Michael J. Welch Receives Cassen Award

Michael J. Welch, PhD, codirector of the Division of Radiological Sciences at Washington University's Mallinckrodt Institute of Radiology (St. Louis, MO) and head of the institute's Radiochemistry Laboratory, was presented with the 2004 Benedict Cassen Award at the SNM Annual Meeting on June 22. The biennial honor, given by the Education and Research Foundation for the SNM, is awarded to a living scientist or physician-scientist whose work has led to a major advance in basic or clinical nuclear medicine science.

Donated by the estate of Mary Wylie Cassen, the award honors Benedict Cassen, whose invention of the rectilinear radioisotope scanner—the first instrument capable of making an image of a body organ in a patient—was seminal to the development of clinical nuclear medicine. Welch's highly regarded work on rapid synthesis of positron-labeled organic chemicals was of vital importance in the development of PET at Mallinckrodt Institute in the early 1970s and in the technology's subsequent application to diagnostic medicine. "It is a great honor for me to receive the Cassen Prize," said Welch. "Although I am the 6th awardee of the prize, I am the first 'synthetic chemist' to be so honored. I believe that the synthesis of new radiopharmaceuticals is one of the cornerstones of nuclear medicine and will continue to be so into the foreseeable future. The expansion of our field will depend upon the continued development of novel agents for the molecular targets being discovered today and in the future."

Welch received his undergraduate and initial graduate degrees from Cambridge University and earned his doctorate in radiochemistry from the University of London in 1965. Applying modern organic chemistry to the preparation of radioactive elements used in medical imaging, he developed rapid methods to synthesize positron-labeled organic chemicals, a process essential in making PET into a practical clinical modality. In the late 1980s, he and colleagues demonstrated that PET scans using radiolabeled estrogen could locate human receptors for the hormone. Subsequent PET studies with radiolabeled compounds provided a rapid and sensitive way to study biological processes in the nervous system. These and other efforts also helped PET gain acceptance for detecting breast and other cancers and for making beneficial choices in patient management.

Michael Devous (left) congratulated Michael Welch after the Cassen Lecture and award presentation.

The National Institutes of Health (NIH) recently extended the funding mechanism for "Cyclotron-Produced Isotopes in Biology and Medicine," which, at 44 years, is among the longest continuously renewed NIH research grants. The grant has been extended for another 5 years with an additional $11 million in funding. Welch has been a principle investigator since 1979.

Additional current research at Mallinckrodt involves radiolabeling agents that can be utilized to assess the receptor status of breast tumors, the preparation of other ligands with higher binding affinity for greater contrast in imaging, and the application of microwave heating to increase the rate of chemical reactions leading to radiolabeled compounds. Welch's group is also investigating the potential for both diagnosis and therapy with metal radionuclides.

Welch was elected to the Institute of Medicine in 1999 and was president of the SNM in 1984. Among his many honors are the SNM's Georg Charles de Hevesy Nuclear Medicine Pioneer Award (1992); the Paul C. Aebersold Award (1980); and the Berson–Yalow Award (1988, 1990); as well as the American Chemical Society's St. Louis (1988), MidWest (1991), and National (1990) Awards for Nuclear Chemistry. He has served for many years on the editorial board of *The Journal of Nuclear Medicine*.

Past recipients of the Cassen Award have included Hal O. Anger, DSc (1994), for his invention of the scintillation camera; David E. Kuhl, MD (1996), for his development of emission reconstruction tomography and quantitative measurements of brain physiology; Henry N. Wagner, Jr., MD (1998), for his contributions to nuclear medicine as a scientist, teacher, and clinician; Gerald L. DeNardo, MD, and Sally J. DeNardo, MD (2000), for their work contributing to the development of radiolabeled antibodies and radioimmunotherapy; and Michael E. Phelps, PhD (2002), for his involvement and work in translating PET science into clinical medical practice.

Aebersold Award Presented to Hank F. Kung

Hank F. Kung, PhD, professor of radiology and pharmacology at the University of Pennsylvania (Philadelphia), was presented with the 2004 Aebersold Award for outstanding achievement in basic science applied to nuclear medicine at the 51st Annual Meeting of the SNM on June 20 in Philadelphia. Kung is known for his work in the development of radiopharmaceuticals. He was instrumental in developing PET and SPECT imaging agents for dopamine and serotonin neurotransmitters, and his laboratory group's research activities cover a wide spectrum of scientific disciplines including drug design, organic synthesis, radiochemistry, receptor pharmacology, pharmacokinetics, and PET and SPECT imaging.

"I am dedicating this award to my wife, Dr. Mei-Ping Kung, who is the real scientist in the family," said Kung in accepting the award. "She is the best-kept secret of my lab. I also want to thank the Society of Nuclear Medicine and my current and former lab members. Especially, I want to thank Dr. Robert Mach, professor of radiology, Washington University, St. Louis, for his friendship and long-standing collaboration. Our work is built on the contributions of many colleagues and collaborators around the world."

Hank Kung, PhD, and spouse, Mei-Ping Kung, PhD, with the Aebersold Award at the Society of Nuclear Medicine meeting in Philadelphia, June 20.

The Aebersold Award is named for Dr. Paul C. Aebersold, a pioneer in the biologic and medical applications of radioactive materials and the first director of the Atomic Energy Commission's Division of Isotope Development at Oak Ridge, TN. The first Aebersold Award was given by the SNM in 1973.

Kung was trained as a medicinal chemist at the School of Pharmacy, State University of New York at Buffalo. After postdoctoral training under Monte Blau at Roswell Park Memorial Institute, Kung joined the department of nuclear medicine at Roswell. He became a member of the department of radiology at the University of Pennsylvania in 1987.

The work of the Radiopharmaceutical Chemistry group at Penn covers an extraordinarily wide range of selective radiotracers and potential applications. The development of ^{99m}Tc-TRODAT-1, the first site-specific dopamine transporter-binding agent, under Kung's direction was widely heralded as a milestone in efforts to achieve both qualitative and quantitative imaging of neurodegenerative processes. The first use of the agent in human brain imaging was selected as the image of the year at the 1996 SNM annual meeting. The article on in vivo characterization of the agent received the Springer award for the best science paper for the *European Journal of Nuclear Medicine* (1997;24:372–380). Clinical studies have validated the use of the tracer as a diagnostic tool for Parkinson's disease and other neurodegenerative diseases.

In the past decade, a number of new ^{123}I-labeled neuroreceptor imaging agents for SPECT were developed in Kung's laboratory. Several have been or are being used successfully in clinical trials, including TISCH (D1 receptor); IBZM, IBF, and FIDA2 (D2 and D3 receptors); and IPT (dopamine transporter). The D2-imaging agent IBZM is currently available commercially in Europe, and the D2 receptor-imaging agent IBF is being developed in Japan. In March of 2003, the first human study of ^{123}I-ADAM, a new serotonin transporter tracer, was performed in the department by Dr. Andrew Newberg. The group reported on early results of biodistribution and imaging with the agent in *The Journal of Nuclear Medicine* (2004;45:834–841) earlier this year.

A look at the Web site of Kung's group (http://sunmac.spect.upenn.edu) shows the range and scope of work in the lab, as well as the multidisciplinary nature of work that characterizes the development of new tracers. Among the dozens of current research projects are the development of imaging agents for β-amyloid plaque, imaging agents that target breast tumor cells, and research into cardiac neuronal functioning.