Thomas F. Budinger to be Honored for Outstanding Contributions to Basic Science

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For his pioneering efforts in the study of nuclear medicine, including his use of instrumentation, diagnostic imaging, and his work in radiation therapy, Thomas F. Budinger, MD, PhD, will be awarded the Paul C. Aebersold Award for Outstanding Achievement in Basic Science Applied to Nuclear Medicine by the Society of Nuclear Medicine. Dr. Budinger is the director of the division of research medicine and radiation biophysics at Lawrence Berkeley Laboratory.

Innovative and Meticulous

William J. MacIntyre, PhD, chairman of the awards committee and past president of the Society, speaks highly of Dr. Budinger's work. "Tom Budinger has been recognized by the awards committee for his creative and fundamental contribution to a multitude of areas in nuclear medicine. These contributions include transmission tomography, positron and single photon emission tomography, and nuclear magnetic resonance, as well as many dynamic and imaging procedures. [These were] developed with Tom's unique combination of innovation and meticulous attention to rigorous scientific detail." Dr. MacIntyre, a former Aebersold Award winner, is staff physicist in the nuclear medicine department of the Cleveland Clinic and adjunct professor of biophysics at Case Western Reserve University.

Born in Evanston, Illinois, in 1932, Dr. Budinger received his Bachelor of Science degree in chemistry from Regis College in Colorado in 1954 and his Master of Science degree as a geological and physical oceanographer from the University of Washington in 1957. He was graduated from the University of Colorado Medical School in 1964. His interest in quantitative scientific studies of the human body led him back to basic science training in physics, and he received a PhD from the University of California at Berkeley in 1971 for work on mathematical theories applicable to biological and medical imaging.

He was employed as a physicist at Lawrence Livermore Laboratory at the University of California from 1966 to 1968. In 1968, he was appointed research physician with Donner Laboratory there, and in 1976, he became the head of the research medicine group. Dr. Budinger was named director of the Donner Medical Group one year later. He is currently the Henry Miller Professor of Medical Research at Donner Laboratory.

Thomas F. Budinger, MD

Dr. Budinger's contributions to basic science in nuclear medicine and radiation biology include experimental and theoretical investigations leading to a better understanding of the effect of beam radiation on specimens in the scanning electron microscope and methods to improve image quality. He developed several methods to improve preformance in computer tomography and created a package of computer algorithms for this work. In 1974, he took the first single photon

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During this time, Dr. McAfee made significant strides in rectilinear scanning—a relatively new field in 1960. This "included experimentations with 3-in crystals, then 5- and 8-in crystals until the cameras made them obsolete," Dr. McAfee noted.

In 1965, Dr. McAfee was offered the position of professor and chairman of the department of radiology for the newly constructed SUNY Upstate Medical Center (now called Health Science Center, Syracuse). After staffing the facility in just two short weeks, he embarked on pioneering research with radiopharmaceuticals—a new quantity at the time.

Dr. McAfee's intellectual stature receives high marks among his peers, who reverently refer to him as "Big John." He has had several works published as historical papers in the *Journal of Nuclear Medicine* and has been named the author of most frequently cited papers in Radiology from 1955–1986. Among the various honors accorded to him are the Paul C. Aebersold Award from the Society of Nuclear Medicine, the Johns Hopkins Alumni Award in Nuclear Medicine, and the Herrmann L. Blumgart Award from the New England Chapter of the Society of Nuclear Medicine. His Society memberships include The Society of Nuclear Medicine, the New York Academy of Medicine, the Radiological Society of North America, the Association of University Radiologists, and The American Roentgen Ray Society.

The Nuclear Medicine Pioneer Award was established in 1960 with selection of the recipient to be determined by the SNM President. In 1979, the name was modified to commemorate Georg Charles de Hevesy, PhD DcSci, the Hungarian chemist and developer of radiotracer technique. The award will be presented to Dr. McAfee at the 36th Annual Society of Nuclear Medicine Meeting next month in St. Louis, Missouri.

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emission computed tomography (SPECT) images of a human myocardium, using an Anger camera, a rotating turntable, and an external source for attenuation measurements.

In 1975, Dr. Budinger embarked on an ambitious project to build a dynamic positron emission tomography (PET), to take images of the blood flow in the living heart. Continuing his instrumentation developments, Dr. Budinger—with his colleagues Dr. Ronald Huesman and Dr. Stephen Dorenzo—completed an instrument enabling 2.6 mm resolution in human 3D tomography imaging, surpassing the previous approximately 5 mm limitation. This instrument is now being used in studies of Alzheimer's disease, stroke, epilepsy, heart disease, and other areas.

He has also investigated the light flashes observed by U.S. astronauts during heavy ion exposure in space and was able to reproduce this effect. Additionally, he has contributed to the development of a strontium-82/rubidium-82 generator for imaging of the human heart and determining the integrity of the blood brain barrier.

"Perhaps the single most important characteristic of Tom Budinger's accomplishments in the context of the Award is the fact that his approach to nuclear medicine has always been that of a pioneer whose interest was the application of basic science to the discipline," wrote Michel M. Ter-Pogossian, PhD, professor of radiology at the Mallinckrodt Institute of Radiology at Washington University Medical Center, in his nomination paper to the Society. "Indeed, the enormously broad scope of his activity was, in most instances, dictated by Tom's interest in blazing new trails based on his superb scientific background."

Dr. Stephen E. Dorenzo, senior biophysicist at Lawrence Berkeley Laboratory, notes a strong devotion to medical research: "Dr. Budinger has consistently and untiringly demonstrated an enthusiasm for basic medical science research throughout his professional career, and has frequently turned down offers of prestigious positions at more clinical institutions because of his dedication to basic medical research. His grasp of important developing topics and his ability to communicate their medical significance to others is recognized world-wide, and this is evidenced by the many lectures he is asked to deliver. His research activities have covered and continue to cover a wide spectrum of research medicine—always at the forefront of basic medical science.

The Paul C. Aebersold Award is named for a pioneer in the biologic and medical application of radioactive materials, the first director of the Atomic Energy Commission's Division of Isotopes Development at Oak Ridge. It was first awarded in 1973 and honors outstanding achievement in basic science applied to nuclear medicine. The award will be presented to Dr. Budinger at the 36th Annual Society of Nuclear Medicine Meeting to be held June 13–16 in St. Louis, Missouri.

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