Hevesy Nuclear Medicine Pioneer Award—1985

Michel M. Ter-Pogossian was born on April 21, 1925, in Berlin and spent his early years in Europe. His scientific career and education began at the University of Paris and its Institute of Radium, the revered scientific home of another nuclear pioneer, Madame Curie. Fortunately for the Mallinckrodt Institute of Radiology, he came to Washington University as a graduate student in 1947 to study in the Physics Department, obtaining a PhD degree in 1950. Dr. Ter-Pogossian has been associated with Washington University and the Mallinckrodt Institute of Radiology since that time, obtaining the rank of full professor in 1961, and becoming the Director of the Division of Radiation Sciences in 1971.

Dr. Ter-Pogossian has been honored on many previous occasions. He has received the Paul C. Aebersold Award from the Society of Nuclear Medicine and the Herrman L. Blumgart Pioneer Award from the Society's New England Chapter. His previous lectureships include the New Horizons Lecture for the Radiological Society of North America, the Wendell Scott Lecture at Washington University, the Benedict Cassen Lecture at UCLA, the David Gould Lecture at Johns Hopkins University, the Landauer Memorial Lecture, and the Hanns Hecht Lecture at the University of Chicago. He is an honorary fellow of the American College of Radiology and the Society Belge de Medecine Nucleaire. He serves on the Editorial Boards of *The Journal of Nuclear Medicine*, the *American Journal of Roentgenology*, the *Journal of Computer Assisted Tomography*, and *Postgraduate Radiology*. He has also served as the editor of the *IEEE Transactions on Medical Imaging*. He has served on advisory committees for the Department of Energy, the National Institutes of Health, and the United States Food and Drug Administration. These many honors and positions of responsibility are illustrative of the respect his many scientific achievements have earned for him.

Dr. Ter-Pogossian has indeed made many important research contributions. The most recent example has been his role in developing and promoting positron emission tomography (PET) as an important biomedical research technique and clinical diagnostic procedure. His interest and contributions to this field began in 1951, with experiments utilizing scintillation crystal systems for detecting radioactivity in vivo (*1*); subsequently, the detector systems were used to identify brain tumors in patients (*2,3*). The next critical step was demonstrating how positron emitting isotopes of oxygen (^{15}O) could provide valuable information on the kinetics of respiration (*4*). Dr. Ter-Pogossian pioneered the use of medical cyclotrons and demonstrated the importance of their availability at medical centers for biomedical research (*5,6*). His studies subsequently demonstrated that cyclotron-produced isotopes could quantitate physiologic information from *specific anatomic regions* of the brain (*7*) and were clinically relevant (*8*). Utilization of more complicated metabolites (e.g., carbon-11 (^{11}C) glucose) was the next critical step (*9,10*).

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A key contribution leading to the birth of PET was the development of specific imaging equipment to obtain three-dimensional regional physiologic information in relatively brief time periods (*11*). In vivo, real-time cerebral studies were then possible (*12*). Dr. Ter-Pogossian next designed and built instrumentation with markedly improved specifications for the use of PET in anatomic areas other than the brain, such as the heart (*13,14*). A series of increasingly sophisticated physiologic in vivo procedures were carried out, including the measurement of regional myocardial metabolism with [^{11}C]palmitate (*15*) and regional cerebral oxygen utilization (*16,17*). He continues to make major improvements in the field, including the recent use of "time-of-flight" techniques (*18*) and improved electronic systems using cesium fluoride detectors. Now that PET systems are becoming available throughout the world and are utilized daily in the care of patients, they are increasing our understanding of many serious human diseases (myocardial infarction, cerebral stroke, and cancer), and promise to revolutionize the clinical approach to these diseases.

Why do we honor Michel Ter-Pogossian? Personally, I believe it is because Michel Ter-Pogossian has played such a key role as an innovator in the development of medical cyclotrons, short-lived isotopes, and detector sys-

tems for clinical use. He is a role model for others in his careful approach to scientific design, careful documentation, statistical analysis, and straightforward reporting of research results. He has recruited and taught many students to become independent scientists and carry on his high standards of excellence. He has the ability to work with physicians, scientists, and technicians from many disciplines, both as a leader and as a team player. Scientific accomplishments in nuclear medicine require input from physicians, physicists, engineers, physiologists, chemists, and computer scientists, to name some of those who have contributed to Dr. Ter-Pogossian's accomplishments.

Finally, he makes things happen. Innovation, careful research, and clinical projects are for naught unless they result in procedures, techniques, and systems that are used by others for good scientific and clinical reasons.

This year, The Society of nuclear Medicine is honoring more than an individual. By recognizing Michel Ter-Pogossian for special merit, we are underscoring the very important principle that innovative scientists are the foundation of the field of nuclear medicine.

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