

**Office of Science
Notice 02-21**

Medical Applications Program

Department of Energy

Office of Science Financial Assistance Program Notice 02-21; Medical Applications Program

AGENCY: U.S. Department of Energy

ACTION: Notice inviting grant applications.

SUMMARY:The Office of Biological and Environmental Research (OBER) of the Office of Science (SC), U.S. Department of Energy (DOE), hereby announces its interest in receiving grant applications to support radiopharmaceutical research for Noninvasive Radiotracer-cell Imaging (NRI) In Vivo. The specific goals include radiotracer labeling of progenitor cells for noninvasively imaging and tracking their behavior and fate in vivo and their overall role in organ and tissue regeneration in disease states. The applicants should clearly demonstrate the relevance and important clinical need of the research proposed. Special consideration will be given to applications arising from a well integrated, multidisciplinary team effort of scientists with relevant skills in radiopharmaceutical chemistry, biology, pharmacology and clinical nuclear medicine. The access to, or availability of specialized radiotracer-labeling and imaging instrumentation, equipment and facilities for real time imaging in animals to humans, will be important factors for funding considerations.

DATES: Potential applicants are encouraged to submit a brief preapplication before preparing a formal application. All preapplications in response to Program Notice 02-21 should be received by DOE by 4:30 p.m., E.S.T., April 1, 2002. A response encouraging or discouraging the submission of a formal application will be communicated via email by April 15, 2002.

Formal applications submitted in response to this notice must be received by 4:30 p.m., E.D.T., May 15, 2002, to be accepted for merit review and consideration for award in Fiscal Year 2002.

ADDRESSES: Preapplications referencing Program Notice 02-21 must be sent via electronic mail to: sharon.betson@science.doe.gov or by FAX to (301) 903-0567.

Formal applications referencing Program Notice 02-21, should be forwarded to: U.S. Department of Energy, Office of Science, Grants and Contracts Division, SC-64, 19901 Germantown Road, Germantown, MD 20874-1290, ATTN: Program Notice 02-21. This address must also be used when submitting applications by U.S. Postal Service Express Mail or any other commercial overnight delivery service, or hand-carried by the applicant. An original and seven copies of the application must be submitted.

FOR FURTHER INFORMATION CONTACT: Dr. Prem C. Srivastava, Office of Biological and Environmental Research, Medical Sciences Division (SC-73), U.S. Department of Energy, 19901 Germantown Road, Germantown, MD 20874-1290, telephone: (301) 903-4071, FAX: (301) 903-0567, E-mail: prem.srivastava@science.doe.gov. The full text of Program Notice 02-21 is available via the Internet using the following web site address:
<http://www.science.doe.gov/production/grants/grants.html>.

SUPPLEMENTARY INFORMATION:

Progenitor Cells

The term progenitor cells implies non-embryonic stem cells, and does **not** include embryonic stem cells. For definitions, refer to National Institutes of Health (NIH) web sites, and all grantees must adhere to federal guidelines when involving human subjects.

<http://www.nih.gov/news/stemcell/primer.htm> <http://www.nih.gov/news/stemcell/index.htm>

Biological and Environmental Research (BER), Medical Applications Program

For more than 50 years the Biological and Environmental Research (BER) program has been advancing environmental and biomedical knowledge that promotes national security through improved energy production, development, and use, international scientific leadership that underpins our nation's technological advances, and environmental research that improves the quality of life for all Americans. BER supports these vital national missions through competitive and peer-reviewed research at National Laboratories, universities, and private institutions.

The mission of the BER Medical Applications subprogram is to deliver relevant scientific knowledge that will lead to innovative diagnostic and treatment technologies for human health. The research builds on unique DOE capabilities in physics, chemistry, engineering, and biology. Research will lead to new metabolic labels and imaging detectors for medical diagnosis, and tailor-made radiopharmaceutical agents. The basic research technologies growing out of this program offer applications for study, detection, diagnosis and early intervention of natural causes of disease; as well as of biochemical, bacterial, and viral health risks from biological and/or gross environmental insults such as bioterrorism.

The modern era of nuclear medicine is an outgrowth of the original charge of the Atomic Energy Commission (AEC), "to exploit nuclear energy to promote human health." Today the program through radiopharmaceutical, molecular nuclear medicine and multimodal imaging systems research, seeks to develop new applications of radiotracers and radionuclide detectors in diagnosis and treatment by integrating the latest concepts and developments in chemistry, pharmacology, genomic sciences and transgenic animal models, structural, computational and molecular biology, and instrumentation.

Molecules directing or affected by homeostatic controls always interact and, thus, are targets for specific molecular substrates. The substrate molecules can be tailored to fulfill a specific need and labeled with appropriate radioisotopes to become measurable in real time in the body on their way to, and in interaction with their targets allowing the analysis of molecular, cellular and

metabolic organ functions in health and disease. The function of radiopharmaceuticals at various sites in the body is imaged by nuclear medical instruments, such as, gamma cameras and positron emission tomographs (PET). This type of imaging refines diagnostic differentiation at molecular, cellular and metabolic organ function levels between health and disease, and among various diseases such as of the heart, brain and cancer, often leading to more effective therapy.

New technological advancements have offered a paradigm shift in the current level of nuclear medicine research challenges and opportunities. Molecular nuclear medicine techniques can permit analysis of the cellular elements as markers of genetic manipulations, cell transformations, organ and tissue regeneration and progression of the disease, and provide insights to molecular pathways of disease and cell function. Such studies are therefore a major focus of this program.

Breakthrough research in the biology of inter-organ and tissue cell repopulation and transformation has offered new paradigms for radiotracer imaging research in resolving the issues of progenitor cell administration including their trafficking, biodistribution, fate and progeny in organ and tissue regeneration, repair and replacement, with wide applications to human disease states such as neurogenesis, myogenesis, hematopoiesis, including stroke, ischemic heart disease, Parkinson's disease, hematopoietic disorders and cancers. This NRI specific program announcement offers challenging research opportunities for new radiotracer technology innovations for emerging new clinical research needs and medical applications.

Program Funding

It is anticipated that approximately \$2 million will be available for multiple grant awards during Fiscal Year 2002, contingent upon the availability of appropriated funds. Previous awards have ranged from \$200,000 per year up to \$400,000 per year (direct plus indirect costs) with terms lasting up to three years. Similar award sizes are anticipated for new grants. Applications may request project support up to three years, with out-year support contingent on the availability of funds, progress of the research and programmatic needs.

Preapplications

A brief preapplication should be submitted. The preapplication should identify, on the cover sheet, the title of the project, the institution, principal investigator name, address, telephone, fax, and E-mail address. The preapplication should consist of two to three pages identifying and describing the research objectives, methods for accomplishment, and the key members of the scientific team responsible for undertaking this effort. Preapplications will be evaluated relative to the scope and research needs of this program notice.

Merit Review

Applications will be subjected to scientific merit review (peer review) and will be evaluated against the following evaluation criteria listed in descending order of importance as codified at 10 CFR 605.10(d):

1. Scientific and/or Technical Merit of the Project;
2. Appropriateness of the Proposed Method or Approach;
3. Competency of Applicant's Personnel and Adequacy of Proposed Resources; and
4. Reasonableness and Appropriateness of the Proposed Budget.

The evaluation will include program policy factors such as the relevance of the proposed research to the terms of the announcement and the agency's programmatic needs. Note, external peer reviewers are selected with regard to both their scientific expertise and the absence of conflict-of-interest issues. Non-federal reviewers may be used, and submission of an application constitutes agreement that this is acceptable to the investigator(s) and the submitting institution.

Submission Information

Information about the development, submission of applications, eligibility, limitations, evaluation, the selection process, and other policies and procedures may be found in 10 CFR Part 605, and in the Application Guide for the Office of Science Financial Assistance Program. Electronic access to the Guide and required forms is made available via the World Wide Web at: <http://www.science.doe.gov/production/grants/grants.html>. DOE is under no obligation to pay for any costs associated with the preparation or submission of applications if an award is not made.

In addition, for this Notice, the Project Description must be 20 pages or less, exclusive of attachments, and the application must contain a Table of Contents, an abstract or project summary, letters of intent from collaborators (if any), and short curriculum vitae consistent with National Institutes of Health guidelines. On the SC grant face page, form DOE F4650.2, in block 15, also provide the PI's phone number, fax number, and E-mail address.

DOE policy requires that potential applicants adhere to 10 CFR 745 "Protection of Human Subjects", or such later revision of those guidelines as may be published in the Federal Register.

The Office of Science as part of its grant regulations requires at 10 CFR 605.11(b) that a recipient receiving a grant and performing research involving recombinant DNA molecules and/or organisms and viruses containing recombinant DNA molecules shall comply with NIH "Guidelines for Research Involving Recombinant DNA Molecules," which is available via the world wide web at: <http://www.niehs.nih.gov/odhsb/biosafe/nih/rdna-apr98.pdf>, (59 FR 34496, July 5, 1994,) or such later revision of those guidelines as may be published in the Federal Register.

The Catalog of Federal Domestic Assistance Number for this program is 81.049, and the solicitation control number is ERFAP 10 CFR Part 605.

John Rodney Clark
Associate Director of Science
for Resource Management

Published in the Federal Register March 6, 2002, Volume 67, Number 44, Pages 10178-10180.