Research Coordination Networks (RCN)

PROGRAM SOLICITATION
NSF 10-566

REPLACES DOCUMENT(S):
NSF 09-554

National Science Foundation

Directorate for Biological Sciences

Directorate for Education & Human Resources
Division of Undergraduate Education

Directorate for Geosciences

Directorate for Mathematical & Physical Sciences

Directorate for Social, Behavioral & Economic Sciences

Office of Polar Programs

Office of International Science and Engineering

Office of Cyberinfrastructure

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

August 18, 2010

For targeted tracks RCN-PLS, RCN-UBE and RCN-UBE Incubator

July 05, 2011

For targeted tracks RCN-PLS, RCN-UBE and RCN-UBE Incubator

July 02, 2012

First Monday in July, Annually Thereafter

For targeted tracks RCN-PLS, RCN-UBE and RCN-UBE Incubator; the first Monday in July thereafter.

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

Proposals Accepted Anytime

For general (non-targeted) RCN, due dates will correspond with those of the program receiving the proposal; please refer to the program in question for deadline dates.

IMPORTANT INFORMATION AND REVISION NOTES

The special reporting requirements for RCN awards (i.e., PIs must provide data on student participants in FastLane project reports and must maintain a Website for recruitment of students and dissemination of information).

RCN program has expanded to include the participation of BIO, EHR, GEO, MPS, SBE, OPP, OISE, and OCI. Applicable submission deadlines have been adjusted.

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 PAPPGuide Part I: Grant Proposal Guide Chapter II for further information about the implementation of this new requirement).

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Research Coordination Networks (RCN)

Synopsis of Program:

The goal of this program is to advance a field or create new directions in research or education. Innovative ideas for implementing novel networking strategies are especially encouraged. Groups of investigators will be supported to communicate and coordinate their research, training and educational activities across disciplinary, organizational, geographic and international boundaries.

Proposed networking activities directed to the general RCN program should focus on a theme to give coherence to the collaboration, such as a broad research question or particular technologies or approaches.

The general RCN program will provide review for proposals to participating core programs and directorates listed in the solicitation, excepting Mathematical & Physical Sciences. Proposals involving mathematical and physical scientists will be accepted under the targeted physical/life science interface track described below.

Additional targeted tracks within the RCN programs are intended to foster linkages across selected directorates.

- RCN-UBE: The Undergraduate Biology Education track could focus on any topic likely to lead to improved participation, learning, or assessment in undergraduate biology curricula.
- RCN-PLS: The physical/life science interface track focuses on topics at the interface of the biological and either the mathematical or physical sciences.

Cognizant Program Officer(s):

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

- 47.049 --- Mathematical and Physical Sciences
- 47.050 --- Geosciences
- 47.074 --- Biological Sciences
- 47.075 --- Social Behavioral and Economic Sciences
- 47.076 --- Education and Human Resources
- 47.078 --- Office of Polar Programs
- 47.079 --- Office of International Science and Engineering
- 47.080 --- Office of Cyberinfrastructure

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 15 to 35 Varies across disciplinary research programs and RCN tracks.

Anticipated Funding Amount: $7,500,000 to $17,500,000 pending availability of funding. Varies across disciplinary research programs and RCN tracks.

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

Proposal Preparation and Submission Instructions

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.
  - 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/publications/pub_summ.jsp?ods_key=grantsgovguide)

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required under this solicitation.

Indirect Cost (F&A) Limitations:

Full negotiated indirect cost rates will apply for awards under this Program. Note that funds requested to support activities of the network participants, such as participants travel, materials and supplies for the network projects, and network retreats should be listed as "participant support" in the proposed budget, and managed by the submitting organization. Under this solicitation, indirect costs (F&A) are not allowed on participant support costs.

- **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):

  August 18, 2010

  For targeted tracks RCN-PLS, RCN-UBE and RCN-UBE Incubator

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

  Proposals Accepted Anytime

  For general (non-targeted) RCN, due dates will correspond with those of the program receiving the proposal; please refer to the program in question for deadline dates.

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

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I. INTRODUCTION

The National Science Foundation announces plans to expand its support of research coordination networks designed to foster communication and promote new collaboration among scientists and engineers with diverse expertise and who share a common

interest in a new or developing area of science or engineering. By encouraging the formation of new groups and networks, the RCN program will advance fields and create novel directions and opportunities for research and science education. It is anticipated that this program will contribute to further progress in all areas of science, however RCNs are intended to foster networking activities and thus will not directly support costs related to research. Past RCN awards can be found on the RCN program page at: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=11691&org=DBI&from=home .

II. PROGRAM DESCRIPTION

Support will be provided for groups of investigators to communicate and coordinate their efforts across disciplinary, organizational, institutional, geographical and/or international boundaries. The objectives are to facilitate open communication and exchange of information and resources, to integrate research and/or education activities of scientists and engineers working independently on topics of common interest, to nurture a sense of community among young scientists and engineers, and to minimize isolation and maximize cooperation so as to eliminate unnecessary duplication of efforts.

Specific features of the program include:

1. Topic/focus of research coordination. For all tracks, the research coordination network will have a common theme as a focus of its activities. General proposals (RCN) could focus on a research question or particular technologies or approaches. For example, a BIO-based RCN might focus on a specific set of organisms, a GEO-based RCN might focus on systems approach to understanding some particular geological phenomenon or process. For the general RCN program, consideration will be given to all well-justified, cohesive proposals advancing research coordination in a field or combination of fields under the purview of the NSF Directorates and Offices listed under the Summary for Program Requirements, or interdisciplinary networks that cross between Directorates or Offices, with the exception of MPS. MPS will only support proposals submitted to the physical/life science interface (RCN-PLS) track.
2. Targeted Undergraduate Biology Education track. BIO and EHR have developed a targeted Undergraduate Biology Education track in recognition of the importance of networking activities to advance biology education. Education track (RCN-UBE) proposals could focus on improving learning in "gateway" courses (e.g., exploring the use of methods that foster active learning or inquiry-based learning), improving learning through the use of emerging technologies in the biology curriculum, strategies and approaches for engaging biology faculty in professional development activities related to undergraduate education, incorporating emerging sub-disciplines into the biology curriculum (e.g., informatics research, proteomics, systems and computational approaches, ecological stoichiometry), improving assessment of student learning, improving the transition of students from two-year to four-year institutions, or incorporating authentic research experiences in undergraduate laboratory courses, with an emphasis on introductory and lower division courses. To assist initial networking efforts of scientists and educators who are developing innovative proposals for the RCN-UBE track, the RCN-UBE track will accept Incubator proposals for up to $50,000 for one year.
3. Targeted Physical/Life Sciences Interface track. The Physical/Life Sciences Interface track (RCN-PLS) was developed between MPS and BIO to address research focused on a specific problem at the interface of the biological and mathematical or physical sciences that would be significantly advanced through a synergistic approach, requiring the expertise of both biologists and mathematical or physical scientists. Such proposals are expected to involve a balance of researchers from two or more disciplines, at least one in the biological sciences and one in the mathematical or physical sciences.
4. Principal investigator (PI). Although the research coordination networks are expected to involve investigators from multiple sites, a single organization must serve as the submitting organization for each proposal. The PI is the designated contact person for the project and is expected to provide leadership in fully coordinating and integrating the activities of the network. Strong, central leadership and clear lines of responsibility are essential for successful networking.
5. Steering committee. Members of the steering committee will be network participants that assume key roles in the leadership and/or management of the project. The steering committee is considered to be senior personnel.
6. Network participants. The size of a network is expected to vary depending on the theme and the needs of the proposed activity. The network may be regional, national, or international. It is expected that a proposed network will involve investigators at diverse organizations. The inclusion of new researchers, post-docs, graduate students, and undergraduates is encouraged. Specific efforts to increase participation of underrepresented groups must be included. In the proposal, an initial network of participants should be identified. However, there should be clearly developed mechanisms to maintain openness, ensure access, and actively promote participation by interested parties outside of the initial participants in the proposed network.
7. Coordination/management mechanism. The proposal should include a clearly defined management plan. The plan should include a description of the specific roles and responsibilities of the Coordinator (PI) and the steering committee. Mechanisms for allocating funds, such as support for the work of a steering committee, should be clearly articulated. The plan should include provisions for flexibility to allow the structure of the group to change over time as membership and the network's foci evolve. Mechanisms for assessing progress and the effectiveness of the networking activities should be part of the management plan.
8. Information and material sharing. The goals of this program are to promote effective communication and to enhance opportunities for collaboration. Proposers are expected to develop and present a clearly delineated understanding of individual member's rights to ideas, information, data and materials produced as a result of the award that is consistent with the goals of the program. When the proposed activity involves generation of community resources such as databases or unique materials, a plan for their timely release and the mechanism of sharing must be described in the proposal. In addition, a plan for long-term maintenance of such resources must be described without assuming continued support from NSF.
9. International participation. NSF encourages international collaboration, and we anticipate that many RCN projects will include participants from outside the US. International collaborations should clearly strengthen the proposed project activities. Network participants from institutions outside the US are encouraged to seek support from their respective funding organizations. NSF funds may not be used to support the expenses of the international scientists and students at their home organization. However, for RCN projects that involve international partners, NSF funds may be used for the following:

    - Travel expenses for US scientists and students participating in exchange visits integral to the RCN project
    - RCN-related expenses for international partners to travel to, and participate in, networking activities in the US.
    - RCN-related expenses for US participants to conduct networking activities in the international partner's home laboratory

III. AWARD INFORMATION

No specific funds are set aside for general RCN proposals submitted under this announcement. Within the previous RCN solicitation, the Foundation invested approximately $1.7 million in FY 2010 for 9 general RCN awards within BIO. With increased participation from multiple directorates, this number will be expected to increase. Up to 5 awards are anticipated for the RCN-UBE track, 7 for RCN-UBE Incubator awards, and up to 4 awards for the RCN-PLS track. Individual awards for the general RCN, RCN-UBE and RCN-PLS may be up to $500,000 over a duration of five years. Awards for RCN-UBE Incubator proposals may be up to $50,000

for one year. Estimated program budget, number of awards and average award size/duration are subject to the quality of proposals received and the availability of funds. Please see the solicitation description for additional information.

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

Additional Eligibility Info:

BIO: As per the NSF Proposal and Award Policies and Procedures Guide, Chapter 1.B, NSF does not normally support technical assistance, pilot plant efforts, research requiring security classification, the development of products for commercial marketing, or market research for a particular project or invention. Research with disease-related goals, including work on the etiology, diagnosis or treatment of physical or mental disease, abnormality, or malfunction in human beings or animals, is normally not supported. Animal models of such conditions or the development or testing of drugs or other procedures for their treatment also are not eligible for support.

Organization Limit: Although the research coordination networks are expected to be multi-organizational, a single organization must serve as the lead and all other organizations as subawardees. Organizations ineligible to submit to this program solicitation may not receive subawards. If they are part of the proposed network, their participation is expected to be supported by non-NSF sources.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

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. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@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/publications/pub_summ.jsp?ods_key=grantsgovguide). 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 nsfpubs@nsf.gov.

Proposers interested in submitting RCN proposals are strongly encouraged to contact the NSF program officer in their area of research/education prior to proposal submission for guidance on program participation and to determine project suitability.

The following exceptions and additions apply to proposals submitted to this Program:

Before submitting for the general or targeted RCNs: Read the entire solicitation and identify the programs that overlap your discipline or the area of potential research. Use the NSF organization listing at http://www.nsf.gov/staff/orglist.jsp to narrow the directorate, division, and program where you need to apply. You are strongly encouraged to discuss your proposal with the appropriate program officer to determine whether the proposed project is within the scope of the RCN, and to identify applicable submission deadlines. This step is especially important for cross-disciplinary proposals.

Cover Sheet: Select this program solicitation number from the pulldown list. (Grants.gov Users: The program solicitation number will be pre-populated by Grants.gov on the NSF Grant Application Cover Page.) Submission requirements for the general RCN include:

- For BIO, OCI, OPP, and DUE - proposers should select the program or cluster appropriate to the proposal topic from the drop down menu during submission via Fastlane. Programs within the Division that you selected will appear automatically

in the "Current List of NSF Selected Units" at the bottom of the screen.
- Note: GEO and SBE list a limited number of programs in FastLane, however all programs and clusters may participate in RCN; proposals to GEO and SBE received by their selected units will be directed to appropriate participating programs.

Proposers wishing to submit to targeted tracks RCN-PLS, RCN-UBE or RCN-UBE Incubator should select "Research Coordination Networks" from the FastLane menu during online submission.

Grants.gov users should refer to Section VI.1.2. of the NSF Grants.gov Application Guide for specific instructions on how to designate the NSF Unit of Consideration.

An informative title for the proposed project, that begins with "RCN:", "RCN-UBE:", "RCN-UBE Incubator:", or "RCN-PLS:" as appropriate, must be provided.

Often proposals are co-reviewed by two or more NSF disciplinary units and, as appropriate, OISE. For proposals with an international dimension, the country or countries involved should be reported on the cover sheet.

Entries on the FastLane Cover Sheet are limited to the principal investigator and a maximum of 4 co-principal investigators. Additional co-principal investigators should be listed on the Project Summary page and entered into FastLane as Senior Investigators (this latter provision allows their biographical sketches to be included in the FastLane proposal).

For Grants.gov users - NSF allows one principal investigator/project director and a maximum of 4 co-principal investigators/project directors to be identified on a proposal. Instructions for entering additional senior project participants are included in Section V.5. of the NSF Grants.gov Application Guide.

For more FastLane and Grants.gov instructions see section D below.

Project Summary: May not be more than one page in length, and must consist of three parts: (1) a list of steering committee members along with their home organizations; (2) a succinct summary of the intellectual merit of the proposed project including the goal of the proposed network, major planned networking activities, and mechanisms for actively promoting participation by all interested parties; and (3) the broader impacts of the proposed work. Proposals that do not separately address both intellectual merit and broader impacts will be returned without review.

Project Description (maximum 15 pages, or eight pages for RCN-UBE Incubator): The following exceptions and additional items should be noted.

1. "Results from Prior Support" need not be included unless the proposed activity is clearly a logical extension of an activity supported by NSF (see the Special Information and Supplementary Documentation section below), in which case describe (up to 5 pages to be counted within the 15-page limit) the prior activity and how it relates to the proposed activity.

2. In addition to objectives, rationale, justification and research coordination activities, all special features outlined in Section II. Note: Management, coordination, and information and material sharing plans are not required for RCN-UBE Incubator proposals. For general RCN, RCN-PLS and RCN-UBE, the Program Description above should be addressed including:

Management plan. Describe plans and procedures for the development and assessment of the proposed activity. Include formal mechanisms to ensure fair and equitable allocation of group resources. Clearly define the responsibilities for leadership and the role of the PI and the steering committee. Delineate the procedures used for the selection of initial network participants, the plans for maintaining an appropriate degree of openness and for encouraging the involvement of additional interested parties. Means for self-evaluation of progress toward the network goals should be presented as an important part of the management plan.

Coordination plan. If the proposed network will work with an established network or group, or if there is a similar activity being planned or ongoing in other countries, describe the plans for coordination and cooperation among the relevant networks.

Information and material sharing. Give careful consideration to issues related to intellectual property rights and materials sharing in the management plan. For example, if the proposed activity is expected to result in community resources (such as databases or collections of biological materials), present a clear plan for sharing of these resources not only among the network participants but with the scientific community at large. Address in the proposal plans for determining authorship or proper attribution of credit for peer-reviewed or other publications, Internet resources, etc. that may be expected to result from the activity.

Increasing diversity. A research coordination network is an important opportunity for encouraging the involvement of investigators from under-represented groups and investigators located in a diverse range of organizations. Describe (1) a well designed plan to increase participation of members of under-represented groups that is specific to the proposed project; (2) a plan to involve investigators at a variety of organizational settings; (3) if applicable, a plan to include new researchers, post-docs, graduate students and undergraduates; and (4) how the plans for increasing diversity are integrated with the proposed project plan.

Budget: Provide yearly budgets for the duration of the proposed project. When subawards are involved yearly budgets are required for each subaward. FastLane or Grants.gov will generate cumulative budgets for the primary and subaward organizations. Budget justification (of up to three pages) is required. Organizations ineligible to submit to this program solicitation may not receive subawards. If they are part of the proposed network, their participation is expected to be supported by non-NSF sources. Allowable costs for international collaboration are described in Section II. Program Description.

Funds may be requested to promote collaborative activities, such as short visits among member laboratories, exchange visits of students, sharing of unique facilities, establishment of a public web site, network retreats, partial support of workshops uniquely tied to the network activities, etc. Any well-justified activity that fulfills the goals of the Program will be considered. Innovative ideas for implementing novel networking strategies to promote research collaborations and enable new research directions or advancement of a field are especially encouraged. Funds from this program may not support independent, individual research projects of the participants; nor are they to be used as a mechanism for a mini-grant awarding program.

Full negotiated indirect cost rates will apply for awards under this Program. Note that funds requested to support activities of the network participants, such as participants travel, materials and supplies for the network projects, and network retreats should be listed as "participant support" in the proposed budget, and managed by the submitting organization. Under this solicitation, indirect costs (F&A) are not allowed on participant support costs. Please refer to the GPG (http://www.nsf.gov/pubs/policydocs/pappguide/nsf10_1/gpg_2.jsp#IIC2givc) regarding proposed international travel.

Special Information and Supplementary Documentation: In addition to the applicable items described in the Grant Proposal Guide (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg), include the following appendix information, clearly labeled, in the Supplementary Docs section of the proposal. **(No other appendix material will be allowed.):**

1. Current Activities: PI and the steering committee members listed in the project summary must provide a single-page (per investigator) description of the relationship between the proposed project and current research activities in his/her laboratory. This page replaces the "Results of Prior Support" section normally found in NSF proposals.
2. Conflicts of Interest list: Provide a list, in a single alphabetized table, with the full names of all people with conflicts of interest for all senior personnel (PI and Co-PIs if any) and any named personnel whose salary is requested in the project budget. Conflicts to be identified are (1) PhD thesis advisors or advisees, (2) collaborators or co-authors, including postdocs, for the past 48 months, and (3) any other individuals or organizations with which the investigator has financial ties (please specify type).

B. Budgetary Information

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

Indirect Cost (F&A) Limitations:

Full negotiated indirect cost rates will apply for awards under this Program. Note that funds requested to support activities of the network participants, such as participants travel, materials and supplies for the network projects, and network retreats should be listed as "participant support" in the proposed budget, and managed by the submitting organization. Under this solicitation, indirect costs (F&A) are not allowed on participant support costs.

Other Budgetary Limitations:

Funds from this program may not support independent, individual research projects of the participants; nor are they to be used as a mechanism for a mini-grant awarding program.

C. Due Dates

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

  August 18, 2010

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  Proposals Accepted Anytime

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D. FastLane / Grants.gov Requirements

- **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. 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. 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

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:

RCN proposals must establish the infrastructure to create new networks of scientists who have not previously worked together. RCNs cannot use resources to fund research or to sustain existing networks. RCN proposals will be evaluated for their creativity, innovation, and potential to advance, transform, or establish new, areas of science.

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, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report 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. The project outcomes report must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

PIs must provide data on student participants in FastLane project reports and must maintain a Website for recruitment of students and dissemination of information.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: 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.

RCN Contacts available at http://www.nsf.gov/bio/ef/rcn_contacts.htm

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.

In addition to opportunities via the RCN solicitation, international RCN-like activities can be furthered via various NSF support programs within specific directorates. Further information can be found by referencing the following solicitations, which are given as examples.

International Collaboration in Chemistry between US Investigators and their Counterparts Abroad (ICC)
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13627&org=CHE&from=home

Materials World Network: Cooperative Activity in Materials Research between US Investigators and their Counterparts Abroad (MWN)

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12820&org=NSF&sel_org=NSF&from=fund

International Materials Institutes (IMI)
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5328&org=NSF&sel_org=NSF&from=fund

Dimensions of Biodiversity
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503446

Basic Research to Enable Agricultural Development (BREAD)
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503285

Programs managed by the Office of International Science and Engineering
http://www.nsf.gov/div/index.jsp?div=OISE

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.

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:**

  Send an e-mail to: nsfpubs@nsf.gov

  or telephone: (703) 292-7827
- **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:

Suzanne H. Plimpton
Reports Clearance Officer
Division of Administrative Services
National Science Foundation
Arlington, VA 22230