Lawrence Award Nominations Solicited

The U.S. Department of Energy (DOE) announced earlier in the fall a call for nominations for the Ernest Orlando Lawrence Award, which is given to midcareer scientists and engineers in recognition of exceptional scientific, technical, and/or engineering achievements related to the broad missions of the DOE and its programs. The objectives of the awards are to: encourage excellence in energy science and technology; inspire individuals to dedicate their lives and talents to scientific and technological effort, through the examples of E.O. Lawrence and the Lawrence award laureates; and highlight for the general public the accomplishments of the scientific and technological communities associated with the U.S. DOE. Nominations are solicited annually in each of 8 categories: atomic, molecular, and chemical sciences; biological and environmental sciences; computer, information, and knowledge sciences; condensed matter and materials sciences; energy science and innovation; fusion and plasma sciences; high energy and nuclear physics; and national security and nonproliferation. Eligibility criteria include requirements that nominees be: in the middle of their careers (having their highest degree conferred in 1990 or later); citizens of the United States; recognized for achievement in research principally funded by the DOE; and assessed primarily on the scientific impact and technical significance of their work relative to its discipline and/or related mission. Each awardee receives a citation signed by the Secretary of Energy, a gold medal, and a $50,000 honorarium. Among numerous past winners are investigators whose work has been in the medical sciences and nuclear medicine, including Nora Volkow, PhD, and Michael Phelps, PhD. Nominations are due on January 15, 2011, and detailed information on submitting nominations as well as descriptions of award categories are available at www.sc.doe.gov/lawrence.

U.S. Department of Energy

NIH "Images" Database

The National Institutes of Health (NIH) announced on October 28 the availability of more than 2.5 million images and figures from medical and life sciences journals through the Images database, a new resource for finding images in biomedical literature. The database was developed and will be maintained by the National Center for Biotechnology Information (NCBI), a division of the National Library of Medicine. The database is available at www.ncbi.nlm.nih.gov/images.

In a press release, NIH noted that the database is expected to have a wide range of uses for a variety of groups, including the clinician looking for visual representation of a disease or condition, the researcher searching for studies with certain types of analyses, the student seeking diagrams that elucidate complex processes, the professional or educator looking for an image for a presentation, and the patient wanting to better understand his or her disease. "Rapid and easy access to images in the biomedical literature should help scientists and others more quickly identify content of interest," said NCBI Director David Lipman, MD. "We believe that the new database will be useful for the discovery process, as well as for educational and professional purposes."

The initial content of Images reflects images and figures contained in NCBI's PubMed Central full-text digital archive of biomedical and life sciences journal literature, located at www.ncbi.nlm.nih.gov/pmc. Content may be expanded in the future to include other NCBI full-text resources, such as NCBI's Bookshelf database of biomedical books and reports, at www.ncbi.nlm.nih.gov/books.

The database enables users to search images based on keywords and a variety of other parameters, such as author and publication date. Images and data can be easily saved to users' collections and shared with others through the use of My NCBI, a feature that allows users of NCBI resources to customize their search and display preferences, save and share searches, build bibliographies, and perform a variety of other functions.

National Institutes of Health

ADNI Expands, Seeks Volunteers

The National Institutes of Health (NIH) announced on October 21 plans to expand the Alzheimer's Disease Neuroimaging Initiative (ADNI) in a groundbreaking study that will recruit hundreds of new volunteers to help define the subtle changes that may take place in the brain many years before overt symptoms of AD appear. ADNI is the largest public–private partnership in AD disease research and is led by the National Institute on Aging (NIA) through a grant to the nonprofit Northern California Institute for Research and Education, with private sector support provided through the Foundation for the National Institutes of Health.

Researchers are seeking new volunteers to join those already participating in the study as it enters a second phase, called ADNI2. Over the next 5 y, approximately 1,000 people, aged 55 to 90 y, will be enrolled at more than 50 sites in the United States and Canada. They will be followed to define changes in brain structure and function as individuals transition from normal cognitive aging to mild cognitive impairment to Alzheimer-related dementia. Researchers hope to identify those at risk for AD, track progression of the disease, and devise tests to measure the effectiveness of potential interventions.

"ADNI2 will build upon the successes of this ongoing effort to identify the earliest signs of AD, when damage to the brain may begin well before symptoms appear," said NIA Director

Richard J. Hodes, MD. "This phase of the study, which includes greater numbers of volunteers in the earliest stages of cognitive impairment, should give us new insights into the onset and progression of Alzheimer's disease."

ADNI2 will recruit 550 new volunteers. The study also will continue to follow participants recruited during 2 earlier phases: ADNI1, started in 2004, and ADNI-GO (Grand Opportunity), begun in 2009. ADNI2 will continue to track changes in the brain with clinical and cognitive testing and PET and other scans measuring glucose metabolism and the amount of β-amyloid in the brain. Researchers are also collecting serum and plasma for biomarker measures and blood samples for genetic analysis. All new participants in ADNI2 will undergo lumbar punctures to measure cerebrospinal fluid biomarkers and will have blood drawn for plasma biomarkers.

One important aspect of the study is the sharing of data soon after it is obtained. Study data are posted to a publicly accessible database available to qualified researchers worldwide. To date, more than 1,700 researchers have signed up for ADNI database access.

ADNI is stimulating the development of a worldwide collaboration among academia, government, and industry researchers and has resulted in more than 170 published papers. To learn more about ADNI, see www.nia.nih.gov/Alzheimers, which includes a list of study locations. Investigators may apply for access to ADNI study data at www.loni.ucla.edu/ADNI. Qualified scientists may also ask for access to the cerebrospinal fluid and blood samples.

National Institutes of Health

Genetic Link to Alcohol Response

An October 19 press release from Brookhaven National Laboratory (Upton, NY) highlighted a study providing novel experimental evidence that genetic differences may make some individuals more susceptible to the addictive effects of alcohol. The study, by Thanos et al. from the National Institutes of Health (Bethesda, MD); Brookhaven; and Oregon Health and Science University (Portland), appeared online on October 19 ahead of print in *Alcohol, Clinical and Experimental Research*. The research, conducted in mice, focused on the levels and distribution of cannabinoid type-1 (CB1) receptors after chronic ethanol intake in the presence and absence of dopamine D2 receptors. The study compared the brain's response to long-term alcohol drinking in 2 genetic variants of mice. One strain lacked the gene for dopamine D2, which responds to dopamine; the other strain was genetically normal. In the dopamine receptor–deficient mice (but not the genetically normal strain), long-term alcohol drinking resulted in significant biochemical changes in areas of the brain known to be involved in alcoholism and addiction.

"This study shows that the effects of chronic alcohol consumption on brain chemistry are critically influenced by an individual's preexisting genetic makeup," said lead author Thanos. "Our findings may help explain how someone's genetic profile can interact with the environment—in this case, chronic alcohol drinking—to produce these changes only in some individuals but not in others with a less vulnerable genetic profile. The work supports the idea that genetic screening could provide individuals with valuable information relevant to understanding risks when deciding whether or not to consume alcohol."

Brookhaven National Laboratory

IOM to Study IT and Health Care Safety

The Institute of Medicine (IOM) announced on September 29 that it will conduct a 1-y study aimed at ensuring that health information technology (HIT) can achieve its full potential for improving patient safety in health care. The study will be carried out under a $989,000 contract announced by the Office of the National Coordinator for Health Information Technology (ONC).

The study will examine a comprehensive range of patient safety–related issues, including prevention of HIT-related errors and rapid reporting of any HIT-related patient safety issues. It will make recommendations on potential effects of government policies and private sector actions in maximizing patient safety and avoiding medical errors through HIT. "The IOM is pleased to have the opportunity to add its expertise and convening power in helping to achieve the goals of improved safety through HIT-assisted care," said IOM President Harvey Fineberg, MD.

Institute of Medicine

NIH Transformative Research Awards

The National Institutes of Health (NIH) announced on September 30 plans to award up to $64 million over 5 y to encourage exploration of exceptionally innovative and original research ideas that have the potential for extraordinary impact. The NIH Director's Transformative Research Projects (T-R01) award program allows investigators to sidestep conventional stumbling blocks often faced when applying for funding for high-risk research, such as the need for preliminary data or a restriction on the amount of funds that can be requested. Twenty T-R01 award recipients were announced in basic sciences or clinical research.

Under the T-R01 program, supported by the NIH Common Fund (previously the NIH Roadmap for Medical Research), scientists are encouraged to rethink the way science is conducted and to propose novel ideas. The awards can provide up to $25 million in total costs each year for a single project. "Complex research projects, even exceptionally high-impact ones, are tough to get funded without the necessary resources to assemble teams and collect preliminary data. The TR01 awards provide

a way for these high-impact projects to be pursued," said NIH Director Francis S. Collins, MD, PhD.

NIH expects to make awards of $12.8 million for new T-R01 projects in fiscal year 2010. Many of the announced awards focus on molecular medicine and include the planned use of molecular imaging techniques. More information on the Transformative R01 Award is at http://commonfund.nih.gov/T-R01. For descriptions of the 2010 recipients' research plans, see http://commonfund.nih.gov/T-R01/Recipients10.asp.

National Institutes of Health

Home-Built Cyclotrons

The Newsline editor noted with interest an article appearing in the latest issue of *symmetry: Dimensions of Particle Physics* (2010;7[4]), a publication of the Fermi National Accelerator Laboratory and SLAC National Accelerator Laboratory, on "The Do-It-Yourself Cyclotron." Contributed by staff writer Calla Cofield, the article traced the history of amateur cyclotron building and focused on an April 2010 conference that brought together a diverse group of individuals who have put together their own working cyclotrons. The complete article is available at: www.symmetrymagazine.org/cms/?pid=1000831.

symmetry: Dimensions of Particle Physics

Erratum

Academic degrees for 3 authors of "PET utilization under Taiwan's Universal Health Insurance program" (2010;51[10]:14N–16N) were in error. Corrected names and degrees include: Chih-Hsin Muo, MS; Fung-Chang Sung, PhD, MS, MPH; and Shih-Ni Chang, MS.

FROM THE LITERATURE

Each month the editor of Newsline selects articles on diagnostic, therapeutic, research, and practice issues from a range of international publications. Most selections come from outside the standard canon of nuclear medicine and radiology journals. These briefs are offered as a monthly window on the broad arena of medical and scientific endeavor in which nuclear medicine now plays an essential role. We have added a special section on molecular imaging, including both radionuclide-based and other molecular imaging efforts, in recognition of the extraordinary activity and promise of diagnostic and therapeutic progress in this area. The lines between diagnosis and therapy are sometimes blurred, as radiolabels are increasingly used as adjuncts to therapy and/or as active agents in therapeutic regimens, and these shifting lines are reflected in the briefs presented here. We have also added a small section on noteworthy reviews of the literature.

MOLECULAR IMAGING/THERAPY

Cerenkov Radiation Energy Transfer Imaging

Dothager et al. from the Washington University School of Medicine (St. Louis, MO) reported on October 11 in the online publication *PLoS One* (2010;5[10]:e13300) on studies of optical imaging of Cerenkov radiation in biological systems. Cerenkov radiation is electromagnetic radiation emitted when a charged particle (such as an electron) passes through an insulator at a constant speed greater than that of the speed of light in the same medium. Cerenkov radiation can be emitted in PET imaging with some β-emitting radionuclides. This study was designed to improve optical imaging of Cerenkov radiation by showing that such radiation from decay of ^{64}Cu and ^{18}F can be spectrally coupled by energy transfer to high Stokes-shift quantum nanoparticles that facilitate a variety of novel optical imaging applications and activation strategies for PET radiopharmaceuticals. Optical imaging of solutions containing the nanoparticles and ^{18}F-FDG showed Cerenkov radiation energy transfer ratios as high as 8.8 ± 1.1, and in vivo imaging in mice with subcutaneous pseudotumors injected with the nanoparticles after intravenous injection of ^{18}F-FDG showed corresponding ratios as high as 3.5 ± 0.3. In addition to the science presented, the article serves as a concise introduction to this rapidly expanding field of investigation.

PLoS One

Near-Infrared/PET Imaging

In an article in the October 1 issue of *Translational Oncology* (2010;3:307–317), Sampath et al. from the University of Texas Health Sciences Center (Houston) described a study investigating detection of cancer metastases with a dual-labeled near-infrared (NIR)/PET agent that can provide both intraoperative guidance and noninvasive imaging. The study was conducted in an immunoincompetent mouse model of human epidermal growth factor receptor 2 (HER-2)–positive cancer metastases. The authors detailed synthesis and initial studies of (^{64}Cu-DOTA)$_n$-trastuzumab-(IRDye800)$_m$. The agent was injected in mice at 2 and 6 wk after breast cancer cell implantation, and PET/CT and NIR fluorescence imaging were performed 1 d after injection. Results were compared with ^{18}F-FDG PET imaging. Resulting images with both ^{18}F-FDG alone and the new agent showed primary tumors, but metastases were visualized only with the dual-labeled agent. ^{64}Cu PET imaging showed lung metastases, and ex vivo NIR fluorescence imaging showed uptake in lung, skin, skeletal muscle, and lymph nodes, with histologic confirmation of corresponding cancer cells. Of note, the high signal-to-noise ratio from