receptor antagonist tamoxifen.

Many leaders in nuclear medicine research believe that the field needs the invigorating effects of exploring the new avenues opened by basic genetic and cellular research. But these same scientists deeply regret the loss of funds to existing efforts, which they say the DOE may be underestimating.

"The field starts to stagnate if you don't have new directions, but the initiative should not direct money away from existing programs," says Suresh Srivastava, PhD, a senior scientist and head of radionuclide and radiopharmaceutical research at Brookhaven National Laboratory in New York.

Richard Reba, MD, of the University of Chicago, who chaired the DOE's workshop on molecular nuclear medicine, asks, "Why are ongoing [nuclear medicine] programs suffering by themselves? Why is nuclear medicine going to have to fund the entire molecular nuclear medicine initiative?"

To proceed with the new project in a year of budget shortfalls, DOE's Dr. Wood says that established medical applications programs had to be scaled back. He adds that the DOE's office of program analysis reviewed programs under medical applications for the first time in five years, and says that some programs would have been trimmed anyway.

"There are programs that outlive their usefulness–from time to time its good to weed them out," concedes Dr. Srivastava. While he describes the cuts at Brookhaven as "minor," he says the DOE might have avoided some cutbacks by waiting a year to seek additional funding for the molecular nuclear medicine grants.

Flood of Proposals

Is the concept of the initiative premature? "That's open to debate," says Dr. Srivastava. "But I would argue otherwise."

Investigators have responded avidly to the DOE's call for proposals. From a flood of pre-proposals, officials invited a select 60 groups to submit formal solicitations. These will compete for about 15 awards of $200,000 each.

Just what the DOE means by the phrase "molecular nuclear medicine" remains vague. The call for proposals in the Federal Register said projects should seek to develop new radioactive probes to target molecular sites with potential for improving the diagnosis and treatment of disease, and should integrate molecular biology, radiochemistry, and nuclear medicine. Emphasizing the development of imaging agents starting from precisely defined molecular mechanisms, the DOE is encouraging an existing trend that has more or less dispensed with empirical approaches to pharmaceutical design–injecting potentially interesting compounds into lab animals to see if they prove useful. The DOE's intentions for molecular nuclear medicine should be easier to interpret with the announcement next month of the winning grant proposals.

Radioisotope Supply Update: Brookhaven Linac Isotope Producer

Even if nuclear medicine investigators muster enough support for a National Biomedical Tracer Facility this year, radioisotope users will have to rely for several more years on DOE accelerator facilities at the Los Alamos National Laboratory in New Mexico and at the Brookhaven National Laboratory in New York.

Both programs, however, are facing difficulties that threaten to stop the flow of radioisotopes well before the NBTF comes online. Decommissioning of the accelerator at the Los Alamos Meson Physics Facility appears inevitable within the next five years, even though this year Congress transferred the $64.5 program to the DOE's military budget (presumably for use in nuclear waste transmutation experiments).

Problems facing the Brookhaven Linac Isotope Producer are serious, but somewhat different than at LAMPF. "We have no finite turn off point," says Leonard Mausner, PhD, the Brookhaven scientist in charge of BLIP. The DOE will keep Brookhaven's linear accelerator or Linac operating to supply protons for the Relativistic Heavy Ion Collider (RHIC), a vanguard of the new instruments DOE is building for sub-atomic particle physics experiments. (For normal operations, RHIC will need an injector of heavy ions, but part of the time physicists will need protons from the Linac.)

"BLIP will not be mothballed for a long time," says Dr. Mausner. But the limited demand for protons for RHIC won't amount to enough operational hours to maintain a viable isotope production program.

"The challenge," says Dr. Mausner, "is to come up with enough money to fill in the gaps in the operating schedule." He predicts that a gap in accelerator production of radioisotopes as long as 3 or 4 years is possible, if LAMPF is shut down and RHIC is fired up before work on the NBTF is completed.

As an interim solution, Dr. Mausner and colleagues are trying to win DOE support to run the Linac more than 40 weeks a year for the sole purpose of making radioisotopes. As it stands, isotope production is parasitic to the Linac's primary role as proton injector for Brookhaven's Alternating Gradient Synchrotron (AGS).

Linked to the fate of physics experiments at both Los Alamos and Brookhaven, production of accelerator radioisotopes has slowly eroded over the years.BLIP ran for 22 weeks and LAMPF about 22 weeks in 1992. Taking overlapping schedules into account, short-lived radioisotopes were produced for 36 weeks last year.

Prospects for 1993 are much worse. Funding for physics research has dried up and fewer experiments are scheduled for the Linac than last year. "It puts our schedule on top of Los Alamos," Dr. Mausner says, leaving a total of about 25 weeks of isotope production between the two facilities.

"Nothing is final," Dr. Mausner says. He notes that physicists have booked experiments in 1994 for a solid 6 months with little overlap scheduled between BLIP and LAMPF.

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