

Research in Undergraduate Institutions (RUI)

Faculty Research Projects; Research Instrumentation
Grants; and Research Opportunity Awards

Program Announcement

NSF 00-144

Replaces NSF 94-79

DIRECTORATE FOR BIOLOGICAL SCIENCES
DIRECTORATE FOR COMPUTER AND INFORMATION SCIENCE AND ENGINEERING
DIRECTORATE FOR EDUCATION AND HUMAN RESOURCES
DIRECTORATE FOR ENGINEERING
DIRECTORATE FOR GEOSCIENCES
DIRECTORATE FOR MATHEMATICAL AND PHYSICAL SCIENCES
DIRECTORATE FOR SOCIAL, BEHAVIORAL, AND ECONOMIC SCIENCES
OFFICE OF INTEGRATIVE ACTIVITIES
OFFICE OF POLAR PROGRAMS



NATIONAL SCIENCE FOUNDATION



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 Web Site 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 or (800) 281-8749
- **To Order Publications or Forms:**
 - Send an e-mail to: pubs@nsf.gov
 - or telephone: (703) 292-7827
- **To Locate NSF Employees:** (703) 292-5111

SUMMARY OF PROGRAM REQUIREMENTS

GENERAL INFORMATION

Program Title: Research in Undergraduate Institutions (RUI)

Synopsis of Program: The Research in Undergraduate Institutions (RUI) activity supports research by faculty members of predominantly undergraduate institutions through the funding of (1) individual and collaborative research projects, (2) the purchase of shared-use research instrumentation, and (3) Research Opportunity Awards for work with NSF-supported investigators at other institutions. All NSF directorates participate in the RUI activity. RUI proposals are evaluated and funded by the NSF programs in the disciplinary areas of the proposed research. Eligible "predominantly undergraduate" institutions include U.S. two-year, four-year, masters-level, and small doctoral colleges and universities that (1) grant baccalaureate degrees in NSF-supported fields, or provide programs of instruction for students pursuing such degrees with institutional transfers (e.g., two-year schools), (2) have undergraduate enrollment exceeding graduate enrollment, and (3) award an average of no more than 10 Ph.D. or D.Sc. degrees per year in all NSF-supportable disciplines. Autonomous campuses in a system are considered independently, although they may be submitting their proposals through a central office. A Research Opportunity Award is usually funded as a supplement to the NSF grant of the host researcher, and the application is submitted by the host institution.

Cognizant Program Officer(s):

- See NSF Web site for RUI, <http://www.ehr.nsf.gov/crssprgm/rui/start.shtm>.

Applicable Catalog of Federal Domestic Assistance (CFDA) Number:

- 47.074 --- Biological Sciences
- 47.070 --- Computer and Information Science and Engineering
- 47.076 --- Education and Human Resources
- 47.041 --- Engineering
- 47.050 --- Geosciences
- 47.049 --- Mathematical and Physical Sciences
- 47.078 --- Office of Polar Programs
- 47.075 --- Social, Behavioral and Economic Sciences

ELIGIBILITY INFORMATION

- **Organization Limit:** See Section III of this announcement.
- **PI Eligibility Limit:** See Section III of this announcement.
- **Limit on Number of Proposals:** None

AWARD INFORMATION

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** Varies across disciplinary research programs
- **Anticipated Funding Amount:** Varies across disciplinary research programs

PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Guidelines

- **Proposal Preparation Instructions:** Supplemental Preparation Guidelines
 - The program announcement/solicitation contains supplements to the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full program announcement/solicitation for further information.

B. Budgetary Information

- **Cost Sharing Requirements:** See "Other Budgetary Limitations"
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Limitations:** Cost-sharing is required by most of the NSF instrumentation programs and may be required by specific program solicitations. Except for proposals submitted to such programs, cost-sharing is not required for proposals submitted under this announcement.

C. Deadline/Target Dates

- **Letter of Intent Due Date(s):** See section V. C
- **Preproposal Due Date(s):** See section V. C
- **Full Proposal Due Date(s):** See section V. C

D. FastLane Requirements

- **FastLane Submission:** Full Proposal Required
- **FastLane Contact(s):**

- FastLane user support, telephone: 1-800-673-6188.

PROPOSAL REVIEW INFORMATION

- **Merit Review Criteria:** National Science Board approved criteria. Additional merit review considerations apply. Please see the full program announcement/solicitation for further information.

AWARD ADMINISTRATION INFORMATION

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

TABLE OF CONTENTS

SUMMARY OF PROGRAM REQUIREMENTS

I. INTRODUCTION

II. PROGRAM DESCRIPTION

III. ELIGIBILITY INFORMATION

IV. AWARD INFORMATION

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

B. Budgetary Information

C. Deadline/Target Dates

D. FastLane Requirements

VI. PROPOSAL REVIEW INFORMATION

A. NSF Proposal Review Process

B. Review Protocol and Associated Customer Service Standard

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

B. Award Conditions

C. Reporting Requirements

VIII. CONTACTS FOR ADDITIONAL INFORMATION

IX. OTHER PROGRAMS OF INTEREST

I. INTRODUCTION

Predominantly undergraduate institutions play a critically important role in U.S. science and technology through their substantial contributions to research and education. NSF encourages research by faculty members of these institutions, both to ensure a broad national base for research and to help faculty members stay at the cutting edge of their disciplines. Such research not only contributes to basic knowledge in science and engineering, but also provides an opportunity for integration of the excitement of scientific discovery into undergraduate education. As the ultimate in inquiry-based learning, undergraduate research is a critical component of high-quality education in science, mathematics, engineering, and technology (SMET), providing a strong foundation for careers in science and engineering and for graduate study. A significant fraction of SMET professionals receive bachelor degrees from predominantly undergraduate institutions.

NSF research programs provide support for research by faculty members of predominantly undergraduate institutions in three ways:

1. Funding of proposals submitted to the disciplinary programs through the Research in Undergraduate Institutions (RUI) activity for research by individual faculty members and groups of collaborating investigators, as described in this announcement. The RUI activity also provides support for shared-use instrumentation or other research tools.
2. Research Opportunity Awards (ROAs) to enable faculty members of predominantly undergraduate institutions to pursue research as visiting scientists with NSF-supported investigators at other institutions, as described herein.
3. Funding of research and instrumentation proposals submitted without the RUI designation to NSF disciplinary programs.

Predominantly undergraduate institutions are defined in terms of the nature of the institution, not solely on the basis of highest degree offered. Included by the definition are two- and four-year colleges, masters-level institutions, and smaller doctoral institutions that, institution-wide, do not award an average of more than 10 doctoral degrees each year in science and engineering fields supported by NSF (see "Eligibility Information" below).

II. PROGRAM DESCRIPTION

A. Objectives and General Features of RUI

The specific objectives of RUI are to (1) support high-quality research by faculty members of predominantly undergraduate institutions, (2) strengthen the research environment in academic departments that are oriented primarily toward undergraduate instruction, and (3) promote the integration of research and education. The involvement of undergraduate students is an important feature of RUI, providing them with research-rich learning environments. However, the

overriding purpose of RUI is the support of faculty research, which maintains faculty members' intellectual vibrancy in the classroom and research community. Proposals submitted through RUI are accepted in all fields of science and engineering supported by the Foundation, including research on learning and education. RUI is fully integrated into the regular disciplinary programs of the Foundation, and RUI proposals are evaluated and funded by NSF programs in the disciplinary areas of the proposed research. The Foundation's research programs are summarized in the NSF Guide to Programs located at <http://www.nsf.gov/cgi-bin/getpub?nsf0065> on the NSF Web site. Many research projects do not fit neatly into a single NSF program, and NSF disciplinary programs often cooperate in the review of interdisciplinary research and shared-use equipment proposals.

The principal difference between RUI proposals and "regular" NSF proposals is the additional requirement that **RUI proposals must include an RUI Impact Statement that describes the expected effects of the proposed research on the research and educational environment of the institution** (see Proposal Preparation). RUI proposals are evaluated in competition with all other proposals submitted to the Foundation in the same area of research, in accordance with the Foundation's standard merit review procedure for that discipline, using the standard NSF review criteria. However, special RUI reviewer instructions, calling attention to the Impact Statement and the special circumstances under which RUI investigators work, are supplied with the request for reviews. Potential applicants are encouraged to consult the NSF *Grant Proposal Guide* (GPG), which provides guidance on the kinds of activities for which NSF support may be requested as well as instructions for proposal preparation. The complete text of the GPG is available electronically on the NSF Web site at <http://www.nsf.gov/pubs/2000/nsf002/start.htm>.

Prospective investigators with specific discipline-related questions are encouraged to contact the program officers in their respective disciplines. In particular, new investigators may find it helpful to discuss their research plans with NSF disciplinary program officers before submitting a formal proposal to the Foundation. All NSF programs are described in detail on the NSF Web site, and the names and telephone numbers of program officers may be obtained from the Web site by clicking on "Directory and Staff."

B. Single-Investigator and Collaborative Faculty Research Projects

All NSF directorates will consider RUI proposals for faculty research projects submitted by individual faculty members or groups of collaborating investigators. It is expected that the research will usually be carried out at the predominantly undergraduate institution, but there may be circumstances under which the principal research site must be another institution or a research facility, e.g., to provide access to critical instrumentation. Proposals for RUI faculty research projects may request support for salaries and wages, research assistantships, fringe benefits, travel, materials and supplies, publication costs and page charges, consultant services, essential equipment, field work, research at other institutions, and indirect costs. Eligible costs are discussed more fully in the GPG. While it is expected that research assistants usually will be undergraduate students, support for masters-degree students, full-time technicians or postdoctoral researchers may be appropriate to a particular project.

Increasingly, advances in research depend on skills and knowledge that extend beyond traditional disciplinary boundaries, and often require the combined skills of several investigators with different expertise. Collaborations within disciplines or across disciplinary lines can

enhance the pace and productivity of faculty research while affording students the opportunity to learn teamwork and acquire a broader range of research skills. A successful collaborative project will focus on a research problem that is best approached from broad perspectives. The core of a collaborative RUI research group will include two or more faculty members and several undergraduates from one or more predominantly undergraduate institutions. As appropriate, other personnel and collaborators at other types of institutions may be involved. Proposers should contact the NSF program officer in their discipline regarding the submission of a collaborative proposal to discuss details relevant to that NSF Directorate. In particular, limitations on requests for instrumentation and the possible requirement for a preproposal should be discussed.

It is the intention of the Directorate for Biological Sciences (BIO) to participate in this activity by continuing the Collaborative Research at Undergraduate Institutions (C-RUI) activity that began in Fiscal Year 1995. See the separate Bio C-RUI Program Solicitation, [NSF 03-514](#).

C. Shared Research Instrumentation and Tools

Proposals may be submitted under RUI to all NSF research directorates for (1) purchasing or upgrading instrumentation or equipment needed for the research of several faculty members and/or (2) developing new instrumentation that will extend current capability in terms of sensitivity or resolution, or that will provide new or alternative techniques for detection and observation. Instrumentation/equipment requests may be for single items or multiple-component systems. For fields in which research depends heavily on the availability of information from expensive databases, multi-investigator RUI proposals requesting funding for access to such databases will be considered. Several directorates or divisions have formal programs to support multi-user instrumentation requests, and the specific guidelines for these programs should be consulted for details on dollar limitations, matching funds and other requirements before development of a proposal to be submitted through RUI. Requirements vary by program. Specialized instrumentation programs are listed in the section "Other Programs of Interest."

Proposals for research instrumentation or equipment, or for database purchase or access, must describe the specific research project (or projects) to be conducted using the instrumentation or databases, state why the instrumentation is essential, and describe the impact of the project and the instrumentation on the department's research environment. While the description of individual research projects may be somewhat shorter than in a research proposal, sufficient detail must be provided for reviewers to judge the merit of the problems to be addressed and the methods proposed. The primary justification for requesting such instrumentation must be the research it will enable, but its use in the institution's instructional program is both expected and encouraged. Many NSF instrumentation programs require cost-sharing, up to one-half of the total cost, and submission under RUI does not exempt the institution from cost-sharing. Indirect costs are not allowed for grants solely for equipment.

D. Research Opportunity Awards

Research Opportunity Awards (ROAs) enable faculty members at predominantly undergraduate institutions to pursue research as visiting scientists with NSF-supported investigators at other institutions. These are usually funded as supplements to ongoing NSF research grants. However, they may be covered by rebudgeting funds already awarded or by inclusion in the original proposal to NSF by either the host or visiting researcher. A Research Opportunity Award is intended to increase the visitor's research capability and effectiveness, to improve research and teaching at his or her home institution, and to enhance the NSF-funded research of the host principal investigator (PI). Most frequently, ROA activities are summer experiences, but partial

support of sabbaticals is sometimes provided. ROAs are made at the discretion of the program officer whose budget provides the funding.

Except for major instrumentation or equipment, any item acceptable for inclusion under a regular grant proposal (as detailed in the NSF Grant Proposal Guide) may in principle be included in an ROA budget. However, most NSF programs limit support to moderate amounts, frequently including only the direct costs of participation (e.g., salary and fringe benefits for the visitor, travel costs, and essential supplies). Duration of support generally ranges from 2 to 12 months.

Requests for ROAs are submitted to NSF by the host institution. Faculty members interested in becoming ROA visiting researchers make their own arrangements with NSF-supported investigators or with researchers who are in the process of applying to NSF for research support. Alternatively, the PI of an ongoing NSF research grant may initiate an ROA collaboration. Potential host researchers may be identified through the search of award abstracts on the NSF Web site. The prospective visiting ROA researcher and the NSF-supported PI at the host institution should work together to develop a research plan and budget. The nature of the research responsibility, the duration of the ROA visit, the nature of the visitor's appointment, the rate of pay, and other arrangements with respect to employment, are matters to be negotiated between the host institution, the PI, the prospective visiting scientist, and his/her home institution, as the proposal is developed.

III. ELIGIBILITY INFORMATION

Eligibility to submit a RUI proposal has institutional and departmental criteria, both of which must be met. A representative of the institution submitting an RUI proposal signs a Certification of RUI Eligibility included in the Supplementary Documentation section of the proposal.

A. Eligible "predominantly undergraduate" institutions include U.S. two-year, four-year, masters-level, and small doctoral colleges and universities. Eligible institutions (1) grant baccalaureate degrees in NSF-supported fields, or provide programs of instruction for students pursuing such degrees with institutional transfers (e.g., two-year schools); (2) have undergraduate enrollment exceeding graduate enrollment; and (3) award no more than an average of 10 Ph.D. and/or D.Sc. degrees per year in all disciplines that NSF supports, averaged over 2 to 5 years preceding proposal submission. Proposals involving more than one academic institution are acceptable, but one predominantly undergraduate institution must have overall management responsibility. Collaborations between predominantly undergraduate institutions and other institutions may be proposed; however, most of the researchers must be at predominantly undergraduate institutions. *Autonomous campuses in a system are considered independently, although they may be submitting their proposals through a central office. It is therefore very important that the predominantly undergraduate campus be identified as the performing organization on the proposal cover sheet.*

B. Eligible departments (principal investigators) (1) must offer courses that qualify for bachelor's degree credit in NSF-supportable fields and (2) may offer master's degrees, but may not award a doctorate or offer doctoral courses and supervise doctoral research, even though the Ph.D. is not technically awarded by that campus.

The principal investigator for a RUI proposal must be employed by, or have a commitment to be employed by, an eligible home institution (i.e., a predominantly undergraduate institution) at the time the proposal is submitted. In addition, the principal investigator must be from an eligible (i.e., non-doctoral) department. Co-principal investigators may be from other institutions, or from doctoral departments.

Because RUI proposals are handled by the disciplinary program officers in conjunction with all other proposals in the same research area, duplicate submission of the same proposal through RUI and without the RUI designation is not permitted. However, an investigator may submit a different proposal for support of another project while a proposal is pending. The Directorate for Biological Sciences will not accept proposals that are duplicates of proposals being submitted to another Federal agency for simultaneous consideration, except for proposals from beginning investigators. The *Grant Proposal Guide* should be consulted for definitions and exceptions to this rule. The GPG also should be consulted regarding limitations on the kinds of research that NSF supports. See "General" on page 1 of the GPG.

IV. AWARD INFORMATION

Awards for faculty research projects will usually be for a period of 3 years, whereas awards for shared-use major instrumentation are usually for a period of 1 to 2 years. In recent years, the annual award size of individual investigator RUI projects has ranged from approximately \$10,000 to over \$100,000. Awards for collaborative proposals are expected to be at a higher level, depending on the number of faculty and co-workers involved. Many factors, including the nature of the project, number of investigators, and duration, affect the size. In general, the budget should be appropriate to the scope of the project. The size of shared-use instrumentation awards depends primarily on the cost of the instrumentation (with institutional cost-sharing usually required). Consultation with the cognizant NSF disciplinary program officer is strongly encouraged to determine if the proposed budget is within the appropriate funding range for the particular program and circumstances.

No specific funds are set aside for proposals submitted under this announcement. However, the Foundation invested approximately \$26 million in RUI research projects in Fiscal Year 1999.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Proposals submitted in response to this program announcement/solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF *Grant Proposal Guide* (GPG). The complete text of the GPG is available electronically on the NSF Web Site at: <http://www.nsf.gov/cgi-bin/getpub?nsf012>. 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.

The NSF FastLane system should be used for submission of all proposals under the RUI activity. Some NSF directorates also require the submission of supplemental requests via FastLane, including ROA supplemental request.

Preproposals are not required for unsolicited RUI proposals. If submitting a proposal under a special solicitation that requires preproposals, follow the instructions in that solicitation. Include a Certification of RUI Eligibility as described under “Supplementary Documentation” below.

REQUESTS FOR RESEARCH OPPORTUNITY AWARDS

A formal request for an ROA supplement must be made by the host institution of the NSF-supported PI who wishes to employ a faculty member from another institution under an ROA collaboration. If funds for the ROA are to be generated by rearranging the project budget of an ongoing award without changing the scope of the project, notification of the NSF program officer is the only requirement. Arrangements for supplemental ROA support to an existing award should be discussed with the cognizant disciplinary program officer and tentative approval obtained prior to submission of the request. The formal ROA request letter from the funded principal investigator must be endorsed by the grantee organization and submitted via FastLane as a supplement at least 3 months before funds will be needed. It must include a description of the arrangements and the work to be performed by the ROA visitor, a statement of the contribution of this work to the NSF-supported project and to the visitor’s future research and home organization, a budget with appropriate explanatory information, and a biographical sketch of the visitor. This same information should be supplied for a Research Opportunity Award that is incorporated into a new research proposal.

RESEARCH AND INSTRUMENTATION PROPOSALS

RUI proposals for shared instrumentation should be prepared using any special guidelines for the program to which the proposal will be submitted. Otherwise, research and instrumentation proposals responding to this program announcement must be prepared and submitted in accordance with the general guidelines contained in the GPG. **RUI proposals differ from other proposals primarily in that they must contain (1) a Certification of RUI Eligibility and (2) a separate RUI Impact Statement (see below).** Proposals must be submitted via the NSF FastLane System. See the "FastLane Requirements" section below and the "Instructions for Preparing and Submitting a Standard Proposal via FastLane" located at <https://www.fastlane.nsf.gov/a1/newstan.htm>.

Cover Sheet. So that your proposal is properly identified and directed, please follow these instruction for NSF Form 1207, "Cover Sheet for Proposal to the National Science Foundation." From the pulldown menu for the program announcement/solicitation block, select the number for this RUI announcement. From the ensuing screen, select the Division and Program to which the proposal should be directed. Include the acronym “RUI” in the title of the proposal entered on the Cover Sheet, e.g. "RUI: Metabolic Cycles in Arctic Ruminants." If the proposal is being submitted in response to a specific Foundation-level solicitation, such as Information Technology Research or Biocomplexity, include the appropriate acronym in the title also and identify the solicitation in the Project Summary. Follow instructions in the solicitation to identify the Division and Program to which the proposal should be directed.

Project Description. Proposers should pay particular attention to the Project Description, which is the principal part of the proposal. It is a detailed statement of the work to be undertaken and should include:

- A section entitled "Results from Prior NSF Support" (if any of the participating faculty members has held an NSF award for research or instrumentation within the last 5 years). If more than one NSF award is involved, this section should describe the project most relevant to the proposed new project. This section must describe the earlier project and its outcomes in sufficient detail to allow reviewers to judge the scientific value of the results achieved in the previous NSF-supported project. Brief discussions of the outcomes of several projects may be appropriate to a collaborative proposal. This part of the project description must not exceed five pages.
- Objectives for the work and its expected significance; relation to the present state of knowledge and to work in progress in the field; description of the general plan of the work, including experimental methods and analysis and, if appropriate, plans for archival materials or data-sharing. This description must contain sufficient detail to allow the reviewers to assess the scientific merit of the project.
- For collaborative proposals, the thematic basis of the collaboration(s) underlying the research project and a description of the expected contribution of each of the faculty members to the proposed research project. Collaborative proposals are expected to include (1) a strong research activity whose scientific merit is clearly enhanced by development of the collaboration, (2) a project theme that takes advantage of the strengths of the particular institution(s), justifying the nature of the research in that context, and (3) a research plan that enhances the research productivity of all faculty and student investigators involved.
- A description of how student involvement in the research project and in the presentation of research results will be fostered; how the research will be integrated with the students' education; how the equipment, if requested, will enhance the research; and educational uses planned for the instrumentation.

Faculty participants in research and instrumentation proposals are encouraged to include in their "Biographical Sketches" publications with undergraduate co-authors (with student names labeled by an asterisk).

Supplementary Documentation

Impact Statement. All RUI proposals must include a RUI Impact Statement (maximum length 5 pages). The statement is an opportunity to provide information that a reviewer will find helpful in assessing the likely impact of the proposed research activity on the research environment of the predominantly undergraduate institution(s), on the career(s) of the faculty participants, and on the ability of the involved department(s) to prepare students for entry into advanced-degree programs and/or careers in science and engineering. An enhanced departmental environment may be reflected in direct student training in research and in increased involvement of the faculty in competitive research, which in turn leads to improved student preparation. It may also be reflected in curricular impact and faculty development.

The RUI Impact Statement should highlight the record of the department(s) and institution(s) in educating undergraduates for science and engineering careers; the plans to attract qualified undergraduate students to the project, including the criteria for their selection; provisions that

will increase the participation of groups underrepresented in science and engineering; and any plans for measuring the effect of participation in the project on the participating students both during and after their undergraduate years. Also of interest is the anticipated contribution of new research tools (instrumentation, databases, etc.) to both educational and research opportunities for students and faculty.

The Impact Statement may include information on factors affecting research productivity such as teaching loads, availability (or lack) of support personnel, nature of experimental and computational facilities, and features of the student population. It may also describe institutional support for research activity by faculty and students and the anticipated impact of that support on the proposed project.

Certification of RUI Eligibility. The following Certification, executed by an Authorized Institutional Representative, must be provided in RUI proposals. The signed Certification should be scanned and included in the proposal as Supplementary Documentation. Institutions are allowed some leeway in the period over which the number of doctorates is averaged, in order to avoid negative effects of short-term anomalies in the number of doctorates awarded.

-----**Certification of RUI Eligibility**-----

"By submission of this proposal, the institution hereby certifies that the originating and managing institution is an institution that offers courses leading to a bachelor's or master's degree, but has awarded an average of no more than 10 doctoral degrees per year in NSF-supported disciplines over the 2-to-5-year period preceding proposal submission."

Authorized Institutional Representative

Typed Name and Title.....Signature.....Date.....

Letters of Commitment. Signed letters of commitment, documenting the proposed collaborative arrangements of significance to the project, should be scanned and included in the proposal as supplementary documentation. Such letters are relevant when collaborators are not employees of the awardee institution or when the project depends on access to facilities or instrumentation at other institutions. Letters of endorsement are not permitted.

Proposers are reminded to identify the program announcement/solicitation number (NSF 00-144) in the program announcement/solicitation block on the proposal Cover Sheet (NSF Form 1207). Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost-sharing is required by most of the NSF instrumentation programs and may be required by specific program solicitations. Except for proposals submitted to such programs, cost-sharing is not required for proposals submitted under this announcement.

C. Deadline/Target Dates

Many NSF programs have deadlines or target dates to allow time for consideration by review panels that meet periodically. Proposals must be submitted by the investigator's home institution in accordance with the target dates or deadlines, if any, of the NSF disciplinary program in the proposed research area. To confirm a date, refer to the program's page on the NSF Web site (<http://www.nsf.gov/>) or to the NSF E-Bulletin, at <http://www.nsf.gov/home/ebulletin/>. Inquiries about deadlines may be made also to the appropriate research program officer. Such inquiries are especially important for shared-use instrumentation proposals, which are sometimes funded cooperatively by two or more programs, depending upon the disciplinary mix of the users. Some programs require the submission of preliminary proposals prior to the submission of full proposals, with due dates posted on program Web sites and in the NSF E-Bulletin.

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this Program Announcement through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: <http://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call 1-800-673-6188.

Submission of Signed Cover Sheets. The signed copy of the proposal Cover Sheet (NSF Form 1207) must be postmarked (or contain a legible proof of mailing date assigned by the carrier) within five working days following proposal submission and be forwarded to the following address:

National Science Foundation
DIS – FastLane Cover Sheet
4201 Wilson Blvd.
Arlington, VA 22230

VI. PROPOSAL REVIEW INFORMATION

A. NSF Proposal Review Process

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

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

proposal. Each reviewer will be asked to address only those that are relevant to the proposal and for which he/she is qualified to make 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 and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

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

Principal Investigators should address the following elements in their proposal to provide reviewers with the information necessary to respond fully to both of the above-described NSF merit review criteria. NSF staff will give these elements careful consideration 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

Specific to RUI and ROA Each request for an ROA supplement is judged on its own merits and is handled on an ad hoc basis by the supervising program officer for the existing award. Consideration is given to the capability of the investigators, the technical soundness of the proposed effort, the contribution of the ROA activity to the ongoing research project, and its potential impact upon the ROA visitor and the visitor's institution. RUI proposals are evaluated in competition with all other proposals submitted to the Foundation in the same area of research, in accordance with the Foundation's standard merit review procedure for that discipline, using the standard NSF review criteria. The reviewers of RUI proposals

usually include several individuals from predominantly undergraduate institutions with relevant expertise, but also researchers from other institutions who are experts in the particular research area. Special RUI reviewer instructions are supplied with the request for reviews, calling attention to the Impact Statement and the special circumstances under which RUI investigators work, which may affect the scope of the project. Reviewers are also asked to recognize that the publication rate of investigators and the pace of their research may be slower at a predominantly undergraduate institution than at a major research university because of heavier teaching loads and limited availability of support personnel, facilities and equipment, as well as the involvement of undergraduates, rather than graduate students, in the research activities. The description of the environment in which the principal investigator works should be so written as to permit the reviewers to take such factors into account. Reviewers will look for indications of impacts such as: increased faculty involvement in the mainstream of research; direct student experience in research; acquisition of research instrumentation that will improve faculty and student research opportunities; and enhanced departmental ability to prepare students for entry into graduate study or scientific and engineering careers, as well as to provide a research-enriched learning environment for all students. Evaluation of research instrumentation proposals may consider such additional factors as the criticality of the instrumentation for the research proposed, the expected extent of usage of the instrumentation and the number of investigators and students benefiting, and the institution's commitment for operation and maintenance.

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

B. Review Protocol and Associated Customer Service Standard

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/solicitation will be reviewed by Mail and/or panel review.

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 be able to tell applicants whether their proposals have been declined or recommended for funding within six months for 95 percent of proposals. The time interval begins on the proposal deadline or target date or from the date of receipt, if deadlines or target dates are not used by the program. The interval ends when the Division Director accepts the Program Officer's recommendation.

In all cases, after 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 its 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 Division administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See section VI. A, for additional information on the review process.)

B. Award Conditions

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

*These documents may be accessed electronically on NSF's web site at http://www.nsf.gov/home/grants/grants_gac.htm. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (730) 292-7827 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions is contained in the *NSF Grant Policy Manual* (GPM) Chapter II, (NSF 95-26) available electronically on the NSF web site at <http://www.nsf.gov/cgi-bin/getpub?gpm>. The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO web site at <http://www.gpo.gov>.

C. Reporting Requirements

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

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

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

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries should be made to the Research in Undergraduate Institutions Program: See NSF Web site for RUI, <http://www.nsf.gov/home/crssprgm/rui/start.htm>. For questions related to the use of FastLane, contact, FastLane user support, telephone: 1-800-673-6188.

IX. OTHER PROGRAMS OF INTEREST

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

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

Programs that may be of particular interest to RUI investigators are:

Instrumentation and Facilities Program, Division of Earth Sciences -- PD 98-1580

Multi-User Biological Equipment and Instrumentation Resources -- NSF 98-137

Chemistry Research Instrumentation and Facilities --: NSF 00-81

Instrumentation and Materials Research -- NSF 99-170

Scientific Computing Research Environments For the Mathematical Sciences (SCREMS -- NSF 99-156

Research Equipment Funding - Chemical and Transport Systems Division -- NSF 99-151

UNIDATA Equipment Grants -- NSF 00-51

Research Experiences for Undergraduates: Supplements and Sites -- NSF 00-107

Course, Curriculum, and Laboratory Improvement -- NSF 00-63

CISE Educational Innovation -- NSF 00-33

Combined Research-Curriculum Development -- NSF 00-66

Informal Science Education - Supplements to Active Research Awards -- NSF 97-70

Connections to the Internet -- NSF 98-102

Grant Opportunities for Academic Liaison with Industry (GOALI) -- NSF 98-142

ABOUT THE NATIONAL SCIENCE FOUNDATION

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

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

Facilitation Awards for Scientists and Engineers with Disabilities (FASSED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF-supported projects. See the program announcement/solicitation for further information.

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 or (800) 281-8749, FIRS at 1-800-877-8339.

The National Science Foundation is committed to making all of the information we publish easy

to understand. If you have a suggestion about how to improve the clarity of this document or other NSF-published materials, please contact us at plainlanguage@nsf.gov.

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

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

Pursuant to 5 CFR 1320.5(b), an agency may not conduct or sponsor, and a person is not required to respond to an information collection unless it displays a valid 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 this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Information Dissemination Branch, Division of Administrative Services, National Science Foundation, Arlington, VA 22230, or to Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for National Science Foundation (3145-0058), 725 - 17th Street, N.W. Room 10235, Washington, D.C. 20503.

OMB control number: 3145-0058.