Instrument Development for Biological Research (IDBR)

PROGRAM SOLICITATION
08-566

REPLACES DOCUMENT(S):
NSF 07-568

National Science Foundation

Directorate for Biological Sciences

Full Proposal Target Date(s):

September 05, 2008

August 28, 2009

Last Friday in August, Annually Thereafter

REVISION NOTES

There have been clarifications and updates, including the following:

- Research to demonstrate the utility of an instrument is not permitted
- Instrument development must clearly address biological research drivers
- Instrumentation that will transform biological research is highly encouraged
- Collaboration between researchers across disciplines is strongly encouraged
- Iterative improvements to prototype or commercial instruments are strongly discouraged
- Renewals are not encouraged
- There is no limit on the number of proposals that may be submitted by an investigator. The program seeks to diversify numbers of PI, gender, geography, etc. in each competition.
- Institutional eligibility has been updated to be consistent with DBI's other programs

Please be advised that the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) includes revised guidelines to implement the mentoring provisions of the America COMPETES Act (ACA) (Pub. L. No. 110-69, Aug. 9, 2007.) As specified in the ACA, each proposal that requests funding to support postdoctoral researchers must include a description of the mentoring activities that will be provided for such individuals. Proposals that do not comply with this requirement will be returned without review (see the PAPP Guide Part I: *Grant Proposal Guide* Chapter II for further information about the implementation of this new requirement).

As announced on May 21, 2009, proposers must prepare and submit proposals to the National Science Foundation (NSF) using the NSF FastLane system at http://www.fastlane.nsf.gov/. This approach is being taken to support efficient Grants.gov operations during this busy workload period and in response to OMB direction guidance issued March 9, 2009. NSF will continue to post information about available funding opportunities to Grants.gov FIND and will continue to collaborate with institutions who have invested in system-to-system submission functionality as their preferred proposal submission method. NSF remains committed to the long-standing goal of streamlined grants processing and plans to provide a web services interface for those institutions that want to use their existing grants management systems to directly submit proposals to NSF.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Instrument Development for Biological Research (IDBR)

Synopsis of Program:

The Instrument Development for Biological Research (IDBR) Program supports the development of novel instrumentation or instrumentation that has been significantly improved by at least an order of magnitude or more in fundamental aspects. Supported instruments are expected to have a significant impact on the study of biological systems at any level. The development of new instrumentation must be firmly based in biological research need. The IDBR Program supports the development or major improvement of software for the operation of instruments only as associated with the development of the instrument. Data analysis and acquisition software are only supported to the extent that the availability of the software, in connection with new instrumentation, will

clearly advance biological research. Proposals are encouraged that focus on proof-of-concept development for entirely novel instrumentation. Proposals must target instrument developments that meet a broad need in the biological community in areas supported by NSF Biology programs. Proposals are encouraged for instrumentation that does not currently exist in the form of a working prototype. In the selection of projects for funding, the program does not support the development of biological instrumentation that would be used for clinical or biomedical applications.

Cognizant Program Officer(s):

- Nily Dan, telephone: (703) 292-8470, email: dbiiid@nsf.gov
- Steven Ellis, telephone: (703) 292-8470, email: dbiiid@nsf.gov

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

- 47.074 --- Biological Sciences

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 15

Anticipated Funding Amount: $4,000,000 (approximately) will be available for new IDBR awards in FY 2009, pending availability of funds.

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

- Proposals may only be submitted by U.S. academic institutions, U.S. non-profit research organizations including museums, research laboratories, professional societies and similar organizations in the U.S. that are directly associated with educational or research activities, and consortia of only the eligible organizations listed here. Separately submitted collaborative proposals from the eligible organizations will also be accepted. Organizations ineligible to submit to this program solicitation may not receive subawards.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

Though there is no limit on the number of proposals that may be submitted by an investigator or institution, the program seeks to diversify numbers of PI, gender, geography, etc. in each competition. Therefore it is unlikely that multiple awards to a single institution would be made.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable
- **Preliminary Proposal Submission:** Not Applicable
- **Full Proposal Preparation Instructions:** This solicitation contains information that supplements the standard NSF Proposal and Award Policies and Procedures Guide, Part I: 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 under this solicitation.
- **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):**

September 05, 2008

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Proposal Review Information Criteria

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

Award Administration Information

Award Conditions: Standard NSF award conditions apply.

Reporting Requirements: Standard NSF reporting requirements apply.

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I. INTRODUCTION

Advances in the biological sciences are increasingly dependent upon the development of novel instrumentation that allow for collection of new data and development of new biological theories. Developing an integrated understanding of molecular interactions, cellular processes, organism-environment interactions, and tracking long-term environmental change are just a few examples of biological research areas that require significant advances in biological instrumentation. Future biological discoveries based on the observation and measurement of new phenomena requires instruments to be developed that target emerging research needs in the biological sciences. Thus, the instrument development challenge for the future will be to develop new instruments that acquire new data and open new avenues of discovery.

For over 20 years, the Directorate for Biological Sciences (BIO) has supported the development and major improvement of instrumentation necessary to advance the biological sciences through awards made by its Instrument Development in Biological Research (IDBR) program. These projects are expected to integrate biological sciences throughout the development and testing phases and have broad, demonstrable benefit to the biological sciences community.

Such instrumentation includes, but is not limited to, analytical instruments, sensors, microscopes of various types, and related devices (e.g., microfluidics, nanotechnologies) for detection or measurement of biological molecules, structures or phenomena at any level, from individual molecules to whole ecosystems. To be eligible for support through IDBR, projects must aim at providing instruments with new or greatly enhanced performance with the development clearly centered on biological research needs. "Performance" includes: accuracy, precision, resolution, throughput, flexibility or breadth of application, cost of construction or operation, and user-friendliness. In general, projects whose aim is the combination of individual pieces of equipment are not considered to be instrument development unless there is a significant challenge in achieving the combination and that the resultant combination addresses a fundamental biological research need that cannot otherwise be addressed.

The development of new instrumentation provides an ideal opportunity for the training of students across multiple disciplines, especially the biological sciences. Therefore, the IDBR program expects that most projects will include provision for the training or

education of undergraduate, graduate, and/or postdoctoral students. Therefore, in the selection of projects for support, the program emphasizes projects that will be conducted in academic environments.

The program does not support research or technique development activities, except to the extent these are required as part of the development of the new or improved instrument, or for the testing of its utility. Projects emphasizing the development of new research techniques should be addressed to an appropriate research program. The anticipated uses of the instrumentation to be developed or improved should include areas of research that fall within the scope of the Directorate for Biological Sciences (see BIO Home Page at http://www.nsf.gov/bio).

The BIO Directorate supports research and education activities whose goal is improved understanding of fundamental biological phenomena and processes at any level of biological organization, from molecules to ecosystems. Projects aimed at instrumentation whose primary use will be in studies of the etiology, diagnosis or treatment of physical or mental disease, abnormality, or malfunction in human beings or animals, is not supported by IDBR. Similarly, the development or testing of drugs or of instruments whose primary application is in pharmaceutical chemistry are not eligible for support. Such projects should be addressed to an appropriate program in another NSF Directorate or to another agency.

Projects in which the main portion of the instrument development activity will be subcontracted to a Federally Funded Research and Development Center (FFRDC) or a commercial (for profit) organization are also not eligible for support by IDBR, and should be addressed to an appropriate NSF program or to another agency.

II. PROGRAM DESCRIPTION

The IDBR program provides support for development of the following:

- New instrumentation that addresses emerging biological research needs with the capacity to transform biological research
- Novel instrument configurations (hybrids, etc.) that demonstrably address a fundamental biological research challenge
- Instrumentation that leverages advances in micro- and nano-fabrication and device design to provide new capabilities in measurement and observation of biological phenomena
- Concept and proof-of-concept of novel instruments for biological research;
- New instruments that provide new capabilities for detection, measurement, and/or observation of biological phenomena, or that greatly extend currently achievable sensitivity, accuracy or resolution;
- Sensors that meet emerging biological research needs and that have the potential to transform biological research at any level of organization
- Data acquisition and analysis tools that, through the development of novel devices/instruments, meet biological research needs

The above examples are by no means exhaustive. Any proposal that is designed to meet the goals of the Program will be considered. Proposals must, in all cases, demonstrate a strong connection to biological research needs through, for example, collaboration with biological researchers as well as demonstrate that the need for the instrumentation is firmly based on biological research drivers.

The Program especially encourages imaginative and novel proposals that seek to develop transformative research instrumentation that may open new biological research areas and support the development of new biological theories.

The IDBR program encourages proposals which conduct collaborative and planning activities such as workshops and the development of virtual organization frameworks. Those activities which promote interactions between the instrument development community and biological researchers as well as innovative networking strategies that foster research collaborations or enable new instrument development directions are especially encouraged. Activities which increase participation of colleagues at smaller institutions, minority-serving institutions, community colleges, and K-12 students and teachers are also recommended.

Renewal proposals, i.e., those requesting continued support of an ongoing project supported through a previous IDBR award, are not accepted. Proposals from previous awardees that propose significant enhancement of performance beyond the initial instrument development may be considered. However, it is expected that in addition to significant enhancement of performance there will be a demonstrated linkage between the instrument developer and the biological user community.

Recognizing that the development and use of novel instrumentation have become increasingly integral to activities supported by all BIO programs, the IDBR program will place a higher priority on proposals that create novel instrumentation that enables biological research in a new and potentially transformative way and that serves a broad user community. Proposals to develop techniques or methods, to develop software and user-interfaces, or to develop algorithms for database generation or data mining should be submitted to the relevant BIO programs that support these efforts.

III. AWARD INFORMATION

The requested funds and award duration should be commensurate with the proposed activities. There are no specific limits on the amount of funds that may be requested; however, the requested period of support should not exceed 48 months. Funding is available beginning the March following proposal submission. Estimated program budget, number of awards and average award size/duration are subject to the availability of funds.

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

- Proposals may only be submitted by U.S. academic institutions, U.S. non-profit research organizations including museums, research laboratories, professional societies and similar organizations in the U.S. that are directly associated with educational or research activities, and consortia of only the eligible organizations listed here. Separately submitted collaborative proposals from the eligible organizations will also be accepted. Organizations ineligible to submit to this program solicitation may not receive subawards.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

Though there is no limit on the number of proposals that may be submitted by an investigator or institution, the program seeks to diversify numbers of PI, gender, geography, etc. in each competition. Therefore it is unlikely that multiple awards to a single institution would be made.

Additional Eligibility Info:

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Instructions: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the guidelines specified in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-PUBS (7827) or by e-mail from nsfpubs@nsf.gov.

Proposals must follow guidelines described in the GPG. The following additions or modifications apply to proposals submitted to this Program:

1. Cover Sheet:

Indicate the number of this program solicitation in the appropriate box. In the box labeled "For consideration by NSF organizational unit," select "INSTRUMENTAT & INSTRUMENT DEVELOPMENT" from the drop-down list.

The project title should begin with "IDBR:" and be descriptive of the development activity to be pursued. If vertebrate animals or human subjects will be used, check the appropriate box, and provide the date of IRB or IACUC approval. If approval has not been obtained at the time of submission, indicate "pending" or "planned" instead of a date. If needed, such approval may be obtained after proposal review, but approval must be obtained before an award can be made.

2. Project Summary (not more than 1 page in length):

Provide a clear summary of the planned instrumentation development activity, the type(s) of biological research that will be enabled by the instrumentation (either by the Principal Investigator or by future intended users), and the expected significance of the instrument for that research. The summary should be understandable to a scientifically literate reader. As required of all NSF proposals, the project summary must clearly address in separate statements: (1) the intellectual merit of the proposal activity including potentially transformative impacts on biological research; and (2) the broader impacts resulting from the proposed activity. Additional information about intellectual merit and broader impacts is available below.

3. Project Description:

Provide a description of the instrument development activity to be pursued. This section may not exceed 15 pages in length. The section **must** cover the following points:

Results from Prior NSF Support (not more than 5 pages in length): Describe the results of any relevant NSF award received by the PI or co-PIs in the last five years. Only describe projects related to the proposed project, if any. This description should discuss the broader impacts of the previous support.

Needs Assessment: IDBR projects require evidence that the instrument to be developed addresses a fundamental biological research need. All proposals must demonstrate that the biological research applicability of the instrument to these needs are the primary motivators of the development project. Support from IDBR will not be provided to projects that develop an instrument that does not directly address a gap in available biological instrumentation. The proposal should state how the use of and access to the instrument will be assured, and how the availability of the instrumentation will further advances in the biological sciences.

User Community: Proposals must clearly specify the target biological user community and provide evidence of a biological research need for the instrumentation. The proposals should also clearly indicate how the community will gain access to the instrument either through dissemination of design plans, on-line access and use, or other approaches that ensure that the biological community, in a broad sense, will benefit by the availability of the instrumentation.

Value of the instrument for biological research: Proposals must clearly identify the biological research needs that motivate the development of the instrument and what potential advances in biology will be made through the use of the instrument. Explain specifically why no existing instrumentation will adequately fill the expected role of the proposed instrument. The proposal should

also compare the performance criteria of the proposed instrument to currently available technologies and clearly define the research gaps that the new instrumentation will address.

Development Plan: Describe the development program to be undertaken, including the design of the proposed instrument and performance metrics, as well as the biological research motivations for performance criteria and how the design plan derives from these motivations, in detail sufficient to allow assessment of the feasibility of the instrument and the potential success of the project. Included in this section should be details of a timeline for assessing instrument development objectives.

Management Plan: A detailed task analysis must be provided to justify the personnel funding required for the duration of the proposed project. Included in this section should be details on project management.

Dissemination Plan: A plan must be included for how the results of the project are made available to potential users. Dissemination plans must go beyond publications/presentations and must demonstrate that the target biological research community needs the instrumentation and will have access through the developing laboratory, through design dissemination, on-line instrument operation, or some other mechanism to be discussed. The Dissemination Plan should also describe the management of intellectual property rights related to the proposed project, including plans for sharing design schematics, information, and materials resulting from the project. This plan should be specific about the nature of the material to be shared, and the timing, and means of release.

Education and outreach: Biological Instrumentation contributes to our understanding of biology at all levels and provides a fertile transdisciplinary platform for potentially transformative research. Education and training of students, post-doctoral investigators, and biological researchers should be incorporated. Outreach to both the broader user community is strongly encouraged as is outreach to K-12 classrooms. Contributions of the instrumentation to education and outreach activities should be clearly identified in the proposal. Describe any other anticipated benefits to society.

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.

4. References Cited:

Provide references as specified in the *GPG*.

5. Biographical Sketches:

Provide biographical sketches for each of the senior personnel, professional staff, and any named postdoctoral students in the format specified in the *GPG*. Each biographical sketch is limited to two pages in length.

6. Budgets:

Provide a budget as specified in the *GPG*. Among other items, funds for personnel, shop costs, and indirect costs may be requested. The period of support requested should not exceed 48 months. The budget justification, which must not exceed three pages, should itemize and explain all project costs.

7. Current and Pending Support:

Provide information on all current and pending support for all senior personnel and for any other personnel for whom a biosketch is included.

8. Facilities, Equipment and Other Resources:

Provide a facilities statement as described in the *GPG*.

9. 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.

List of Suggested Reviewers (optional): Proposers may include a list of suggested reviewers whom they believe are well qualified to review the proposal. Proposers may also include a list of individuals who they would prefer not review the proposal. The form for this purpose is provided under Single Copy Documents.

10. Supplementary Documents:

When applicable, include documentation of collaborative arrangements discussed in the proposal. No general letters of endorsement may be included.

PROPOSAL SUBMISSION

The **target date** for submitting proposals to the IDBR program is the **last Friday in August annually**. Proposals received by the target date are considered by an Advisory Panel that meets approximately 3-4 months following the target date.

Proposers are reminded to identify the program solicitation number (Populated with NSF Number at Clearance) in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost Sharing: Cost sharing is not required under this solicitation.

Other Budgetary Limitations: Projects of up to 48 months duration are supported.

C. Due Dates

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

  September 05, 2008

  August 28, 2009

  Last Friday in August, Annually Thereafter

Last Friday in August, Annually Thereafter

D. FastLane Requirements

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

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the Grant Proposal Guide for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Further instructions regarding this process are available on the FastLane Website at: https://www.fastlane.nsf.gov/fastlane.jsp.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program where they will be reviewed if they meet NSF proposal preparation requirements. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal.

A. NSF Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two NSB-approved merit review criteria are listed below. The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgements.

What is the intellectual merit of the proposed activity?
How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?
What are the broader impacts of the proposed activity?
How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

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

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

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

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

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

Additional Review Criteria:

In addition, reviewers are also asked to consider the following:

- motivation for instrument design and development based on biological research needs
- feasibility of the proposed instrument design, including the likelihood of achieving expected performance;
- appropriateness of the project to the goals of the IDBR program and in particular the impact of the proposed instrument on biological research;
- adequacy and justification for proposed budget and timeline;
- demonstration of a potentially broad biological research user community;
- the adequacy of the plans and capacity to transfer the technology to wider public research use whether through commercialization or other means of dissemination;
- the adequacy of the design and fabrication expertise and infrastructure, as appropriate; and
- potential of the project for the integration of research and education, and for the broadening of participation of members of underrepresented groups or underserved communities.

As part of the consideration of the merit of the research, the reviewers will examine the importance of any new biological and/or design knowledge to be gained during the development project and the importance of the biological research for which the instrument is eventually intended. As a part of the consideration of the effect on infrastructure, the reviewers consider the likely importance of the instrument to enabling new discoveries in biological research.

B. Review and Selection Process

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

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

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

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

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

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (GC-1); * or Research Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

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

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

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period. (Some programs or awards require more frequent project reports). Within 90 days after expiration of a grant, the PI also is required to submit a final project report.

Failure to provide the required annual or final project reports will delay NSF review and processing of any future funding increments as well as any pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through FastLane, for preparation and submission of annual and final project reports. Such reports provide information on activities and findings, project participants (individual and organizational) publications; and, other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Nily Dan, telephone: (703) 292-8470, email: dbiiid@nsf.gov
- Steven Ellis, telephone: (703) 292-8470, email: dbiiid@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@nsf.gov.
- Caroline Duffie, science assistant, telephone: (703) 292-5303, email: cduffie@nsf.gov

IX. OTHER INFORMATION

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

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

ABOUT THE NATIONAL SCIENCE FOUNDATION

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

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

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

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

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