

## Koral Receives 2011 Loevinger–Berman Award

**K**enneth F. Koral, PhD, an emeritus professor in the Department of Radiology at the University of Michigan Medical School (Ann Arbor), was named the recipient of the 2011 Loevinger–Berman Award for his outstanding contributions to the advancement of understanding of internal dosimetry in relationship to risk and therapeutic efficacy. The Loevinger–Berman Award, presented by the SNM Medical Internal Radiation Dose (MIRD) Committee at the 2011 Annual SNM meeting held in San Antonio, TX, is named in honor of Robert Loevinger, PhD, and Mones Berman, PhD, who formulated the MIRD schema for internal dose calculations. The award is given in recognition of excellence pertaining to the field of internal dosimetry as it relates to nuclear medicine through research and/or development, significant publication contributions, or advancement of the understanding of internal dosimetry, especially pertaining to risk and therapeutic efficacy.

Koral, the valedictorian of his high school in Cleveland, OH, earned his BS and PhD (nuclear physics) degrees from Case Western Reserve University (in 1963 and 1971, respectively). Before receiving his doctorate he worked as a physicist with the National Aeronautics and Space Administration in Cleveland. His postdoctoral training included 1 y at Queen's University (Belfast, Ireland) and 2 y as a National Cancer Institute research trainee at the University of Michigan. In 1979, he was appointed as an assistant research scientist in the Division of Nuclear Medicine at the University of Michigan and thereafter ascended through the ranks to senior research scientist and research professor before his retirement in 2007.

Koral began his research career at the University of Michigan working on developing and improving quantitative nuclear medicine imaging methods. His early collaborators at Michigan included W. Leslie Rogers, PhD, William Beierwaltes, MD, Glenn F. Knoll, PhD, and Neal H. Clinthorne. His earliest dosimetry paper was on the dose to neck lesions in thyroid cancer patients, published in *Medical Physics* in 1982. His work on Compton scatter correction in SPECT using spectral analysis methods led to several widely cited papers and multiple patents. In the past 2 decades his research became more focused on dosimetry applications. In the early 1990s, when  $^{131}\text{I}$  radioimmunotherapy was being developed at the University of Michigan by Mark Kaminski, MD, and Richard L. Wahl, MD, Koral's expertise in quantitative imaging and dosimetry was invaluable. He was a coauthor in the pioneering paper "Imaging, dosimetry, and radioimmunotherapy with iodine-131-labeled anti-CD37 (MB-1) antibody in B-cell lymphoma" (*J Clin Oncol*. 1992;10:1696–1711). Early on, Koral realized the need for quantitative SPECT to perform accurate dosimetry and proposed the hybrid conjugate view SPECT method, in which a SPECT measurement at a single time point is coupled with sequential planar



**Kenneth F. Koral, PhD (center), receives the 2011 Loevinger–Berman award from Yuni K. Dewaraja, PhD (left), and George Sgouros, PhD (right)**

measurements to improve time–activity estimation, which until that point was determined only by planar measurements. His proposed method was first published in the paper "Importance of intra-therapy single-photon emission tomographic imaging in calculating tumor dosimetry for a lymphoma patient" (*Eur J Nucl Med*. 1991;18:432–435). Today, this hybrid approach has been adopted by groups at multiple institutions in the United States and Europe.

Koral was one of the first to propose and utilize fused CT-SPECT images to improve imaging-based dosimetry, as reported in the paper "A method using CT-SPECT fusion plus conjugate views for dosimetry in  $^{131}\text{I}$ -MoAb therapy of lymphoma patients" (*J Nucl Med*. 1994;35:1714–1729). His expertise in quantitative imaging was sought out by the MIRD Committee when putting together guidelines for imaging-based dosimetry in pamphlet No. 16, which was published in 1999. He went on to publish papers on normal organ dosimetry in neuroblastoma therapy and on tumor dosimetry as well as dose-response in  $^{131}\text{I}$  therapy for non-Hodgkin lymphoma. In these studies particular attention was placed on improved quantitative imaging with emphasis on reconstruction, calibration, and registration of the data using methods developed by Koral and colleagues. His research in dosimetry led to multiple National Institutes of Health–funded R01 research grants, more than 75 peer-reviewed papers, and several book chapters. Since retirement, Koral continues to publish and is active in the dosimetry research community as a reviewer. In recognition of his many contributions to internal dosimetry, the MIRD Committee was delighted to select Kenneth F. Koral, PhD, as the 2011 Loevinger–Berman Award winner.

*Yuni K Dewaraja, PhD  
George Sgouros, PhD*

*For the SNM Medical Internal Radiation Dose Committee*