# DOE Plan for Leftover Radioactive Materials in Cancer Research

Department of Energy (DOE) Secretary Bill Richardson announced in June steps to expand the DOE capacity to offer for clinical trials an isotope extracted from leftover radioactive materials used in nuclear activities. Plans call for increasing the supply of $^{213}Bi$, a decay product of the $^{233}U$ currently in storage at the DOE's Oak Ridge National Laboratory (ORNL; Oak Ridge, TN), making the isotope available for use in an expanded cancer treatment research project.

"This is an innovative way to utilize legacy materials from nuclear production for positive uses," said Secretary Richardson. "The use of this isotope for cancer treatment has shown promise, and, with an increased availability of the isotope, these research efforts can be expanded." As funds are available, the DOE plans to increase the supply of the isotope by up to 30% over the next year and hopes to double its supply by 2002. Initially, DOE will use the existing extraction and process line at ORNL. To double the supply, however, additional funding from Congress will be required to install a new processing line. DOE also is initiating some longer-term actions that will allow for future decisions on the extraction of additional isotopes from the large quantities of $^{233}U$ at ORNL.

The proposal announced today builds on the radioimmunotherapy clinical trials in the use of $^{213}Bi$ that the DOE has supported for the last 2 y, primarily at Memorial Sloan-Kettering Cancer Center in New York, NY. These trials have explored treatments for serious forms of cancer, including acute myelogenous leukemia. As additional supplies are made available, researchers hope to use the isotope to develop treatments for cancers of the pancreas, kidney, and other organs. This research is in the first stage of clinical trials and has shown very promising results.

*—Department of Energy*

# Upcoming European Association of Nuclear Medicine Congress

The European Association of Nuclear Medicine (EANM) will hold its annual scientific meeting in Paris, France, September 2–6. More than 4000 attendees are expected at the event. Most exhibitions, plenary sessions, and smaller gatherings will be held in the Palais des Congrés. The large and diverse technical exposition will run from Sunday, September 3 through September 6. The chair of the Scientific Committee, J. Martin-Comin, MD, of Spain, reports that 460 oral presentations and 886 poster presentations are scheduled for the meeting.

SNM members who wish to attend the meeting have until August 20 to register without a late fee. More information about the EANM is available on the Web site at www.eanm.org, and detailed information on the meeting, including housing, travel, and scheduling news, is on a Congress Web site at www.eanm-paris2000.com.

The EANM was created in 1985 through a merger of the Society of Nuclear Medicine–Europe and the European Nuclear Medicine Society. Its members are physicians, scientists, technologists, and other persons working in nuclear medicine or related fields.

For additional information contact the EANM at the Faculté de Médecine Saint-Antoine, 27 rue Chaligny F-75012, Paris, France. Phone: 33 (0)1 44 68 88 45; fax: 33 (0)1 44 68 88 46; and e-mail: congress@eanm-paris 2000.com.

# PET and SPECT in Alzheimer's Disease Diagnosis

Researchers from the University of Pennsylvania Medical Center announced in June that they had found a way to tag amyloid plaques in the brains of patients with Alzheimer's disease, offering new routes for diagnosing and tracking progression of the disease. The tag, a molecule called BSB ((*trans,trans)*-1-bromo-2,5-bis-(3-hydroxycarbonyl-4-hydroxy)styryl-benzene), gets into the brain and attaches specifically to the plaques, where the molecule can then be imaged by PET or SPECT.

Writing in the *Proceedings of the National Academy of Science* (June 20, 2000;97:7609–7614), Daniel M. Skovronsky, Bin Zhang, Mei-Ping Kung, Hank F. Kung, John Q. Trojanowski, and Virginia M.-Y. Lee said their tag could offer a way to diagnose and check the extent of Alzheimer's disease in living patients. Although Alzheimer's is currently defined by a battery of skill tests, definitive diagnosis is not recognized until physical findings at autopsy. Research efforts have been successful in diagnosing Alzheimer's in mice. "We demonstrated unequivocally that the compound can go through the blood–brain barrier and bind to amyloid," Lee said.

Marcelle Morrison-Bogorad of the National Institute on Aging in Bethesda, MD, which funded the study, said "This tool could help clinicians peer into a person's brain and monitor amyloid levels in response to treatment. We definitely need something

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like this to advance the diagnosis and treatment of dementia."

Lee hopes it might be both a primary diagnostic tool and a means to determine whether drugs are working to slow the progression of the disease. "The exciting promise of our agent is that, when clinically applied, it will demonstrate efficacy of therapy in treatments designed to inhibit the growth of amyloids," she said.

*—www.AuntMinnie.com*

## Membrane Protein Research Yields New Insights into Inner Workings of the Cell

Biophysicists at the National Science Foundation (NSF) National High Magnetic Field Laboratory (NHMFL) in Tallahassee, FL, have discovered that membrane proteins give rise to unique patterns of signals in their nuclear magnetic resonance (NMR) spectra. This result opens a new approach for the 3-dimensional characterization of membrane protein structures. These important proteins have been particularly difficult to characterize by standard technologies, and hence few membrane protein structures are known today.

"About 25% of proteins are membrane proteins, yet structures of only a few of these are known," says Kamal Shukla, director of NSF's molecular biophysics program, which funded the research. "X-ray crystallography and solution NMR cannot be used for these proteins, because they are hard to crystallize and are not soluble." The methodology developed for obtaining structural information of integral membrane proteins by the Florida team is therefore significant.

It has been known for some time that structural constraints from solid-state NMR spectroscopy of uniformly aligned samples can be used to develop a high-resolution 3-dimensional structure. However, although many constraints can be obtained, there has been no approach for dependable resonance assignments. In other words, without knowing where in the molecule each signal comes from it has been difficult to make progress with structural characterization.

Now, a team of researchers, including Tim Cross, Riqiang Fu, and Jack Quine from the NSMFL, supported by the NSF's molecular biophysics program, have discovered that the signal patterns observed in 2-dimensional spectra directly reflect the distribution of amino acids about a helical axis, known as a helical wheel. Through standard methods of $^{15}N$ labeling using bacterial cultures, it is now possible to assign these signals to specific atomic sites in the membrane protein helices.

Furthermore, the location of the resonance patterns in the spectrum defines the tilt of the helix within the membrane. Indeed, it is possible to get this topological information on a helix without signal assignments, the first time this has been possible in NMR spectroscopy. These results were published as a cover story in the *Journal of Magnetic Resonance* (May 2000; 14:162–167).

*—National Science Foundation*