Part I Overview Information

Department of Health and Human Services

Participating Organizations
National Institutes of Health (NIH), (http://www.nih.gov/)

Components of Participating Organizations
National Institute of Environmental Health Sciences (NIEHS), http://www.niehs.nih.gov/)

Title: Development and Application of Nanotechnology-based Tools to Understand Mechanisms of Bioremediation (R01)

Announcement Type
New

NOTICE: Applications submitted in response to this Funding Opportunity Announcement (FOA) for Federal assistance must be submitted electronically through Grants.gov (http://www.grants.gov) using the SF424 Research and Related (R&R) forms and the SF424 (R&R) Application Guide

APPLICATIONS MAY NOT BE SUBMITTED IN PAPER FORMAT.

This FOA must be read in conjunction with the application guidelines included with this announcement in Grants.gov/Apply for Grants (hereafter called Grants.gov/Apply).

A registration process is necessary before submission and applicants are highly encouraged to start the process at least four weeks prior to the grant submission date. See Section IV.

Request for Applications (RFA) Number: RFA-ES-07-007

Apply for Grant Electronically

For Assistance downloading this or any Grants.gov application package, please contact Grants.gov Customer Support at http://grants.gov/CustomerSupport

Catalog of Federal Domestic Assistance Number(s)
93.143

Key Dates
Release/Posted Date: November 9, 2007
Opening Date: January 15, 2008 (Earliest date an application may be submitted to Grants.gov)
Letters of Intent Receipt Date: January 16, 2008
NOTE: On time submission requires that applications be successfully submitted to Grants.gov no later than 5:00 p.m. local time (of the applicant institution/organization).
Application Submission/Receipt Date: February 15, 2008
Peer Review Date: June/July 2008
Council Review Date: October 2008
Earliest Anticipated Start Date: December 1, 2008
Expiration Date: February 16, 2008

Additional Overview Content

Executive Summary

- **Purpose.** The National Institute of Environmental Health Sciences (NIEHS) is announcing a new funding opportunity to support individual research projects as part of the Superfund Basic Research and Training Program (SBRP). The objective for this Funding Opportunity Announcement (FOA) is to enhance our understanding of the basic structural and functional properties of biological populations that are involved in the bioremediation of hazardous substances by integrating or adapting innovative nanotechnology based tools for sensing, detecting, and elucidating processes at the molecular and nano-scale.
- **Mechanism of Support.** This FOA will utilize the NIH Research Project Grant (R01) award mechanism.
- **Funds Available and Anticipated Number of Awards.** The NIEHS intends to commit a total of $2 million to fund six to eight grants that will be awarded in Fiscal Year 2009. An applicant may request up to 3 years of support. Awards issued under this FOA are contingent upon the availability of funds and the submission of a sufficient number of meritorious applications.
- **Eligible Institutions/Organizations.** You may submit (an) application(s) if your organization is an accredited domestic institution of higher education.
- **Eligible Project Directors/Principal Investigators (PDs/PIs).** Individuals with the skills, knowledge, and resources necessary to carry out the proposed research are invited to work with their institution/organization to develop an application for support. Individuals from underrepresented racial and ethnic groups as well as individuals with disabilities are always encouraged to apply for NIH support.
- **Number of Applications.** Applicants may submit more than one application, provided each application is scientifically distinct.
- **Renewals and Resubmissions.** Neither competing renewals (formerly “competing continuation”) nor resubmissions will be accepted for this R01. At this time, it is not known if this FOA will be reissued.
- **Number of PDs/PIs.** More than one PD/PI, or multiple PDs/PIs, may be designated on the application.
- **Application Materials.** See Section IV.1 for application materials.
- **General Information.** For general information on SF424 (R&R) Application and Electronic Submission, see these Web sites:
    - SF424 (R&R) Application and Electronic Submission Information: http://grants.nih.gov/grants/funding/424/index.htm
    - General information on Electronic Submission of Grant Applications: http://era.nih.gov/ElectronicReceipt/
- **Hearing Impaired.** Telecommunications for the hearing impaired is available at: TTY 301-451-0088.
- Special submission date: February 15, 2008.
- Initial merit review convened by NIEHS.

Table of Contents

Part II - Full Text of Announcement

Section I. Funding Opportunity Description

1. Research Objectives

Purpose

The mission of the National Institute of Environmental Health Sciences (NIEHS) is to promote research that will ultimately reduce the burden of human illness and dysfunction from environmental causes. Complementary to this mission are the goals of the national Superfund Program, established by Congress in 1980 to identify uncontrolled hazardous wastes; characterize the impacts of hazardous waste sites and emergency releases on the surrounding environment (i.e., communities, ecological

systems, and ambient air, soil, water); and institute control or remediation approaches to minimize risk from exposure to these contaminants.

In 1986, six years after the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was enacted, Congress authorized NIEHS to implement a university-based program of basic research and training grants which became known as the "Superfund Basic Research and Training Program" (SBRP). As a result, the Multi-Project grant program was established with the intent to improve the ability to identify, assess, and evaluate the potential health effects of exposure to hazardous waste and to develop innovative technologies to remediate sites contaminated by hazardous substances. This solicitation is part of the SBRP's Individual Research Program, established in 2005 to provide opportunities to support individual projects that address specific issues complementary to the SBRP multi-project research program and are responsive to the basic research needs of the national Superfund Program.

The purpose of this solicitation is to enhance our understanding of the basic structural and functional properties of biological populations that are involved in the bioremediation of hazardous substances by integrating or adapting innovative nanotechnology-based tools for sensing, detecting, and elucidating processes at the molecular and nano-scale. Nanotechnologies, defined as the use and manipulation of matter at dimensions between 1 ~ 100nm, show potential for real-time assessment of changes in microbial species composition, alterations in nutrient transfer, and detection of spatio-temporal characteristics of the ecosystem. With a better understanding of these phenomena, we will be better equipped to determine and therefore overcome the rate-limiting steps in bioremediation applications, such as lack of essential nutrients or critical bacterial species, or co-contaminant toxicity. By studying the fundamental processes responsible for biologically-mediated reduction or stabilization of environmental contaminants, work funded under this RFA will be a step towards promoting improved bioremediation processes. It is the intent of this initiative to develop the mechanistic understanding of the science and foster the integration of these new techniques to substantially advance bioremediation practices.

Background

Contamination of soil, sediment and groundwater by hazardous substances represents a significant potential threat to human and ecological health. Bioremediation, whether utilizing naturally occurring microorganisms or plants, or attenuated by adding genetically modified organisms, holds great promise as a mechanism to convert toxic chemicals to harmless forms. Compared to many physical or chemical methods of remediation, bioremediation tends to be more cost efficient and to generate less waste; therefore, there would be significant societal benefits to increasing the usability of bioremediation. Nonetheless, bioremediation has drawbacks: the process can be relatively slow, it may not be effective for treating all types of contaminants, and it does not always lead to complete degradation of hazardous substances. As scientists gain a better understanding of the organisms and mechanisms involved in bioremediation, these shortcomings may be overcome, thereby allowing the utilization of this strategy on more hazardous waste sites.

Basic research directed towards understanding the mechanisms of bioremediation generally focuses on a variety of strategies to assess the overarching questions: under which condition is bioremediation the most practical remediation strategy, and how can it be made more effective? Some of those approaches include:

- Identifying genes, proteins, and organisms involved in bioremediation and elucidating the mechanisms of contaminant degradation.
- Understanding what mechanisms affect the localization, compartmentalization, or immobilization of contaminants in or by biological systems during remediation.
- Determining relationships between degradation activity and membrane structures (e.g. entry potential, ion channels, or membrane permeability).
- Determining how chemical contaminants impact the functionality of populations degrading and/or sequestering hazardous substances.
- Identifying rate-limiting steps involved in the complete biodegradation of contaminants and/or detecting metabolites of biodegradation.
- Understanding how microbial population dynamics affect biodegradation rates or influence bioremediation success.
- Determining what changes in the geochemical environment might affect the overall direction of biodegradation and its long-term stability as a remedy.

The above approaches address problems that are difficult to solve, not only because of the complexity of the systems, but also because the scale on which bioremediation processes occur are, by default, at the micro- or nano-scale. While many bioremediation studies rely on sampling the bulk environment, the most relevant point of interaction between contaminants and biological systems happens at the scale associated with cell membranes/walls, interstitial space in soil/sediments, within biofilms, on root hairs, etc. Now that imaging, sensing, and chemical detection technologies have improved, investigation of complex biological interactions simultaneously, in real time, and without disturbance to relevant points of interaction (e.g. membrane, interstitial) becomes a distinct possibility.

In particular, remarkable advancements in the development of nanotechnology over the past decade have created an opportunity to understand systems and processes at scales particularly relevant to bioremediation. The National Nanotechnology Initiative defines nanotechnology as, “Research and technology development at the atomic, molecular or macromolecular levels, in the length scale of approximately 1 –100 nanometer range, to provide a fundamental understanding of phenomena and materials at the nano-scale and to create and use structures, devices and systems that have novel properties and functions because of their small and/or intermediate size” (http://www.nsf.gov/crssprgm/nano/reports/omb_nifty50.jsp). Nanotechnology applications and tools utilize the unique properties of matter (e.g. electrical, optical, acoustic, and magnetic) found at the nanometer scale to create a wealth of applications for sensing and detection, often with real-time output capabilities.

Despite the tremendous potential for nanotechnology-based tools to address the mechanisms of bioremediation, research that uses nanotechnologies to further our understanding of bioremediation has been limited. Many of these new nanotechnology tools have been used successfully to understand basic molecular, cellular and environmental properties in biomedical, national security, and environmental monitoring applications. It is foreseeable that these innovative nanotechnology-based approaches, designed for other applications, may be used (or adapted) to address basic, mechanistic issues associated with bioremediation.

Objectives and Scope:

The fundamental goal of this solicitation is to enhance our understanding of the basic structural and functional properties of biological populations that are involved in the bioremediation of hazardous substances by integrating or adapting innovative nanotechnology-based tools for sensing, detecting, and elucidating processes at the molecular and nano-scale. Nanotechnology shows potential for real-time assessment of changes in microbial species composition, alterations in nutrient transfer, and detection of spatio-temporal characteristics of the ecosystem. Nanotechnologies may also be used to elucidate the basic structural and functional properties of ecological populations that are involved in the bioremediation of hazardous substances. Research themes that would address the stated goal may include, but are not limited to, the following:

- Adapting nano-sensors or nano-enabled platforms designed for biomedical, national security or other applications for use as tools to understand fundamental processes in bioremediation.
- Integrating nanotechnology sensing tools and devices with advanced microbiological/ecological studies to lead to a better understanding of basic mechanisms of bioremediation.
- Combining novel microbial ecology methods with nano-detectors to monitor real-time changes in contaminant concentrations.
- Adapting methods used for detection of pathogenic bacteria to detect bacteria active in biodegradation.
- Improving and broadening methods of nanotechnology-based DNA detection, molecular labeling, monitoring in vivo cellular transport, protein tagging for processes relevant to bioremediation.
- Using advanced nanotechnologies to identify microbial, ecological or other biological processes that may influence the rate of contaminant degradation or sequestration.
- Using atomic force microscope (AFM) cantilevers to assess colonization patterns of microorganisms in biofilms involved with contaminant degradation.
- Using microelectronic array technology for rapid identification of microorganisms relevant to biodegradation.
- Using microfluidic channels or devices to understand the relationship between pore size, bacterial colonization and contaminant degradation.
- Adapting lab-on-a-chip devices to assess changes in the bioavailability of hazardous compounds as a function of bioremediation processes.

Given the ultimate goal of this FOA is to expand our knowledge of the mechanisms of bioremediation, studies that utilize micro-scale techniques (some examples included above) that achieve the stated objectives will be considered responsive to this solicitation. In addition, developmental research in nanotechnology (e.g. applied physics or biotechnology approaches) that has a clear connection to enhancing our basic understanding of bioremediation also will be considered.

It is expected that research proposals will integrate emerging nanotechnologies with basic research needs in bioremediation; therefore, applications without these two components will be considered non-responsive. Examples of non-responsiveness or studies that would be outside of the scope of this FOA include, but may not be limited to, the following:

- Studies that exclusively study metagenomics,
- Studies that exclusively isolate genes or genetically engineer microorganisms,
- Studies that develop nanotechnology tools without a clear connection to understanding bioremediation processes,
- Studies that exclusively develop methods of detection of contaminant concentrations at nano-scales,
- Studies that utilize nanotechnologies for site characterization alone without a basic bioremediation component,
- Studies which utilize nanoparticles as reactive agents for remediation.

The anticipated outcome of this FOA is to achieve a better mechanistic understanding of biological interactions involved in bioremediation using nanotechnology-based approaches. It is anticipated that grants funded under this award will move the field closer to understanding topics such as: how contaminants are degraded, what enzymes are utilized, and which organisms are responsible. With a better understanding of these phenomena, we will be better equipped to determine and therefore overcome the rate-limiting steps in bioremediation applications, such as lack of nutrients or critical bacterial species, or co-contaminant toxicity. Hence, research from this funding opportunity may be useful to determine where and when bioremediation is mechanistically feasible and with well-described degradation pathways ensuring safe and effective long-term application.

See Section VIII, Other Information - Required Federal Citations, for policies related to this announcement.

Section II. Award Information

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1. Mechanism of Support

This Funding Opportunity Announcement (FOA) will use the NIH Research Project Grant (R01) award mechanism.

The applicant will be solely responsible for planning, directing, and executing the proposed project.

This FOA uses “Just-in-Time” information concepts. It also uses the modular as well as the non-modular budget formats (see http://grants.nih.gov/grants/funding/modular/modular.htm). Specifically, if you are a U.S. organization and are submitting an application with direct costs in each year of $250,000 or less (excluding consortium Facilities and Administrative [F&A] costs), use the PHS398 Modular Budget component provided in the SF424 (R&R) Application Package and SF424 (R&R) Application Guide (see specifically Section 5.4, “Modular Budget Component,” of the Application Guide).

At this time, it is not known if this FOA will be reissued.

2. Funds Available

Because the nature and scope of the proposed research will vary from application to application, it is anticipated that the size and duration of each award will also vary. Although the financial plans of the NIEHS provides support for this program, awards pursuant to this funding opportunity are contingent upon the availability of funds and the submission of a sufficient number of meritorious applications.

- The NIEHS intends to commit approximately $2 million in fiscal year 2009 to fund six to eight applications.
- An applicant may request a budget for direct costs up to $200,000 per year. Facilities and Administrative (F&A) costs incurred by including third party consortia or subcontracts in the application are not included in the direct cost limitation; see NOT-OD-05-004, November 2, 2004.
- An applicant may request up to 3 years of support.
- Awards issued under this FOA are contingent upon the availability of funds and the submission of a sufficient number of meritorious applications.

NIH grants policies as described in the *NIH Grants Policy Statement* will apply to the applications submitted and awards made in response to this FOA.

F&A costs requested by consortium participants are not included in the direct cost limitation. See NOT-OD-05-004, November 2, 2004.

Section III. Eligibility Information

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1. Eligible Applicants

1.A. Eligible Institutions

You may submit (an) application(s) if your organization has any of the following characteristic:

- An accredited domestic institution of higher education.

Section 311(a)(3) of SARA limits recipients of awards to "accredited institutions of higher education," which are defined in the Higher Education Act, 20 USC (annotated) 3381. However, grantees are permitted under the law, and encouraged by NIEHS, to subcontract as appropriate with organizations, domestic or foreign, public or private (such as universities, colleges, hospitals, laboratories, faith-based organizations, units of State and local governments, and eligible agencies of the Federal government) as necessary to conduct portions of the research. Examples of other organizations may include generators of hazardous wastes; persons involved in the detection, assessment, evaluation, and treatment of hazardous substances; owners and operators of facilities at which hazardous substances are located; State and local governments and community organizations.

1.B. Eligible Individuals

Any individual(s) with the skills, knowledge, and resources necessary to carry out the proposed research as the PD/PI is invited to work with his/her organization to develop an application for support. Individuals from underrepresented racial and ethnic groups as well as individuals with disabilities are always encouraged to apply for NIH support.

More than one PD/PI, or multiple PDs/PIs, may be designated on the application for projects that require a “team science” approach that clearly does not fit the single-PD/PI model. Additional information on the implementation plans and policies and procedures to formally allow more than one PD/PI on individual research projects is available at http://grants.nih.gov/grants/multi_pi. All PDs/PIs must be registered in the NIH eRA Commons prior to the submission of the application (see http://era.nih.gov/ElectronicReceipt/preparing.htm for instructions).

The decision of whether to apply for a single PD/PI or multiple PD/PI grant is the responsibility of the investigators and applicant organizations and should be determined by the scientific goals of the project. Applications for multiple PD/PI grants will require additional information, as outlined in the instructions below. The NIH review criteria for approach, investigators, and environment have been modified to accommodate applications involving either a single PD/PI or multiple PDs/PIs. When considering multiple PDs/PIs, please be aware that the structure and governance of the PD/PI leadership team as well as the

knowledge, skills and experience of the individual PD/PIs will be factored into the assessment of the overall scientific merit of the application. Multiple PDs/PIs on a project share the authority and responsibility for leading and directing the project, intellectually and logistically. Each PD/PI is responsible and accountable to the grantee organization, or, as appropriate, to a collaborating organization, for the proper conduct of the project or program, including the submission of required reports. For further information on multiple PDs/PIs, please see http://grants.nih.gov/grants/multi_pi.

2. Cost Sharing or Matching

This program does not require cost sharing as defined in the current *NIH Grants Policy Statement.*

3. Other-Special Eligibility Criteria

Applicants may submit more than one application, provided each application is scientifically distinct.

Section IV. Application and Submission Information

To download a SF424 (R&R) Application Package and SF424 (R&R) Application Guide for completing the SF424 (R&R) forms for this FOA, link to http://www.grants.gov/applicants/apply_for_grants.jsp and follow the directions provided on that Web site.

A one-time registration is required for institutions/organizations at both:

- Grants.gov (http://www.grants.gov/applicants/get_registered.jsp) and
- eRA Commons (http://era.nih.gov/ElectronicReceipt/preparing.htm)

PDs/PIs should work with their institutions/organizations to make sure they are registered in the eRA Commons.

Several additional separate actions are required before an applicant institution/organization can submit an electronic application, as follows:

1) Organizational/Institutional Registration in Grants.gov/Get Registered

- Your organization will need to obtain a Data Universal Number System (DUNS) number and register with the Central Contractor Registration (CCR) as part of the Grants.gov registration process.
- If your organization does not have a Taxpayer Identification Number (TIN) or Employer Identification Number (EIN), allow for extra time. A valid TIN or EIN is necessary for CCR registration.
- The CCR also validates the EIN against Internal Revenue Service records, a step that will take an additional one to two business days.
- Direct questions regarding Grants.gov registration to:
  Grants.gov Customer Support
  Contact Center Phone: 800-518-4726
  Business Hours: M-F 7:00 a.m. - 9:00 p.m. Eastern Time
  Email support@grants.gov

2) Organizational/Institutional Registration in the eRA Commons

- To find out if an organization is already Commons-registered, see the "List of Grantee Organizations Registered in NIH eRA Commons."
- Direct questions regarding the Commons registration to:
  eRA Commons Help Desk
  Phone: 301-402-7469 or 866-504-9552 (Toll Free)

TTY: 301-451-5939
Business hours M-F 7:00 a.m. – 8:00 p.m. Eastern Time
Email commons@od.nih.gov

3) Project Director/Principal Investigator (PD/PI) Registration in the NIH eRA Commons: Refer to the *NIH eRA Commons System (COM) Users Guide*.

- The individual(s) designated as PDs/PIs on the application must also be registered in the NIH eRA Commons. In the case of multiple PDs/PIs, all PDs/PIs must be registered **and be assigned the PI role** in the eRA Commons prior to the submission of the application.
- Each PD/PI must hold a PD/PI account in the Commons. Applicants should not share a Commons account for both an Authorized Organization Representative/Signing Official (AOR/SO) role and a PD/PI role; however, if they have both a PD/PI role and an Internet Assisted Review (IAR) role, both roles should exist under one Commons account.
- When multiple PDs/PIs are proposed, all PDs/PIs at the applicant organization must be affiliated with that organization. PDs/PIs located at another institution need not be affiliated with the applicant organization, but must be affiliated with their own organization to be able to access the Commons.
- This registration/affiliation must be done by the AOR/SO or their designee who is already registered in the Commons.

Both the PD/PI(s) and AOR/SO need separate accounts in the NIH eRA Commons since both are authorized to view the application image.

Note that if a PD/PI is also an NIH peer-reviewer with an Individual DUNS and CCR registration, that particular DUNS number and CCR registration are for the individual reviewer only. These are different than any DUNS number and CCR registration used by an applicant organization. Individual DUNS and CCR registration should be used only for the purposes of personal reimbursement and should not be used on any grant applications submitted to the Federal Government.

Several of the steps of the registration process could take four weeks or more. Therefore, applicants should immediately check with their business official to determine whether their organization/institution is already registered in both Grants.gov and the Commons. The NIH will accept electronic applications only from organizations that have completed all necessary registrations.

1. Request Application Information

Applicants must download the SF424 (R&R) application forms and the SF424 (R&R) Application Guide for this FOA through Grants.gov/Apply.

Note: Only the forms package directly attached to a specific FOA can be used. You will not be able to use any other SF424 (R&R) forms (e.g., sample forms, forms from another FOA), although some of the "Attachment" files may be useable for more than one FOA.

For further assistance, contact GrantsInfo: Telephone 301-435-0714, Email: GrantsInfo@nih.gov.

Telecommunications for the hearing impaired: TTY 301-451-0088.

2. Content and Form of Application Submission

Prepare all applications using the SF424 (R&R) application forms and in accordance with the SF424 (R&R) Application Guide for this FOA through Grants.gov/Apply.

The SF424 (R&R) Application Guide is critical to submitting a complete and accurate application to NIH. There are fields within the SF424 (R&R) application components that, although not marked as mandatory, are required by NIH (*e.g., the "Credential" log-in field of the "Research & Related Senior/Key Person Profile" component must contain the PD/PI's assigned eRA Commons User ID*). Agency-specific instructions for such fields are clearly identified in the Application Guide. For additional

information, see “Frequently Asked Questions – Application Guide, Electronic Submission of Grant Applications.”

The SF424 (R&R) application has several components. Some components are required, others are optional. The forms package associated with this FOA in Grants.gov/APPLY includes all applicable components, required and optional. A completed application in response to this FOA includes the data in the following components:

Required Components:

SF424 (R&R) (Cover component)
Research & Related Project/Performance Site Locations
Research & Related Other Project Information
Research & Related Senior/Key Person
PHS398 Cover Page Supplement
PHS398 Research Plan
PHS398 Checklist

PHS398 Modular Budget or Research & Related Budget, as appropriate (See Section IV.6., “Special Instructions,” regarding appropriate required budget component.)

Optional Components:

PHS398 Cover Letter File
Research & Related Subaward Budget Attachment(s) Form

SPECIAL INSTRUCTIONS

Applications with Multiple PDs/PIs

When multiple PDs/PIs are proposed, NIH requires one PD/PI to be designated as the "Contact” PI, who will be responsible for all communication between the PDs/PIs and the NIH, for assembling the application materials outlined below, and for coordinating progress reports for the project. The contact PD/PI must meet all eligibility requirements for PD/PI status in the same way as other PDs/PIs, but has no other special roles or responsibilities within the project team beyond those mentioned above.

Information for the Contact PD/PI should be entered in item 15 of the SF424 (R&R) Cover component. All other PDs/PIs should be listed in the Research & Related Senior/Key Person component and assigned the project role of “PD/PI.” Please remember that all PDs/PIs must be registered in the eRA Commons prior to application submission. **The Commons ID of each PD/PI must be included in the “Credential” field of the Research & Related Senior/Key Person component. Failure to include this data field will cause the application to be rejected.**

All projects proposing Multiple PDs/PIs will be required to include a new section describing the leadership of the project.

Multiple PD/PI Leadership Plan: For applications designating multiple PDs/PIs, a new section of the research plan, entitled “Multiple PD/PI Leadership Plan” (Section 14 of the Research Plan Component in the SF424 (R&R)), must be included. A rationale for choosing a multiple PD/PI approach should be described. The governance and organizational structure of the leadership team and the research project should be described, including communication plans, process for making decisions on scientific direction, and procedures for resolving conflicts. The roles and administrative, technical, and scientific responsibilities for the project or program should be delineated for the PDs/PIs and other collaborators.

If budget allocation is planned, the distribution of resources to specific components of the project or the individual PDs/PIs should be delineated in the Leadership Plan. In the event of an award, the requested allocations may be reflected in a footnote on the Notice of Award.

Applications Involving a Single Institution

When all PDs/PIs are within a single institution, follow the instructions contained in the SF424 (R&R) Application Guide.

Applications Involving Multiple Institutions

When multiple institutions are involved, one institution must be designated as the prime institution and funding for the other institution(s) must be requested via a subcontract to be administered by the prime institution. When submitting a detailed budget, the prime institution should submit its budget using the Research & Related Budget component. All other institutions should have their individual budgets attached separately to the Research & Related Subaward Budget Attachment(s) Form. See Section 4.8 of the SF424 (R&R) Application Guide for further instruction regarding the use of the subaward budget form.

When submitting a modular budget, the prime institution completes the PHS398 Modular Budget component only. Information concerning the consortium/subcontract budget is provided in the budget justification. Separate budgets for each consortium/subcontract grantee are not required when using the Modular budget format. See Section 5.4 of the Application Guide for further instruction regarding the use of the PHS398 Modular Budget component.

3. Submission Dates and Times

See Section IV.3.A. for details.

3.A. Submission, Review, and Anticipated Start Dates

Opening Date: January 15, 2008 (Earliest date an application may be submitted to Grants.gov)
Letters of Intent Receipt Date: January 16, 2008
Application Submission/Receipt Date: February 15, 2008
Peer Review Date: June/July 2008
Council Review Date: October 2008
Earliest Anticipated Start Date: December 1, 2008

3.A.1. Letter of Intent

Prospective applicants are asked to submit a letter of intent that includes the following information:

- Descriptive title of proposed research.
- Name, address, and telephone number of the PI(s).
- Names of other key personnel.
- Participating institutions.
- Number and title of this funding opportunity.

Although a letter of intent is not required, is not binding, and does not enter into the review of a subsequent application, the information that it contains allows IC staff to estimate the potential review workload and plan the review.

The letter of intent is to be emailed or sent by the date listed in Section IV.3.A.

The letter of intent should be emailed or sent to:

Sally Eckert-Tilotta, PhD
Division of Extramural Research and Training
National Institute of Environmental Health Sciences
79 TW Alexander Drive

Building Number 4401, Room Number 3173
Research Triangle Park, NC 27709-2233
Telephone: (919) 541-1446
Fax: (919) 541-2503
Email: eckertt1@niehs.nih.gov

A letter of intent is not required but strongly encouraged to assist NIEHS staff in preparing for the review.

3.B. Submitting an Application Electronically to the NIH

To submit an application in response to this FOA, applicants should access this FOA via http://www.grants.gov/applicants/apply_for_grants.jsp and follow steps 1-4. Note: Applications must only be submitted electronically**. PAPER APPLICATIONS WILL NOT BE ACCEPTED.**

3.C. Application Processing

Applications **may** be submitted on or after the opening date and **must** be successfully received by Grants.gov no later than **5:00 p.m. local time** (of the applicant institution/organization) on the application submission/receipt date(s). (See Section IV.3.A. for all dates.) If an application is not submitted by the receipt date(s) and time, the application may be delayed in the review process or not reviewed.

Once an application package has been successfully submitted through Grants.gov, any errors have been addressed, and the assembled application has been created in the eRA Commons, the PD/PI and the Authorized Organization Representative/Signing Official (AOR/SO) have two business days to view the application image.

- If everything is acceptable, no further action is necessary. The application will automatically move forward for processing by the Division of Receipt and Referral, Center for Scientific Review, NIH, after two business days.

- Prior to the submission deadline, the AOR/SO can “Reject” the assembled application and submit a changed/corrected application within the two-day viewing window. This option should be used if the AOR/SO determines that warnings should be addressed or if information was lost or compromised during transmission. Reminder: warnings do not stop further application processing. If an application submission results in warnings (but no errors), it will automatically move forward after two business days if no action is taken. Please remember that some warnings may not be applicable or may need to be addressed after application submission.

- If the two-day window falls after the submission deadline, the AOR/SO will have the option to “Reject” the application if, due to an eRA Commons or Grants.gov system issue, the application does not correctly reflect the submitted application package (e.g., some part of the application was lost or didn’t transfer correctly during the submission process). The AOR/SO should first contact the eRA Commons Helpdesk to confirm the system error, document the issue, and determine the best course of action. NIH will not penalize the applicant for an eRA Commons or Grants.gov system issue.

- If the AOR/SO chooses to “Reject” the image after the submission deadline for a reason other than an eRA Commons or Grants.gov system failure, a changed/corrected application still can be submitted, but it will be subject to the NIH late policy guidelines and may not be accepted. The reason for this delay should be explained in the cover letter attachment.

- Both the AOR/SO and PD/PI will receive e-mail notifications when the application is rejected or the application automatically moves forward in the process after two days.

Upon receipt, applications will be evaluated for completeness by the CSR and responsiveness by the NIEHS. Incomplete and non-responsive applications will not be reviewed.

There will be an acknowledgement of receipt of applications from Grants.gov and the Commons. The submitting AOR receives the Grants.gov acknowledgments. The AOR and the PI receive Commons acknowledgments. Information related to the assignment of an application to a Scientific Review Group is also in the Commons.

Note: Since email can be unreliable, it is the responsibility of the applicant to check periodically on their application status in the Commons.

The NIH will not accept any application in response to this funding opportunity that is essentially the same as one currently pending initial review, unless the applicant withdraws the pending application. However, when a previously unfunded application, originally submitted as an investigator-initiated application, is to be submitted in response to a funding opportunity, it is to be prepared as a NEW application. That is, the application for the funding opportunity must not include an "Introduction" describing the changes and improvements made, and the text must not be marked to indicate the changes from the previous unfunded version of the application.

4. Intergovernmental Review

This initiative is not subject to *intergovernmental review*.

5. Funding Restrictions

All NIH awards are subject to the terms and conditions, cost principles, and other considerations described in the *NIH Grants Policy Statement*.

Pre-award costs are allowable. A grantee may, at its own risk and without NIH prior approval, incur obligations and expenditures to cover costs up to 90 days before the beginning date of the initial budget period of a new or competing renewal (formerly "competing continuation") award if such costs: are necessary to conduct the project, and would be allowable under the grant, if awarded, without NIH prior approval. If specific expenditures would otherwise require prior approval, the grantee must obtain NIH approval before incurring the cost. NIH prior approval is required for any costs to be incurred more than 90 days before the beginning date of the initial budget period of a new or competing renewal award.

The incurrence of pre-award costs in anticipation of a competing or non-competing award imposes no obligation on NIH either to make the award or to increase the amount of the approved budget if an award is made for less than the amount anticipated and is inadequate to cover the pre-award costs incurred. NIH expects the grantee to be fully aware that pre-award costs result in borrowing against future support and that such borrowing must not impair the grantee's ability to accomplish the project objectives in the approved time frame or in any way adversely affect the conduct of the project. See the *NIH Grants Policy Statement*.

6. Other Submission Requirements

PD/PI Credential (e.g., Agency Login)

The NIH requires the PD/PI(s) to fill in his/her Commons User ID in the "PROFILE – Project Director/Principal Investigator" section, "Credential" log-in field of the "Research & Related Senior/Key Person Profile" component.

Organizational DUNS

The applicant organization must include its DUNS number in its Organization Profile in the eRA Commons. This DUNS number must match the DUNS number provided at CCR registration with Grants.gov. For additional information, see "Frequently Asked Questions – Application Guide, Electronic Submission of Grant Applications."

PHS398 Research Plan Component Sections

Items 2-5 of the PHS398 Research Plan component are limited to 25 pages. While each section of the Research Plan component needs to be uploaded separately as a PDF attachment, applicants are encouraged to construct the Research Plan component as a single document, separating sections into distinct PDF attachments just before uploading the files. This approach will enable applicants to better monitor formatting requirements such as page limits. All attachments must be provided to NIH in PDF format, filenames must be included with no spaces or special characters, and a .pdf extension must be used.

All application instructions outlined in the SF424 (R&R) Application Guide are to be followed, incorporating "Just-in-Time" information concepts, and with the following additional requirements:

Special Instructions for Modular Grant applications

R01 applications from U.S. institutions/organizations requesting up to $250,000 per year in direct costs (excluding consortium F&A costs) must be submitted in a modular budget format. Additional information on modular budgets is available at http://grants.nih.gov/grants/funding/modular/modular.htm. When submitting a modular budget, the applicant organization will include only the PHS398 Modular Budget component. See Section 5.4 of the SF424 (R&R) Application Guide for further instructions regarding the use of the PHS398 Modular Budget component.

Appendix Materials

NIH has published new limitations on grant application appendix materials to encourage applications to be as concise as possible while containing the information needed for expert scientific review. See http://grants.nih.gov/grants/guide/notice-files/NOT-OD-07-018.html.

Applicants **must** follow the specific instructions on Appendix materials as described in the SF424 (R&R) Application Guide (See http://grants.nih.gov/grants/funding/424/index.htm).

Do not use the Appendix to circumvent the page limitations of the Research Plan component. An application that does not observe the required page limitations may be delayed in the review process.

Note: While each section of the PHS398 Research Plan component needs to be uploaded separately as a PDF attachment, applicants are encouraged to construct the Research Plan component as a single document, separating sections into distinct PDF attachments just before uploading the files. This approach will enable applicants to monitor better formatting requirements such as page limits. All attachments must be provided to NIH in PDF format, filenames must be included with no spaces or special characters, and a .pdf extension must be used.

Annual Meetings

It is the intent of the NIEHS to hold annual grantee meetings. Funds for travel by appropriate staff (i.e., Principal Investigator and at least one student) to attend the meeting should be included in the budget for each year. The location of the meeting site will rotate among the different SBRP grantees and the Research Triangle Park, NC.

Plan for Sharing Research Data

Applicants who are planning to share data may wish to describe briefly the expected schedule for data sharing, the format of the final dataset, the documentation to be provided, whether or not any analytic tools also will be provided, whether or not a data-sharing agreement will be required and, if so, a brief description of such an agreement (including the criteria for deciding who can receive the data and whether or not any conditions will be placed on their use), and the mode of data sharing (e.g., under their own auspices by mailing a disk or posting data on their institutional or personal Web site, through a data archive or enclave). The precise content of such data-sharing plans will vary, depending on the data being collected and how the investigator is planning to share the data. Investigators choosing to share under their own auspices may wish to enter into a data-sharing agreement. References to data sharing may also be appropriate in other sections of the application.

Sharing Research Resources

NIH policy expects that grant recipients make unique research resources readily available for research purposes to qualified individuals within the scientific community after publication (See the *NIH Grants Policy Statement* http://grants.nih.gov/grants/policy/nihgps_2003/NIHGPS_Part7.htm#_Toc54600131). Investigators responding to this funding opportunity should include a sharing research resources plan addressing how unique research resources will be shared or explain why sharing is not possible.

The adequacy of the resources sharing plan and any related data sharing plans will be considered by Program staff of the funding organization when making recommendations about funding applications. The effectiveness of the resource sharing will be evaluated as part of the administrative review of each Non-Competing Grant Progress Report (PHS 2590). See Section VI.3., "Reporting."

Section V. Application Review Information

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1. Criteria

Only the review criteria described below will be considered in the review process.

The following will be considered in making funding decisions:

- Scientific merit of the proposed project as determined by peer review
- Availability of funds
- Relevance of program priorities

2. Review and Selection Process

Applications that are complete and responsive to the FOA will be evaluated for scientific and technical merit by an appropriate peer review group convened by National Institute of Environmental Health Sciences in accordance with the review criteria stated below.

As part of the initial merit review, all applications will:

- **Undergo a selection process in which only those applications deemed to have the highest scientific merit, generally the top half of applications under review, will be discussed and assigned a priority score.**
- **Receive a written critique.**
- **Receive a second level of review by** the National Advisory Environmental Health Sciences Council.

Applications submitted in response to this funding opportunity will compete for available funds with all other recommended applications. The following will be considered in making funding decisions:

- **Scientific merit of the proposed project as determined by peer review.**
- **Availability of funds.**
- **Relevance of program priorities.**

The goals of NIH supported research are to advance our understanding of biological systems, to improve the control of disease, and to enhance health. In their written critiques, reviewers will be asked to comment on each of the following criteria in order to judge the likelihood that the proposed research will have a substantial impact on the pursuit of these goals. Each of these criteria will be addressed and considered in assigning the overall score, weighting them as appropriate for each

application.

- Significance
- Approach
- Innovation
- Investigator
- Environment

Note that an application does not need to be strong in all categories to be judged likely to have major scientific impact and thus deserve a high priority score. For example, an investigator may propose to carry out important work that by its nature is not innovative but is essential to move a field forward.

Significance: Does this study address an important problem? If the aims of the application are achieved, how will scientific knowledge be advanced? What will be the effect of these studies on the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

Approach: Is the conceptual framework, design, methods, and analysis adequately developed, well integrated, well reasoned, and appropriate to the aims of the project? Does the applicant acknowledge potential problem areas and consider alternative tactics? For applications designating multiple PDs/PIs, is the leadership approach, including the designated roles and responsibilities, governance, and organizational structure, consistent with and justified by the aims of the project and the expertise of each of the PDs/PIs?

Innovation: Is the project original and innovative? For example: Does the project challenge existing paradigms; address an innovative hypothesis or critical barrier to progress in the field? Does the project develop or employ novel concepts, approaches, methodologies, tools, or technologies for this area?

Investigators: Are the PD/PI(s) and other key personnel appropriately trained and well suited to carry out this work? Is the work proposed appropriate to the experience level of the principal investigator and other researchers? Does the PD/PI(s) and investigative team bring complementary and integrated expertise to the project (if applicable)?

Environment: Do(es) the scientific environment(s) in which the work will be done contribute to the probability of success? Do the proposed studies benefit from unique features of the scientific environment, or subject populations, or employ useful collaborative arrangements? Is there evidence of institutional support?

2.A. Additional Review Criteria

In addition to the above criteria, the following items will continue to be considered in the determination of scientific merit and the priority score:

Care and Use of Vertebrate Animals in Research: If vertebrate animals are to be used in the project, the adequacy of the plans for their care and use will be assessed. See the “Other Research Plan Sections” of the PHS398 Research Plan component of the SF424 (R&R).

Biohazards: If materials or procedures are proposed that are potentially hazardous to research personnel and/or the environment, determine if the proposed protection is adequate.

On the issue of the safe handling of nanomaterials, applicants must describe their proposed actions to protect the environment and the health and safety of personnel working with any applicable nanomaterials that may be hazardous. Reviewers will be asked to comment on the plans and express any concerns. The priority score will not be affected by these concerns; however grants will not be awarded until concerns are adequately addressed.

2.B. Additional Review Considerations

Budget and Period of Support: The reasonableness of the proposed budget and the appropriateness of the requested period of support in relation to the proposed research may be assessed by the reviewers. The priority score should not be affected by the evaluation of the budget.

2.C. Sharing Research Data

Not Applicable

2.D. Sharing Research Resources

NIH policy expects that grant recipients make unique research resources readily available for research purposes to qualified individuals within the scientific community after publication (See the *NIH Grants Policy Statement* http://grants.nih.gov/grants/policy/nihgps_2003/NIHGPS_Part7.htm#_Toc54600131). Investigators responding to this funding opportunity should include a sharing research resources plan addressing how unique research resources will be shared or explain why sharing is not possible.

Program staff will be responsible for the administrative review of the plan for sharing research resources.

The adequacy of the resources sharing plan and any related data sharing plans will be considered by Program staff of the funding organization when making recommendations about funding applications. The effectiveness of the resource sharing will be evaluated as part of the administrative review of each Non-Competing Grant Progress Report (PHS 2590), See Section VI.3., “Reporting.”

Model Organism Sharing Plan: Reviewers are asked to assess the sharing plan in an administrative note. The sharing plan itself should be discussed after the application is scored. Whether a sharing plan is reasonable can be determined by the reviewers on a case-by-case basis, taking into consideration the organism, the timeline, the applicant's decision to distribute the resource or deposit it in a repository, and other relevant considerations.

3. Anticipated Announcement and Award Dates

Not Applicable

Section VI. Award Administration Information

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1. Award Notices

After the peer review of the application is completed, the PD/PI will be able to access his or her Summary Statement (written critique) via the NIH eRA Commons.

If the application is under consideration for funding, NIH will request "just-in-time" information from the applicant. For details, applicants may refer to the *NIH Grants Policy Statement Part II: Terms and Conditions of NIH Grant Awards, Subpart A: General*.

A formal notification in the form of a Notice of Award (NoA) will be provided to the applicant organization. The NoA signed by the grants management officer is the authorizing document. Once all administrative and programmatic issues have been resolved, the NoA will be generated via email notification from the awarding component to the grantee business official.

Selection of an application for award is not an authorization to begin performance. Any costs incurred before receipt of the NoA are at the recipient's risk. These costs may be reimbursed only to the extent considered allowable pre-award costs. See Section IV.5., “Funding Restrictions.”

2. Administrative and National Policy Requirements

All NIH grant and cooperative agreement awards include the *NIH Grants Policy Statement* as part of the NoA. For these terms of award, see the *NIH Grants Policy Statement* Part II: Terms and Conditions of NIH Grant Awards, Subpart A: General and Part II: Terms and Conditions of NIH Grant Awards, Subpart B: Terms and Conditions for Specific Types of Grants, Grantees, and Activities.

The following Terms and Conditions will be incorporated into the award statement and will be provided to the Principal Investigator as well as to the appropriate institutional official, at the time of award:

- An annual grantee meeting, to be held at one of the of the SBRP grantees sites or in Research Triangle Park is planned for the exchange of information among investigators supported by the SBRP. Applicants must include travel costs associated with this meeting for the Principal Investigator and at least one student (if applicable). These funds are restricted and may not be used for any other purpose without written prior approval from the NIEHS.

3. Reporting

When multiple years are involved, awardees will be required to submit the Non-Competing Grant Progress Report (PHS 2590) annually and financial statements as required in the *NIH Grants Policy Statement.*

Section VII. Agency Contacts

We encourage your inquiries concerning this funding opportunity and welcome the opportunity to answer questions from potential applicants. Inquiries may fall into three areas: scientific/research, peer review, and financial or grants management issues:

1. Scientific/Research Contact(s):

Heather F. Henry, PhD
Division of Extramural Research and Training
National Institute of Environmental Health Sciences
79 TW Alexander Drive
Building Number 4401, Room Number 3446A
Research Triangle Park, NC 27709-2233
Telephone: (919) 541-5330
Fax: (919) 541-4937
Email: henryh@niehs.nih.gov

2. Peer Review Contact(s):

Sally Eckert-Tilotta, PhD
Division of Extramural Research and Training
National Institute of Environmental Health Sciences
79 TW Alexander Drive
Building Number 4401, Room Number 3173
Research Triangle Park, NC 27709-2233
Telephone: (919) 541-1446
Fax: (919) 541-2503
Email: eckertt1@niehs.nih.gov

3. Financial/Grants Management Contact(s):

Ms. Lisa M. Archer
Grants Management Branch
Division of Extramural Research and Training
National Institute of Environmental Health Sciences
79 TW Alexander Drive
Building Number 4401, Room Number 3406
Research Triangle Park, NC 27709-2233
Telephone: (919) 541-0751
Fax: (301) 451-5334
Email: archer@niehs.nih.gov

Ms. Susan L. Ricci
Grants Management Branch
Division of Extramural Research and Training
National Institute of Environmental Health Sciences
79 TW Alexander Drive
Building Number 4401, Room Number 3408
Research Triangle Park, NC 27709-2233
Telephone: (919) 316-4666
Fax: (301) 451-5334
Email: ricci@niehs.nih.gov

Section VIII. Other Information

Required Federal Citations

Use of Animals in Research:
Recipients of PHS support for activities involving live, vertebrate animals must comply with PHS Policy on Humane Care and Use of Laboratory Animals (http://grants.nih.gov/grants/olaw/references/PHSPolicyLabAnimals.pdf) as mandated by the Health Research Extension Act of 1985 (http://grants.nih.gov/grants/olaw/references/hrea1985.htm), and the USDA Animal Welfare Regulations (http://www.nal.usda.gov/awic/legislat/usdaleg1.htm) as applicable.

Sharing Research Data:
Investigators submitting an NIH application seeking $500,000 or more in direct costs in any single year are expected to include a plan for data sharing or state why this is not possible (http://grants.nih.gov/grants/policy/data_sharing).

Investigators should seek guidance from their institutions, on issues related to institutional policies and local IRB rules, as well as local, State and Federal laws and regulations, including the Privacy Rule. Reviewers will consider the data sharing plan but will not factor the plan into the determination of the scientific merit or the priority score.

Access to Research Data through the Freedom of Information Act:
The Office of Management and Budget (OMB) Circular A-110 has been revised to provide access to research data through the Freedom of Information Act (FOIA) under some circumstances. Data that are (1) first produced in a project that is supported in whole or in part with Federal funds and (2) cited publicly and officially by a Federal agency in support of an action that has the force and effect of law (i.e., a regulation) may be accessed through FOIA. It is important for applicants to understand the basic scope of this amendment. NIH has provided guidance at http://grants.nih.gov/grants/policy/a110/a110_guidance_dec1999.htm. Applicants may wish to place data collected under this funding opportunity in a public archive, which can provide protections for the data and manage the distribution for an indefinite period of time. If so, the application should include a description of the archiving plan in the study design and include

information about this in the budget justification section of the application. In addition, applicants should think about how to structure informed consent statements and other human subjects procedures given the potential for wider use of data collected under this award.

Sharing of Model Organisms:
NIH is committed to support efforts that encourage sharing of important research resources including the sharing of model organisms for biomedical research (see http://grants.nih.gov/grants/policy/model_organism/index.htm). At the same time the NIH recognizes the rights of grantees and contractors to elect and retain title to subject inventions developed with Federal funding pursuant to the Bayh Dole Act (see the *NIH Grants Policy Statement*. Beginning October 1, 2004, all investigators submitting an NIH application or contract proposal are expected to include in the application/proposal a description of a specific plan for sharing and distributing unique model organism research resources generated using NIH funding or state why such sharing is restricted or not possible. This will permit other researchers to benefit from the resources developed with public funding. The inclusion of a model organism sharing plan is not subject to a cost threshold in any year and is expected to be included in all applications where the development of model organisms is anticipated.

NIH Public Access Policy:
NIH-funded investigators are requested to submit to the NIH manuscript submission (NIHMS) system (http://www.nihms.nih.gov/) at PubMed Central (PMC) an electronic version of the author's final manuscript upon acceptance for publication, resulting from research supported in whole or in part with direct costs from NIH. The author's final manuscript is defined as the final version accepted for journal publication, and includes all modifications from the publishing peer review process.

NIH is requesting that authors submit manuscripts resulting from 1) currently funded NIH research projects or 2) previously supported NIH research projects if they are accepted for publication on or after May 2, 2005. The NIH Public Access Policy applies to all research grant and career development award mechanisms, cooperative agreements, contracts, Institutional and Individual Ruth L. Kirschstein National Research Service Awards, as well as NIH intramural research studies. The Policy applies to peer-reviewed, original research publications that have been supported in whole or in part with direct costs from NIH, but it does not apply to book chapters, editorials, reviews, or conference proceedings. Publications resulting from non-NIH-supported research projects should not be submitted.

For more information about the Policy or the submission process, please visit the NIH Public Access Policy Web site at http://publicaccess.nih.gov// and view the Policy or other Resources and Tools, including the Authors' Manual.

URLs in NIH Grant Applications or Appendices:

All applications and proposals for NIH funding must be self-contained within specified page limitations. For publications listed in the appendix and/or Progress report, Internet addresses (URLs) or PubMed Central (PMC) submission identification numbers must be used for publicly accessible on-line journal articles. Publicly accessible on-line journal articles or PMC articles/manuscripts accepted for publication that are directly relevant to the project may be included **only** as **URLs** or **PMC submission identification numbers** accompanying the full reference in either the Bibliography & References Cited section, the Progress Report Publication List section, or the Biographical Sketch section of the NIH grant application. A URL or PMC submission identification number citation may be repeated in each of these sections as appropriate. There is no limit to the number of URLs or PMC submission identification numbers that can be cited.

Healthy People 2010:
The Public Health Service (PHS) is committed to achieving the health promotion and disease prevention objectives of "Healthy People 2010," a PHS-led national activity for setting priority areas. This FOA is related to one or more of the priority areas. Potential applicants may obtain a copy of "Healthy People 2010" at http://www.health.gov/healthypeople.

Authority and Regulations:
This program is described in the Catalog of Federal Domestic Assistance at http://www.cfda.gov/ and is not subject to the intergovernmental review requirements of Executive Order 12372 or Health Systems Agency review. Awards are made under the authorization of Sections 301 and 405 of the Public Health Service Act as amended (42 USC 241 and 284) and under

Federal Regulations 42 CFR Part 52 and 45 CFR Parts 74 and 92. All awards are subject to the terms and conditions, cost principles, and other considerations described in the NIH Grants Policy Statement.

The PHS strongly encourages all grant recipients to provide a smoke-free workplace and discourage the use of all tobacco products. In addition, Public Law 103-227, the Pro-Children Act of 1994, prohibits smoking in certain facilities (or in some cases, any portion of a facility) in which regular or routine education, library, day care, health care, or early childhood development services are provided to children. This is consistent with the PHS mission to protect and advance the physical and mental health of the American people.

Loan Repayment Programs:
NIH encourages applications for educational loan repayment from qualified health professionals who have made a commitment to pursue a research career involving clinical, pediatric, contraception, infertility, and health disparities related areas. The LRP is an important component of NIH's efforts to recruit and retain the next generation of researchers by providing the means for developing a research career unfettered by the burden of student loan debt. Note that an NIH grant is not required for eligibility and concurrent career award and LRP applications are encouraged. The periods of career award and LRP award may overlap providing the LRP recipient with the required commitment of time and effort, as LRP awardees must commit at least 50% of their time (at least 20 hours per week based on a 40 hour week) for two years to the research. For further information, please see: http://www.lrp.nih.gov/.

Weekly TOC for this Announcement
NIH Funding Opportunities and Notices

Department of Health and Human Services

National Institutes of Health (NIH)
9000 Rockville Pike
Bethesda, Maryland 20892