

# Interagency Opportunities in Metabolic Engineering

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## Program Solicitation

NSF 08-588

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*Replaces Document(s):*

NSF 05-502

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### **National Science Foundation**

Directorate for Engineering

Division of Bioengineering and Environmental Systems

Directorate for Biological Sciences

Division of Integrative Organismal Biology

Division of Molecular and Cellular Biosciences

Directorate for Mathematical and Physical Sciences

Division of Chemistry

**U.S. Dept. of Energy**

**Environmental Protection Agency**

**National Aeronautics and Space Administration**

**Department of Commerce**

**National Institutes of Health**

National Institute of General Medical Sciences

Department of Defense

U.S. Dept. of Agriculture

**Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

October 22, 2008

## SUMMARY OF PROGRAM REQUIREMENTS

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### General Information

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**Program Title:**

Interagency Opportunities in Metabolic Engineering

**Synopsis of Program:**

This solicitation describes a collaborative effort among the Department of Agriculture, Department of Commerce, Department of Defense, Department of Energy, Environmental Protection Agency, National Aeronautics and Space Administration, National Institute of General Medical Sciences (National Institutes of Health), and the National Science Foundation. The intent of this interagency solicitation is to provide an opportunity for an interagency granting activity in the area of metabolic engineering (ME). The eight participating agencies or departments are providing research funding and agency in-kind support such as equipment, laboratory space, personnel time, and materials in support of this solicitation. Upon conclusion of the review process, meritorious proposals may be recommended for funding by a participating agency or department. Each participating agency will make its own awards and the subsequent grant administration procedures will be in accordance with the individual policies of the awarding agency or department.

**Cognizant Program Officer(s):**

- Frederick G. Heineken, Program Director, Chemical, Bioengineering, Environmental, and Transport Systems Division, telephone: (703) 292-7944, email: [fheineke@nsf.gov](mailto:fheineke@nsf.gov)

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

- 47.041 --- Engineering
- 47.049 --- Mathematical and Physical Sciences
- 47.074 --- Biological Sciences
- 66.509 --- Environmental Protection Agency
- 81.049 --- Office of Science, Office of Fusion Energy Sciences
- 93.859 --- National Institute of General Medical Sciences

### Award Information

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**Anticipated Type of Award:** Standard Grant or Continuing Grant

**Estimated Number of Awards:** 10

**Anticipated Funding Amount:** \$9,000,000 The total estimated amount of funding available for interagency ME support is up to \$9,000,000 (up to \$1,950,000 of NSF support), subject to the availability of funds and quality of proposals. Additional in-

kind support, such as equipment, laboratory space, personnel time, and materials may be provided. Upon conclusion of the review process, meritorious proposals may be recommended for funding by a participating agency or department. Each participating agency will make its own awards and the subsequent grant administration procedures will be in accordance with the individual policies of the awarding agency or department.

## Eligibility Information

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### Organization Limit:

None Specified

### PI Limit:

None Specified

### Limit on Number of Proposals per Organization:

None Specified

### Limit on Number of Proposals per PI: 1

A PI or Co-PI may be listed on only one proposal.

## Proposal Preparation and Submission Instructions

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### A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable
- **Preliminary Proposal Submission:** Not Applicable
- **Full Proposals:**
  - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg).
  - Full Proposals submitted via Grants.gov: NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: <http://www.nsf.gov/bfa/dias/policy/docs/grantsgovguide.pdf>)

### B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required under this solicitation.
- **Indirect Cost (F&A) Limitations:** There are no indirect cost limitations on awards funded by NSF. If a proposal is recommended for funding by a participating agency other than NSF, indirect cost limitations may apply.
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

### C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

October 22, 2008

## Proposal Review Information Criteria

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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:** Additional award conditions apply. Please see the full text of this solicitation for further information.

**Reporting Requirements:** Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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## I. INTRODUCTION

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This solicitation describes a collaborative effort among the Department of Agriculture, Department of Commerce, Department of Defense, Department of Energy, Environmental Protection Agency, National Aeronautics and Space Administration, National Institute of General Medical Sciences (National Institutes of Health), and the National Science Foundation. The intent of this interagency solicitation is to:

1. Provide an opportunity for an interagency granting activity in the area of metabolic engineering (ME). Eight agencies or departments are to make available up to \$9,000,000 for research funding, and possible additional agency in-kind support such as equipment, laboratory space, personnel time, and materials in support of this solicitation.
2. Draw attention to Federal research and development (R&D) interests and opportunities in metabolic engineering, which is coordinated through the Metabolic Engineering Working Group (MEWG).

In July 1995, the Biotechnology Research Subcommittee (BRS), an Interagency Coordinating Committee

under the Office of Science and Technology Policy (OSTP), released the report *Biotechnology for the 21st Century: New Horizons* (<http://www.nalusda.gov/bic/bio21/>) that identifies research priorities and opportunities in biotechnology. One of the research priorities included the need for a better understanding of metabolic pathways and metabolic engineering in living systems. To stimulate increased awareness and attention to this field, the Subcommittee on Biotechnology established MEWG. Among its various activities, MEWG has held six grant competitions ([NSF 98-49](#), [NSF 99-85](#), [NSF 01-19](#), [NSF 02-037](#), [NSF 03-516](#), and [NSF 05-502](#)). The first competition resulted in 19 proposals with five awards totaling \$3,600,000; the second competition resulted in 29 proposals with six awards totaling \$3,100,000; the third competition resulted in 13 awards made from 33 proposals totaling \$7,500,000; the fourth competition resulted in 11 awards from 47 proposals totaling \$7,600,000; the fifth competition resulted in 10 awards from 41 proposals totaling \$5,800,000; and the sixth competition resulted in 9 awards from 67 proposals totaling \$6,400,000.

Participating agencies have varied research interests in metabolic engineering. Information on agency interests can be obtained at: <http://www.metabolicengineering.gov/>

## II. PROGRAM DESCRIPTION

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In order to continue to support a coordinated effort of Federal metabolic engineering R&D interests in metabolic engineering (ME), MEWG is calling for research proposals in ME.

For purposes of this solicitation, ME is defined as follows: An approach to the understanding and utilization of metabolic processes. As the name implies, ME is the targeted and purposeful alteration of metabolic pathways found in an organism in order to better understand and utilize cellular pathways for chemical transformation, energy transduction, and supramolecular assembly. ME typically involves the redirection of cellular activities by the rearrangement of the enzymatic, transport, and regulatory functions of the cell through the use of recombinant DNA and other techniques. Much of this effort has focused on microbial organisms, but important work is being done in cell cultures derived from plants, insects, and animals. Since the success of ME hinges on the ability to change host metabolism, its continued development will depend critically on a far more sophisticated knowledge of metabolism than currently exists. This knowledge includes conceptual and technical approaches necessary to understand the integration and control of genetic, catalytic, and transport processes. While this knowledge will be valuable as fundamental research, per se, it will also provide the underpinning for many applications of immediate value.

### Topic Descriptions

Proposals are invited that address conceptual and technical approaches that further the development and utilization of metabolic engineering. Four areas are of particular interest:

- Instrumentation, sensors, new analytical tools, and new experimental methods that facilitate the study of metabolic pathways, especially those technologies that allow the examination of individual cells.
- Quantitative and conceptual approaches (e.g. metabolic flux analysis) integrated with experimental studies that better characterize the regulation and integration of complex, interacting metabolic pathways.
- The use of bioinformatics to deduce the structure, function, and regulation of major metabolic pathways.
- The engineering of metabolic pathways to produce novel and/or important substances or otherwise address novel problems in understanding or manipulating such pathways.

This listing is not meant to be all-inclusive, and other areas of research that could contribute to an expanded understanding of metabolic processes and/or a substantial broadening of their utilization, would be welcomed.

## III. AWARD INFORMATION

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The total estimated amount of funding available for interagency ME support is up to \$9,000,000 (up to \$1,950,000 of NSF support) for approximately 10 awards. However, agencies have no obligation to provide this amount of support if the quality of the proposals received does not justify such an expenditure, and/or sufficient funds are not available. Additional in-kind support such as equipment, laboratory space, personnel time, and materials from the participating agencies may be provided. Upon conclusion of the review process, meritorious proposals may be recommended for funding by a participating agency or department. Each participating agency will make its own awards and the subsequent grant administration procedures will be in accordance with the individual policies of the awarding agency or department.

## IV. ELIGIBILITY INFORMATION

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### Organization Limit:

None Specified

### PI Limit:

None Specified

### Limit on Number of Proposals per Organization:

None Specified

### Limit on Number of Proposals per PI: 1

A PI or Co-PI may be listed on only one proposal.

### Additional Eligibility Info:

The categories of proposers identified in the Grant Proposal Guide (GPG), are eligible to submit proposals under this solicitation. This includes academic and non-profit institutions, industrial organizations, and Government (Federal, State, and Local) Laboratories. **Before submitting a proposal, investigators are strongly encouraged to discuss their idea for a proposal with a member(s) of the MEWG (see agency contacts listed in this solicitation).**

## V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

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### A. Proposal Preparation Instructions

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**Full Proposal Preparation Instructions:** Proposers may opt to submit proposals in response to this Program Solicitation via Grants.gov or via the NSF FastLane system.

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](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). Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: (<http://www.nsf.gov/bfa/dias/policy/docs/grantsgovguide.pdf>). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [pubs@nsf.gov](mailto:pubs@nsf.gov).

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

**Collaborative Proposals.** All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.3 of the Grant Proposal Guide provides additional information on collaborative proposals.

To avoid the possible return of a proposal without review, investigators are encouraged to put into the Project Summary the names of at least two participating agencies that have expressed an interest in their proposal. See Section VI. A for additional information.

## B. Budgetary Information

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

**Indirect Cost (F&A) Limitations:** There are no indirect cost limitations on awards funded by NSF. If a proposal is recommended for funding by a participating agency other than NSF, indirect cost limitations may apply.

**Other Budgetary Limitations:** Funding up to \$700,000 (total costs for the entire duration of a project, i.e. direct and indirect costs) for single investigator proposals, and up to \$1,500,000 for multiple investigator proposals, will be considered. A proposal is subject to return without review if it does not meet these budget guidelines. A typical project duration is up to three years.

## C. Due Dates

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- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

October 22, 2008

## D. FastLane/Grants.gov Requirements

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- **For Proposals Submitted Via FastLane:**

Detailed technical instructions regarding the technical aspects of preparation and submission via FastLane are available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail [fastlane@nsf.gov](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 solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

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

- **For Proposals Submitted Via Grants.gov:**

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. The Grants.gov's Grant Community User Guide is a comprehensive reference document that provides technical information about Grants.gov. Proposers can download the User Guide as a Microsoft Word document or as a PDF document. The Grants.gov User Guide is available at: <http://www.grants.gov/CustomerSupport>. In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: [support@grants.gov](mailto:support@grants.gov). The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

**Submitting the Proposal:** Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

## VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

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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

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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>.

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:**

NSF will conduct the review as described in the solicitation using NSF's review criteria (intellectual merit and broader impact). The criteria used routinely for NIH peer review (significance, approach, innovation, investigator, and environment) will also be included in the evaluation of proposals. Also, when appropriate, the panel will assess: a) The adequacy of plans to include both genders, minorities and their subgroups, and children as appropriate for the scientific goals of the research and to recruit and retain research subjects; b) The reasonableness of the proposed budget and duration in relation to the proposed research; and c) The adequacy of the proposed protection for humans, animals, or the environment, to the extent they may be adversely affected by the project proposed in the application.

## B. Review and Selection Process

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The participating agencies will do an initial review of all eligible proposals. For those proposals of interest to two or more participating agencies, the MEWG has agreed that they will be reviewed using the NSF standard merit review criteria of intellectual merit and broader impacts, as described in the current NSF Grant Proposal Guide (GPG) and the additional review criteria included in this solicitation.

For those proposals of interest to only one agency, the submitter will be asked to withdraw the proposal, and send the proposal directly to that agency which will process the proposal in accordance with its own review process. If no participating agency expresses interest in funding a proposal, the proposal will be returned without review by NSF.

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

NSF will take the lead in organizing and conducting the merit review process in compliance with the Federal Advisory Committee Act. The review will be conducted using the standard NSF merit review processes, including conflict of interests and confidentiality policies and procedures. A multi-disciplinary panel of external reviewers will review these proposals, and make recommendations.

The Chemical, Bioengineering, Environmental and Transport Systems (CBET) Division of NSF is responsible for providing staff support for this solicitation. A designated staff member from each of the participating agencies or departments will be assigned to work with NSF staff to carry out this review.

Proposals that duplicate or are substantially similar to proposals concurrently under consideration by any of the participating agencies or departments will be returned without review by NSF. All participating agencies will screen for duplicate or substantially similar proposals according to standard agency procedures and report on those proposals to NSF. All other proposal compliance issues and return of non-compliant proposals without review will be governed by NSF standard policies and procedures.

NSF staff will select reviewers and panelists after receipt of proposals, in consultation with staff from the participating agencies and departments. The composition of the ME review panel will not exceed one fourth Federal officers and employees. NSF staff will have responsibility for certifying that appropriate confidentiality and conflict of interest procedures have been followed.

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. All declination notices will be prepared by NSF. Each participating agency or department will make its own awards and the subsequent grant administration procedures will be in accordance with the individual policies of the awarding agency or department. 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 by NSF 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

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

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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 (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](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 [pubs@nsf.gov](mailto:pubs@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](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag).

**Special Award Conditions:** If an award, under this competition, is made by a participating agency other than NSF, the conditions of that award will be made available before the award.

## C. Reporting Requirements

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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.

**For awards from participating agencies other than NSF, reporting requirements will be provided before the award is activated.**

## VIII. AGENCY CONTACTS

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General inquiries regarding this program should be made to:

- Frederick G. Heineken, Program Director, Chemical, Bioengineering, Environmental, and Transport Systems Division, telephone: (703) 292-7944, email: [fheineke@nsf.gov](mailto:fheineke@nsf.gov)

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: [fastlane@nsf.gov](mailto:fastlane@nsf.gov).

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: [support@grants.gov](mailto:support@grants.gov).

## AGENCY CONTACTS

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Additional information may be obtained by contacting:

### *Department of Agriculture (USDA)*

- Liang-Shiou Lin, Phone: (202) 401-5042, [lilin@csrees.usda.gov](mailto:lilin@csrees.usda.gov)
- Gail McLean, Phone: (202) 401-6060, [gmclean@csrees.usda.gov](mailto:gmclean@csrees.usda.gov)

### *Department of Commerce (DOC)*

- Robert Goldberg, Phone: (301) 975-2584, [robert.goldberg@nist.gov](mailto:robert.goldberg@nist.gov)

### *Department of Defense (DOD)*

- Walter Kozumbo, Phone: (703) 696-7720, [walter.kozumbo@afosr.af.mil](mailto:walter.kozumbo@afosr.af.mil)

### *Department of Energy (DOE)*

- Amy Miranda, Office of Biomass Program, Phone: (202) 586-6471, [amy.miranda@ee.doe.gov](mailto:amy.miranda@ee.doe.gov)
- Valerie Sarisky-Reed: Office of Biomass Program, (202) 586-8014, [valerie.sarisky-reed@ee.doe.gov](mailto:valerie.sarisky-reed@ee.doe.gov)
- David Thomassen, Office of Biological and Environmental Research Phone: (301) 903-9817, [david.thomassen@science.doe.gov](mailto:david.thomassen@science.doe.gov)
- Sharlene Weatherwax, Office of Biological and Environmental Research, Phone: (301) 903-6165, [sharlene.weatherwax@science.doe.gov](mailto:sharlene.weatherwax@science.doe.gov)

### *Environmental Protection Agency (EPA)*

- Michael Broder, Office of Research and Development, Phone: (202) 564-3393, [broder.michael@epa.gov](mailto:broder.michael@epa.gov)
- Mark Segal, Office of Pollution Prevention and Toxics, Phone: (202) 564-7644, [segal.mark@epa.gov](mailto:segal.mark@epa.gov)

### *National Aeronautics and Space Administration (NASA)*

- Jitendra Joshi, Phone: (703) 599-3674, [jitendra.a.joshi@nasa.gov](mailto:jitendra.a.joshi@nasa.gov)

### *National Institute of General Medical Sciences (NIH)*

- Warren Jones, Phone: (301) 594-3827, [jonesw@nigms.nih.gov](mailto:jonesw@nigms.nih.gov)

### *National Science Foundation (NSF)*

- Fred Heineken, Chemical, Bioengineering, Environmental and Transport Systems Division  
Phone: (703) 292-7944, [fheineke@nsf.gov](mailto:fheineke@nsf.gov)
- Wilfredo Colon, Chemistry Division  
Phone: (703) 292-8171, [wcolon@nsf.gov](mailto:wcolon@nsf.gov)
- Semahat Demir, Bioengineering, Environmental and Transport Systems Division  
Phone: (703) 292-7950, [sdemir@nsf.gov](mailto:sdemir@nsf.gov)
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## IX. OTHER INFORMATION

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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, MyNSF (formerly the Custom News Service) is an information-delivery system 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 or the user's Web browser each time new publications are issued that match their identified interests. MyNSF also is available on NSF's Website at <http://www.nsf.gov/mynsf/>.

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

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

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

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

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

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

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

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

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

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230
- **For General Information** (NSF Information Center): (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090

• **To Order Publications or Forms:**

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• **To Locate NSF Employees:** (703) 292-5111

## PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and NSF-51, "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

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Reports Clearance Officer  
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