level to address training issues and inconsistencies. SNMTS will be discussing this issue at its National Council meeting in June in hopes of having some good discussion from chapter delegates regarding issues in their states.

The 2008 RT in DC advocacy event was a huge success, with more than 15 SNMTS members in attendance. In 2009, as the new president, senators, and delegates take office, we feel it is especially important to educate legislators on the challenges and successes faced by the nuclear medicine technologist community. RT in DC this year has been scheduled for April 20 and 21; SNMTS hopes to bring in more than 25 technologist members to meet with various state legislators. SNMTS will be collaborating with the American Society of Radiologic Technologists over the next several months on this effort.

Over the past 2 y, SNMTS has identified many up-and-coming new leaders in our organization through the new SNMTS/IBA Leadership Academy. The Leadership Academy has created an opportunity for our current SNMTS leaders to meet emerging leaders and work with them throughout a 2-d skill-building event. SNMTS has "graduated" 2 classes from the academy and looks forward to graduating a third next year. Applications will open in mid-February for the 3rd Annual SNMTS/IBA Leadership Academy. In addition, beginning at the Annual Meeting in Toronto, the Leadership Academy will have an annual reunion of all prior graduates. This reunion will allow graduates to continue the networking they started at the academy. Graduates should look for the announcement or invitation.

We are now in the second year of the SNMTS 5-y strategic plan. Over the next year, SNMTS President-Elect Cybil Nielsen will be chairing a strategic planning task force that will review the current strategic plan and develop it to better plan for the future of SNMTS. The task force will meet on February 5, during the SNM Mid-Winter Meeting, to begin creating new strategic goals. We invite all interested SNMTS members to attend the National Council of Representatives (NCOR) meeting on February 6, at which the task force will share the draft strategic goals and request feedback from NCOR attendees.

This is an exciting time for SNMTS, as we work to create the design for the future of the nuclear medicine technologist. We are ready for what the future holds—I just hope its ready for us! It's been a year to celebrate!

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SNMTS President

State of the Science of Molecular Imaging: 2008

This has been an exciting year for molecular imaging science, with the primary theme for the year being "multimodality." It is apparent that all of the imaging modalities we have at our disposal are crucial to the future of our field. The use of more than 1 of these modalities, either simultaneously or in tandem, has become commonplace, with developments in new combination instrumentation coming at a rapid pace. For example, while PET/CT is now the gold standard for clinical molecular imaging, PET/MR has come into its own this year. The research groups of Bernd Pichler, PhD, and Simon Cherry, PhD, published several papers on this subject in 2008, with papers on this topic in *The Journal of Nuclear Medicine* (*1–2*) and a high-profile paper published in *Nature Medicine* describing a 3-dimensional small animal PET scanner built into a 7T MR imaging unit (*3*). The prospects for combining functional MR imaging and/or MR spectroscopy with PET are particularly exciting, as this new technology will combine 2 functional/molecular imaging modalities into a single instrument (*4*).

Advances in neuroimaging have brought new insights into the brain's "default network," a specific, anatomically defined brain system preferentially active when individuals are not focused on the external environment (see the review by Buckner et al. [*5*] for an elegant treatise on this subject). The default network is active when we are engaged in what we might think of as "doing nothing" or when we are allowed to think unrestrained and undisturbed. The default network has relevance for understanding mental disorders including autism, schizophrenia, and Alzheimer's disease (AD). For example, emerging evidence suggests that activity in the default network augments a metabolic cascade that is conducive to the development of AD, because pathology of this disease appears in the default network even before symptoms emerge. The preferential use of the default network throughout life may be conducive to increased accumulation of the plaques and tangles that cause the dementia of AD. Metabolic PET and functional MR imaging have contributed greatly to the understanding of these important discoveries. The take-home message from this amazing research is to try not to let our minds wander, but to be more focused and disciplined throughout our lives!

Carolyn J. Anderson, PhD

In the area of cardiovascular imaging, recent progress has been made in multimodality imaging of atherosclerotic

plaques. Until recently, only advanced disease could be detected noninvasively. Nahrendorf et al. (*6*) described a combined PET/MR/optical nanoprobe to image the biomarker CD68 on macrophages in atherosclerotic plaques. Sanz and Fayad (*7*) described many of the novel targets being investigated for early detection of coronary artery disease by PET, SPECT, optical, and MR imaging.

Although ^{18}F-FDG in PET has been the gold standard for molecular imaging since the 1970s, there is always more to learn about this tracer. A recent essay by Hsu and Sabatini (*8*) discussed the Warburg effect of aerobic glycolysis and the fact that, although it is the key metabolic hallmark of cancer, we still do not fully understand its significance. In the 1920s, Otto Warburg discovered that, even in the presence of ample oxygen, cancer cells prefer to metabolize glucose by glycolysis, despite the fact that (compared with oxidative phosphorylation) this is a less efficient pathway for producing adenosine triphosphate (*9*). The Warburg effect is exploited for imaging tumors with ^{18}F-FDG PET, but do we ever wonder about the underlying mechanisms of why FDG is giving us either a high or low standardized uptake value in a particular tumor? Hsu and Sabatini remind us that the Warburg effect in tumor, as measured by FDG, may be telling us that genetic changes or perhaps demands of the microenvironment are driving the tumors to take up our favorite molecular imaging tracer. Why are some tumors refractory to imaging by ^{18}F-FDG PET? Many hypotheses have posited answers to this question, and it is hoped that by probing even deeper into tumor metabolism we can learn more about a particular tumor than just its mere presence or whether it is responding to a specific therapy.

Finally, let us not forget that the Nobel Prize in Chemistry was presented to Osamu Shimomura, PhD (Marine Biology Laboratory; Woods Hole, MA), Martin Chalfie, PhD (Columbia University; New York, NY), and Roger Tsien, PhD (University of California, San Diego) for the discovery and development of green fluorescent protein (GFP). Using GFP and the kaleidoscope of other proteins developed by Tsien, molecular imaging scientists have been able to study proteins, tracking the growth and fate of a variety of cell types to learn more about all the diseases discussed here. The winning topic of the 2008 Nobel Prize in Chemistry reminds us of the great science and scientists behind a ubiquitous tool in molecular imaging. As our arsenal of multimodality imaging instrumentation and probes grows, we will be probing ever deeper into the basic processes of metabolism, disease, and optimal health.

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Physics Applications in Nuclear Medicine: 2008 in Review

In 2008 many new ideas became available for internal dose assessment, and excellent progress was seen as well in the area of instrumentation. Significant advances were seen in detector development and image analysis methods, and new tools and information for dosimetry became available. Electronic resources continued to play a significant role in these essential areas of investigation.

Radiation Dose Assessment

RAdiation Dose Assessment Resource (RADAR) task group and Web site: The RADAR task group of the SNM maintains an information Web site (www.doseinfo-radar.com) that regularly provides dose calculational tools and data to SNM members and other investigators around the world, averaging 5,000 visitors with more than 30,000 page hits per month.

The focus of the RADAR task group is to: (1) provide accurate and up-to-date information on input data (radionuclide decay data, absorbed fractions, standard organ masses, and other data) needed for radiation dosimetry to the scientific community on a timely basis; (2) perform research and develop new models and techniques to improve the state of the art in internal and external dosimetry; (3) publish information on dosimetry models and methods in journal articles, books, book chapters, conference proceedings, and others; (4) develop and publish software tools that facilitate