agencies or private organizations, are especially encouraged. Supported conferences and workshops should reach a wide audience through rapidly published proceedings (either paper or electronic). The distribution of speakers and participants is expected to reflect the diversity of the scientific community. Support of junior investigators, post-doctorals and graduate students is especially appropriate, and selection mechanisms should encourage attendance by members of underrepresented groups.

Other Activities

Proposals to carry out prerequisites necessary for Biological Databases and Informatics activities, such as working groups, nomenclature standardization efforts, etc., are appropriate. In particular, the BDI program seeks to encourage activities that are designed to promote greater interactions between the computational sciences and biology in furtherance of the BDI mission.

Other Related Programs

Support for Biological Databases and Informatics activities in biology may also be obtained from other 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 Information and Data Management program (<http://www.interact.nsf.gov/cise/html.nsf/html/idmPD?OpenDocument>) in the Information and Intelligent Systems Division (IIS) of the Directorate for Computer and Information Science and Engineering (CISE) supports computer science research on database systems. In determining where to seek support, recognize that Biological Databases and

Informatics occur over a continuum, from database systems research to database application maintenance and data curation. The support of fundamental database research rests with the database program in IIS/CISE. Support of software application maintenance and data management rests with the appropriate BIO Directorate research program. The primary mission of BDI is to bridge the gulf between primary database research in a computer science context and application maintenance or data management by supporting activities that would be considered too applied to warrant support from CISE and too technical or theoretical for a research program in BIO.

Applicants are encouraged to contact the appropriate NSF program officers to discuss their ideas prior to proposal submission.

ELIGIBILITY

The BDI program will accept applications from eligible institutions as described in the NSF “*Grant Proposal Guide*” (*GPG*), NSF 99-2, Chapter I, Section D, in categories 1 and 2 only. The *GPG* is available on the NSF web site at the URL (<http://www.nsf.gov/cgi-bin/getpub?nsf992>). Paper copies of the *GPG* may be purchased from the NSF Publication Clearinghouse, P.O. Box 218 Jessup, Maryland 20794-0218, telephone (301) 947-2722, or by e-mail from pubs@nsf.gov.

Consortia of eligible individuals or organizations may also apply, but a single individual or organization must accept overall management responsibility. 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-U.S. sources.

AWARD INFORMATION

NSF expects to make approximately 10 awards per year from a total budget of approximately \$5 million, depending on the quality of submissions and the availability of funds. Typical awards range from \$50K to \$300K per year for two to three years. For proposals received in July the anticipated date of awards is January of the following year. For proposals received in January the anticipated date of awards is July of the same year.

PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Proposals to the Biological Databases and Informatics program require electronic submission via the NSF FastLane system and should be prepared and submitted in accordance with the general guidelines provided in the “Instructions for Proposal Preparation” found in the “*Grant Proposal Guide*” (*GPG*) NSF 99-2. The complete text of the *GPG* is available on the NSF Web Site at the URL (<http://www.nsf.gov/cgi-bin/getpub?nsf992>). Paper copies of the *GPG* may be purchased from the NSF Publication

Clearinghouse, P.O. Box 218 Jessup, Maryland 20794-0218, telephone (301) 947-2722, or by e-mail from pubs@nsf.gov.

Proposers are reminded to identify the program announcement number (NSF 99-91) in the program announcements/solicitation block on NSF Form 1207, "*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.

Include in proposals to BDI the components listed in the *GPG*, Chapter II, Section D. State information in each component as clearly and concisely as possible for merit review. Take special care in adhering to the requirements for page limitations, font size, and margins (see *GPG*, Chapter II, Section C). Proposals not strictly adhering to the requirements of the *GPG* and these guidelines are returned without review. Instructions and guidelines for the FastLane submission of proposals are detailed in Instructions for Preparing and Submitting a *Standard Proposal* via FastLane located at <http://www.fastlane.nsf.gov/a1/newstan.htm>. Also, see the "FastLane Submission" section below.

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

- **Proposal Cover Sheet (NSF Form 1207)**

1. In the NSF FastLane system read the proposal preparation instructions located at <http://www.fastlane.nsf.gov/a1/newstan.htm>. When completing the Cover Sheet click on the "Add Org Unit" button. Highlight "DIRECT FOR BIOLOGICAL SCIENCES" and click "OK." Scroll down, highlight "Database Activities" and click "OK." Clicking "OK" designates this program as the NSF organizational unit of consideration.
2. In the box labeled "Program Announcement/Solicitation No." enter "NSF 99-91" with no additional characters.
3. The first-listed Principal Investigator (PI) is designated as the primary PI and is responsible for coordinating the entire proposed project.

- **Project Summary**

Provide a brief (200 words or less) description of the project.

- **Project Description (maximum length 15 pages)**

Particular attention must be paid to the following major aspects in preparing a description of the proposed project. Although some relevant technical issues are mentioned below, these details are intended only as guidelines. This section must not exceed 15 pages inclusive of tables, diagrams or other visual material. Clearly label sections and major subdivisions of the project description.

- Proposals should address the project goals, the anticipated product(s) of the new 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 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 developed in the proposal. Some attention should be paid to possible alternative economic models of long term support to which a project, intent on maturing to a community database or widely used tool, might migrate. It should not be assumed that NSF will fund such projects in perpetuity.
- 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 award. This plan should be specific about the nature of the results to be shared, and the timing and means of release.

- **Biographical Sketches**

For each of the key personnel, including senior staff and any other staff whose participation is critical to the success of the project, provide a curriculum vitae or short biographical sketch. Briefly describe relevant experience and list up to 10 publications (to include the individual's 5 most important and up to 5 other relevant publications). Include an alphabetical list of current and past collaborators of all key personnel whose biosketches are included, and of any other staff or collaborators mentioned by name in the proposal. Additionally, include names of all graduate students and postdoctoral fellows who have trained with these individuals, as well as anyone with whom these individuals have co-authored a paper within the last 4 years. The information may not exceed 2 pages for each individual.

- **Budget (NSF Form 1030)**

Provide a budget and budget justification for each year of support requested as well as a separate, cumulative budget for all years. If funds for subcontracts are requested, a separate budget and budget justification must be prepared by each subcontractor to show the distribution of subcontract funds across categories. Funds for facility construction or renovation may not be requested.

A brief justification for funds in each budget category should be provided. For major equipment or software materials, a particular model or source and the current or expected price should be specified whenever possible. A brief explanation of the need for each item whose cost exceeds \$10,000 should be provided. This section should also include details of other sources of support for the project, such as government, industry, or private foundations.

- **Current Support**

Provide a complete list of current and pending support for all PIs and Co-PIs.

- **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. This section is limited to 2 pages.

- **Special Information and Supplementary Documentation**

Plans requiring collaborative effort by an individual not employed at the submitting institution(s) should be supported by a signed letter 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 should not be provided for such individuals, unless requested by NSF. A collaborator whose primary purpose is advisory (e.g., service on a committee that will provide policy advice) does not need to provide such a letter.

Scan the letters and other relevant Special Information and Supplementary Documentation, as specifically described in the *GPG*, Chapter II, Section D.10, and add them at the end of the Project Description file, clearly labeled as “Special Information and Supplementary Documentation.” Only documentation as described in the *GPG*, Chapter II, Section D.10 and detailed above is allowed. **This information is not counted as part of the 15-page limit of the Project Description.**

- **BIO Proposal Classification Form (PCF)**

Complete the BIO PCF, available on the NSF FastLane system. The PCF is an on-line coding system that allows Principal Investigators to characterize their projects when submitting proposals to the Directorate for Biological Sciences. Once PIs begin preparation of a proposal in the NSF FastLane system and select a division, cluster, or program within the Directorate for Biological Sciences as the first or only organizational unit to review the proposal, the PCF will be generated and available through the Form Selector screen. Additional information about the BIO PCF is available in FastLane at <http://www.fastlane.nsf.gov/a1/BioInstr.htm>.

B. Proposal Target Dates

Proposal target dates for the BDI program are the second Monday of January and the second Monday of July annually. Proposals must be submitted electronically via the NSF FastLane system.

Mail the following materials directly to the Biological Databases and Informatics Program:

a paper copy of the cover sheet (NSF Form 1207), including the completed certification page (page 2 of 2) signed by the PI, all Co-PIs and an institutional representative; and the BIO proposal classification form (PCF).

Do not mail copies of the full proposal. NSF will make the appropriate number of copies of the proposal.

The applicant is responsible for ensuring that the hard copy materials are received within one week of the target date.

Send materials to:

Biological Databases and Informatics Program—NSF 99-91
Division of Biological Infrastructure
National Science Foundation
4201 Wilson Boulevard
Room 615
Arlington, VA 22230

Unless requested by NSF, additional information may not be sent following proposal submission.

C. FastLane Requirements

BDI proposals must be submitted electronically using the NSF FastLane system for electronic proposal preparation and submission. The FastLane system is available through the Web at the FastLane Web site at <http://www.fastlane.nsf.gov>. The Sponsored Research Office (SRO or equivalent) must provide a FastLane Personal Identification Number (PIN) to each Principal Investigator (PI) to gain access to the FastLane “Proposal Preparation” application. PIs that have not submitted a proposal to NSF in the past must contact their SRO to be added to the NSF PI database. This should be done as soon as the decision to prepare a proposal is made.

In order to use NSF FastLane to prepare and submit a proposal, the following are required:

Browser (must support multiple buttons and file upload)

- Netscape 3.0 or greater
- Microsoft Internet Explorer 4.01 or greater

PDF Reader (needed to view/print forms)

- Adobe Reader 3.0 or greater

PDF Generator (needed to create project description)

- Adobe Acrobat 3.01 or greater
- Aladdin Ghostscript 5.10 or greater

A list of registered institutions and the FastLane registration form are located on the FastLane Web page.

Proposers are strongly advised to ensure that the required registrations have been completed, and the necessary software is available, well before the proposal submission deadline. The FastLane instructions specify how to obtain help if needed.

To access FastLane, go to the NSF Web site at <http://www.nsf.gov>, then select “FastLane,” or go directly to the FastLane home page at <http://www.fastlane.nsf.gov/>. Please see “Instructions for Preparing and Submitting a Proposal to the NSF Directorate for Biological Sciences” located at <http://www.fastlane.nsf.gov/a1/BioInstr.htm>.

Additionally, read the “PI Tipsheet for Proposal Preparation” and the “Frequently Asked Questions about FastLane Proposal Preparation,” accessible at <https://www.fastlane.nsf.gov/a1/A1Prep.htm>.

IMPORTANT NOTE: For technical assistance with FastLane, please send an e-mail message to biofl@nsf.gov. If you have inquiries regarding other aspects of proposal preparation or submission, please contact the cognizant program officer, preferably at least three weeks before the competition deadline.

PROPOSAL REVIEW INFORMATION

A. Merit Review Criteria

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, adjacent disciplines to that principally addressed in the proposal, etc.

Proposals will be reviewed against the following general merit review criteria established by the National Science Board. Following each criterion are potential considerations that the reviewer may employ in the evaluation. These are suggestions and not all will apply to any given proposal. Each reviewer will be asked to address only those that are relevant to the proposal 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 and 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 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?

In addition, reviewers of proposals to BDI 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 (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; and
- efficiency and cost-effectiveness of the proposed approach for infrastructure development

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 learner perspectives. PIs should address this issue in their proposal to provide reviewers with the information necessary to respond fully to both NSF merit review criteria. NSF staff will give this careful consideration in making funding decisions.

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 -- are 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. PIs should address this issue in their proposal to provide reviewers with the information necessary to respond fully to both NSF merit review criteria. NSF staff will give it careful consideration in making funding decisions.

B. Merit Review Process

Most proposals submitted to the NSF are reviewed by mail review, panel review, or some combination of mail and panel review. Proposals submitted to this activity will be evaluated by a special emphasis panel formed to review the applications and mail reviews. Site visits may be conducted as needed.

All proposals are carefully reviewed by at least three persons outside NSF who are experts in the particular field represented by the proposal. Reviewers will be asked to formulate a recommendation to either support or decline each proposal. A program officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation. In most cases, proposers will be contacted by the program officer after his or her recommendation to award or decline funding has been approved by his or her supervisor, the division director. This informal notification is not a guarantee of an eventual award. NSF will be able to inform applicants whether their proposals have been declined or recommended for funding within six months for 95 percent of proposals in this category. The time interval begins on the proposal deadline or target date or from the date of receipt, if deadlines or target dates are not used by the program. The interval ends when the division director accepts the program officer's recommendation.

In all cases, after final programmatic approval has been obtained, award recommendations are then 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 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 an 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 Officer does so at its own risk.

AWARD AND 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 (DGA). 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 lead Principal Investigator.

B. Grant Award Conditions

An NSF grant consists of: (1) the award letter, which includes any special provisions applicable to the grant 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 grant conditions, such as Grant General Conditions (NSF GC-1)* or Federal Demonstration Partnership Phase III (FDP) Terms and Conditions* and (5) any NSF brochure, program guide, announcement or other NSF issuance that may be incorporated by reference in the award letter. Electronic mail notification is the preferred way to transmit NSF grants to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

* These documents may be accessed electronically on NSF's Web site at: <http://www.nsf.gov/>>. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (301) 947-2722 or by e-mail from pubs@nsf.gov.

C. Distribution of Materials

As a condition of any award resulting from this program announcement, the awardee must agree that in the event of non-renewal of the award it will transfer to NSF or its designee, without condition or additional charge, a current version of the database or software. This should include current versions of all software necessary for entry submission and for database operation or tool operation, user and system documentation and documentation of database design (data dictionary, conceptual and physical schemata, integrity constraint documentation, and application source code and documentation.)

D. Intellectual Property Rights

The National Science Foundation makes no claim to copyright of inventions or writings that might result from BDI awards. However, should copyrightable materials result from the funded activity, grantees should be aware that they will be required to provide the Federal government with a non-exclusive, nontransferable, irrevocable, royalty-free license to exercise, or have exercised for or on behalf of the United States throughout the world, all the exclusive rights provided by copyright.

In addition, grantees should be aware of the requirements for publication and distribution of technical materials developed with BDI support. Grantees should also note their obligation to include an acknowledgment of NSF support (citing an award number) and, when required, a disclaimer of NSF responsibility resulting from BDI support in all publications.

E. Reporting Requirements

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

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

NSF has implemented a new electronic project reporting system, available through FastLane, which 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. Reports will continue to be required annually and after the expiration of the grant, but PIs will not need to re-enter information previously provided, either with the proposal or in earlier updates using the electronic system.

Effective October 1, 1998, PIs are required to use the new reporting format for annual and final project reports. PIs are strongly encouraged to submit reports electronically via FastLane. For those PIs who cannot access FastLane, paper copies of the new report formats may be obtained from the NSF Publications Clearinghouse as specified above. NSF expects to require electronic submission of all annual and final project reports via FastLane beginning in October, 1999.

F. New Awardee Information

If the submitting organization has never received an NSF award, it is recommended that the organization's appropriate administrative officials become familiar with the policies and procedures in the *NSF Grant Policy Manual* which are applicable to most NSF awards. The "Prospective New Awardee Guide" (NSF 97-100) includes information on: Administration and Management Information; Accounting System Requirements and Auditing Information; and Payments to Organizations with Awards. This information will assist an organization in preparing documents that NSF requires to conduct administrative and financial reviews of an organization. The guide also serves as a means of highlighting the accountability requirements associated with Federal awards. This document is available electronically on NSF's Web site at: <http://www.nsf.gov/cgi-bin/getpub?nsf97100>.

CONTACTS FOR ADDITIONAL INFORMATION

Inquiries regarding the announcement should be directed to the cognizant NSF official: Dr. Paul Gilna, Division of Biological Infrastructure, National Science Foundation, 4201 Wilson Boulevard, Room 615, Arlington, VA 22230. Telephone: (703) 306-1469; FAX: (703) 306-0356; E-mail: pgilna@nsf.gov.

OTHER PROGRAMS OF INTEREST

The *NSF Guide to Programs* is a compilation of funding opportunities for research and education in science, mathematics, and engineering. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter. Beginning in fiscal year 1999, the *NSF Guide to Programs* only will be available electronically, at <http://www.nsf.gov/cgi-bin/getpub?gp>. Many NSF programs offer announcements concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices listed in Appendix A of the *GPG*.

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, available electronically on the NSF Web site at: <http://www.nsf.gov/>. The direct URL for recent issues of the Bulletin is <http://www.nsf.gov/home/ebulletin/>. Subscribers can also sign up for NSF's Custom News Service to find out what funding opportunities are available.

ABOUT THE NATIONAL SCIENCE FOUNDATION

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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 regarding NSF programs, employment, or general information. TDD may be accessed at (703) 306-0090 or through FIRS on 1-800-877-8339.

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the review process; to applicant institutions/grantees to provide or obtain data regarding the proposal-review process, award decisions, or the administration of awards; to government contractors, experts, volunteers, and researchers and educators as necessary to complete assigned work; to other government agencies needing information as part of the review process or in order to coordinate programs; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Reports Clearance Officer; Information Dissemination Branch, DAS; National Science Foundation; Arlington, VA 22230.

YEAR 2000 REMINDER

In accordance with NSF Important Notice No. 120 dated June 27, 1997, Subject: Year 2000 Computer Problem, NSF awardees are reminded of their responsibility to take appropriate actions to ensure that the NSF activity being supported is not adversely affected by the Year 2000 problem. Potentially affected items include computer systems, databases, and equipment. The National Science Foundation should be notified if an awardee concludes that the Year 2000 will have a significant impact on its ability to carry out an NSF-funded activity. Information concerning Year 2000 activities can be found on the NSF Web site at <http://www.nsf.gov/oirm/y2k/start.htm>.

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