

TECHNOLOGIST N E W S

■ SNM-TS Highlights from Denver

The 43rd Annual Meeting of the Society of Nuclear Medicine in Denver brought together technologists from all over the world this year. Long-time attendees commented that they saw many new, enthusiastic faces among the professionals at the conference and exhibits.

SNM-TS Presidential Title Passed to Pickett

Martha Pickett, CNMT, assumed the position of Technologist Section president at the annual meeting. Pickett brings a wealth of experience, as an administrative technologist, an educator and a program director, to her new role. She was active in working with the im-



Martha Pickett, CNMT (left) accepts the Technologist Section presidency from outgoing President Lynn Fulk, CNMT, at the annual meeting.

mediate past-president, Lynn Fulk, CNMT, to accomplish a number of tasks over the previous year. Technologists formally welcomed Pickett to the presidency at the Technologist Section business meeting in June.

Rosenfeld Receives President's Award

Sheila Rosenfeld, CNMT received the President's Award for Outstanding Contribution at the annual meeting in Denver. Lynn Fulk, outgoing SNM-TS president, selected Rosenfeld in recognition of her continued outstanding service to the Technologist Section over her many years of membership. Rosenfeld's high-energy approach to life and her profession has made her a moving force behind the scenes of many achievements within the Technologist Section. While chairing the Continuing Education Committee for many years, Rosenfeld led the effort to institute the



Sheila Rosenfeld, CNMT receives the SNM-TS President's Outstanding Achievement Award from outgoing President Lynn Fulk, CNMT, at the annual meeting in Denver.

VOICE system. She also chaired the NMTCB soon after its inception and made important contributions to the organization's growth. Rosenfeld has been particularly dedicated to education. While directing the School of Nuclear Medicine Technology at St. Louis University in St. Louis, she mentors a new generation of technologists. Her dedication and perseverance have gained her wide respect in the technologist community. Sue Weiss, CNMT aptly summed up Rosenfeld's contributions, "Sheila's a super person and has stepped in many times to help wherever she was needed."

JNMT Awards Outstanding Paper of 1995

The associate editors of the *Journal of Nuclear Medicine Technology* selected "Optimal Reconstruction Filter Parameters for Multi-Headed Brain SPECT: Dependence on Count Activity" by Hong-Gang Liu, John M. Harris, Chakri S. Inampudi and James M.



Susan Gilbert, JNMT editor, presents two of the co-authors, Hong-Gang Liu (far right) and James M. Mountz, with the award for outstanding JNMT paper in 1995.

Mountz for the Outstanding Paper Award for 1995. Susan Gilbert, JNMT editor, presented Liu and Mountz with the award at the Technologist Section's business meeting in Denver.

The award-winning paper appeared in the December 1995 issue of JNMT (JNMT 1995;23:251-257). In this imaging paper, Liu, et al. demonstrated that proper selection of the frequency cutoff is the most critical parameter for optimization of image reconstruction quality.

New SNM-TS Fellows Inducted

The Technologist Section awarded fellowships to seven members during a ceremony at the annual business meeting in June. These members achieved fellow status through their participation in professional and civic activities, education, and professional experience and contributions:

Kenneth M. Blasius, CNMT
Carol V. Bonanno, CNMT
Paul E. Christian, CNMT
Lynette A. Fulk, CNMT
Miriam K. Miller, CNMT
Kathy S. Thomas, CNMT
Cynthia S. Wharton, CNMT

See the 1996 Annual Meeting Snapshots photo album in this article for photographs of each new fellow.

Paul Cole Scholarships Awarded

Twelve nuclear medicine technologist students received Paul Cole scholarships from the Education and Research Foundation at the annual meeting. Scholarships were awarded to: baccalaureate degree students Tina J. Haw, Kari L. Livingston, Travis J. Patten and Tammy M. Tesch; associate degree students Suzanne M. Diaz, John E. Millet, Thomas C. Pomfret and Gerald D. Wilburn; and certificate students Diann L. Christopher, Vickie L. Knauss, Victoria M. Lucas and Lori J. Tokarz. The fund was established by the Technologist Section, family and friends of Paul Cole, CNMT to help students continue on their chosen career path in nuclear medicine technology.

1996 Annual Meeting Snapshots



SNM-TS President Lynn Fulk, CNMT (left) accepts a monetary award from Joe Strauss, MD of Mallinckrodt Medical, Inc., for Technologist Section educational projects.



The new 1996 SNM-TS fellows receive their awards from President Lynn Fulk, CNMT, from the top: Kenneth Blasius, CNMT; Carol Bonanno, CNMT; Paul Christian, CNMT; Miriam Miller, CNMT; Kathy Thomas, CNMT; and Cynthia Wharton, CNMT. Outgoing President Lynn Fulk receives her fellowship award from James Wirrell, CNMT.

Incoming SNM President Michael D. Devous, PhD speaks to nuclear medicine technologists in Denver.



Peter T. Kirchner, MD, immediate past president of SNM, joins incoming SNM-TS President Martha Pickett, CNMT (left front), Kathy Thomas, CNMT (right front) and Denise Merlino, CNMT (left rear) at the SNM-TS President's Reception at the Denver Museum of Natural History.



Glenn Seaborg, PhD (center) is greeted by John Reilley, CNMT (left) and Susan Weiss, CNMT at the SNM President's Reception at the Petroleum Club.



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TECHNOLOGIST AWARDS

TECHNOLOGIST SECTION AWARDS

Scientific Paper

First Place

The Utility and Reproducibility of Semiquantitative Analysis of Sestamibi Breast Images

LK Dunnwald, SD Hartnett and DA Mankoff

University of Washington Medical Center, Seattle, WA

J Massler, C Mento, S Shodavaram, R Cason, S Das, TST Wang and RL Van Heertum
Columbia Presbyterian Medical Center, New York, NY

Second Place

Technetium-99m-Labeled Red Blood Cells: A Clinical Evaluation of Labeling Efficiency for Several Manufacturers' Methods

MP White, DM Cross,

Second Place

Scintimammography with Technetium-99m-MIBI: A Comparison of Early and Delayed Imaging

M Whiteley, J Cutrone, F Mishkin, L Diggles and I Khalkhali

Harbor-UCLA Medical Center, Torrance, CA

Third Place

Comparison of Technetium-99m-Sestamibi Uptake During Arbutamine Infusion Versus Exercise Stress

LFL Lu, MM Dalipaj and TD Ruddy

University of Ottawa Heart Institute at the Ottawa Civic Hospital, Ottawa, Canada

Student Scientific Poster

First Place

A Better Way to Prepare Point Sources for Scintillation Camera

KE Hobbick, DR Mack, TJ Hardyman, MG Redfern and JC Hung

Mayo Clinic, Rochester, MN

Second Place

Comparison of the Diagnostic Utility of Anterior Oblique Views and Lateral Views in Lung Perfusion Imaging

T Dao, F Mishkin, K Gil-Gomez and E Pong

Harbor-UCLA Medical Center, Torrance, CA

Third Place

Effects of EDTA on the Labeling Efficiency of Technetium-99m-Labeled Red Blood Cells with Ultra-TAG RBC Kit

MD Jacobs, DR Mack, S Chowdhury and JC Hung

Mayo Clinic, Rochester, MN

BRAIN COUNCIL TECHNOLOGIST AWARDS

First Place

An Evaluation of Differential Magnification During Acquisition for Brain SPECT

DC Vines, JK Payne, MD Devous Sr and M Ishibe

Mount Sinai Hospital and University of Toronto, Toronto, Ontario, Canada and University of Texas Southwestern Medical Center, Dallas, TX

Second Place

Simultaneous Acquisition of Transmission and Emission Data: A New Technique for Attenuation Correction in Brain SPECT

S Fischer, M Pechmann, K Tatsch and K Hahn

University of Munich, Munich, Germany

Third Place

Statistical Mapping of Cerebral Blood Flow (CBF) SPECT Using Three-Dimensional Stereotactic Surface Projection (3D-SSP)

RJ Ackermann, S Minoshima, EP Ficaro and DE Kuhl

University of Michigan Medical Center, Ann Arbor, MI

CARDIOVASCULAR TECHNOLOGIST AWARDS

First Place

Reliability of Left Ventricular Ejection Fraction Quantification Using an Automated Method with Gated SPECT-Perfusion Imaging in Patients with Myocardial Infarction

A Gagnon, G Bavaria, R Taillefer and S Lajeunesse

Hotel-Dieu de Montreal, Montreal, Canada

Second Place

Effect of Attenuation Correction on Technetium-99m Cardiac Perfusion Defect Extent and Severity Using Quantitative Analysis

JN Kritzman, EP Ficaro, PA Rose and JR Corbett

University of Michigan, Ann Arbor, MI

Third Place

Optimization of Maximal Likelihood Cardiac SPECT Reconstruction is Affected by Extracardiac Activity: A Phantom Evaluation

P deMans, D Natale, EN Heller, GI Zubal, FJT Wachters and AJ Sinusas

Yale University, New Haven, CT



Lisa Dunnwald, CNMT (third from left) and Shelley Hartnett, CNMT (far left) receive the award for first place Technologist Section paper from Donna Brinlee, CNMT (far right). Dunnwald receives a congratulatory handshake from President Lynn Fulk, CNMT.

Second Place

Optimized Preparation of Technetium-99m Sulfur Colloid (SC) for Use in Lymphoscintigraphy Studies

R Anderson and SM Karesh

Loyola University Medical Center, Maywood, IL

Third Place

Nonuniform Attenuation Correction of Technetium-99m-MAA Perfusion Lung SPECT

TM Hauser, EP Ficaro, RJ Ackermann, BA Dwamena and RL Wahl

University of Michigan Medical Center, Ann Arbor, MI

Scientific Poster

First Place

A Study of Sequential Factors Affecting Technetium-99m RBC Labeling Efficiency Using Ultra-TAG

A Russell, MV McMahon and GV Heller

Hartford Hospital, University of Connecticut, Hartford, CT

Third Place

Quantitative Lung Scans: How and Why?

R Lauderdale, K Blasius, F Lumia, C Dennis, D Murphy and E Paczolt

Deborah Heart and Lung Center, Brown Mills, NJ

TECHNOLOGIST SECTION STUDENT AWARDS

Student Scientific Paper

First Place

Biodistribution of Carbon-11-Beta-CNT in Mice

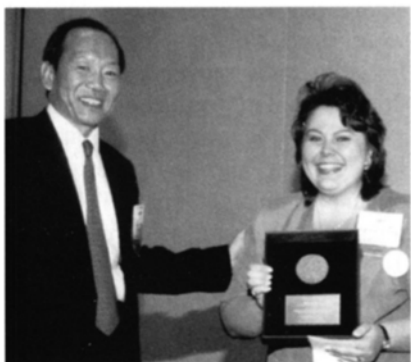
J Garrett, D Bowling, K Carlson and W Winkle

Indiana University School of Medicine, Indianapolis, IN

1995 PR Stars Contest Winners Announced

Monty Fu, Syncor's chairman of the board, presented the 1995 PR Stars Contest awards at the Technologist Section business meeting in Denver. The PR Stars Contest, formerly called the Media Stars Contest, recognizes individuals or groups for their creative awareness efforts in support of nuclear medicine. The 1995 contest was sponsored by Syncor Pharmacy Services.

Jossian Javier Pagán-Lisboa, CNMT, of Ashford Presbyterian Community Hospital in Puerto Rico, netted first



Monty Fu (right), Chairman of the Board of Syncor, presents awards to PR Stars Contest winners. This year's winners are: Jossian Javier Pagán-Lisboa for first place (top photo); Jody Nelson for second place (middle photo); and Sridhar Iyengar for third place (bottom photo).

place for his originality in increasing awareness of nuclear medicine at his hospital. Working with a small budget, Pagán-Lisboa made the most of balloons, banners, posters, the hospital paging system and a hat contest to promote nuclear medicine.

The second place winner was Jody Nelson, RT(R), CNMT of Southern Tennessee Medical Center, Winchester, TN. Nelson didn't confine her promotional efforts to Nuclear Medicine Week. She held workshops on total quality management and a nuclear medicine overview, created a customer-oriented newsletter and had vendors donate her own custom-designed buttons, pens, notepads and notebooks for distribution. Nelson's community-wide efforts included a television show that expanded into a regular medical spot on a local cable channel.

Sridhar Iyengar, of Mercy Memorial Hospital, Monroe, MI, earned third place with his creative promotions. He followed his announcement of Nuclear Medicine Week in his hospital's newsletter with a number of events. Iyengar arranged a tour of the nuclear medicine department for local high school students, held an open house and arranged for a lecture by a visiting speaker.

The PR Stars Contest is open to all nuclear medicine professionals. Next year, Technology Imaging Services will sponsor the PR Stars Contest. For information on participating in next

year's contest, please contact the Society of Nuclear Medicine at 703-708-9000 and request a Nuclear Medicine Week PR Kit.

Chapter Officer Update

This update includes the latest chapter election results and chapter changes since the listing published in the June *JNMT*. These people are your key contacts. Call them to discuss your concerns and ideas.

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SNM ELECTION RESULTS

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Vice President-Elect

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Martin L. Nusynowitz, MD

■ Why Do the SNM-TS Bylaws Need Revision?

Contributed by Kristen Waterstram-Rich, Bylaws Committee Chair

Two years ago, as SNM was going through restructuring, the Technologist Section began the development of a strategic plan. In preparation for producing the plan, National Council Delegates (NCDs) from the chapters were given surveys to complete by obtaining information from the grassroots members of their chapters. This information was compiled, distributed to and discussed with the National Council in a strategic planning meeting. As a result of that meeting, many goals and objectives were made to outline a plan of work for the Technologist Section to follow in order to respond to the information and suggestions given by the grassroots members in the survey responses. Several of the themes common to all responses were the need to: respond faster to changes in our environment, improve communications, work in a more cost-effective manner, require the leadership to provide accountability, and to improve the mentoring process. In order to employ some of these themes, it became apparent that the Technologist Section itself was in need of restructuring. In order to accommodate the restructuring, that was requested through comments on the surveys and voiced by NCDs, and to bring the SNM-TS more in line with the newly restructured SNM, the bylaws of the organization had to be revised.

At the SNM Annual Meeting, held in June 1996 in Denver, the proposed bylaws revision was presented. The document had been sent to National Council members in advance of the meeting and there was an informational session held the evening before to explain the document and answer any questions. The document presented to the council contained several articles which had options from which the council could choose so that the completed document would reflect the intent of the restructuring. The version of the proposed bylaws, which will be presented

at the SNM Midwinter Meeting in 1997, will be the document that contains the National Council's decisions that were approved by vote this past June. Within the next month NCDs will be receiving a copy of the proposed bylaws reflecting their decisions. The December issue of *JNMT* will have an article explaining the proposed changes in the bylaws, which are being made in response to the membership's request for change and which were approved by National Council vote in June 1996.

If you have any questions after reading the December *JNMT* bylaws article or if you would like more information, please contact your chapter NCD or any of the officers of the Technologist Section. If you don't know the name of your NCD or if you are unsure how to contact Technologist Section officers, check your June *JNMT* and this issue for updated listings of section officers and NCDs or contact the SNM-TS Central Office at 703-708-9000.

■ Review of the JNM Outstanding Manuscript Awards

Contributed by Jerry Glowniak, MD Consulting Editor, JNMT

Human Studies: "Vasoactive Intestinal Peptide Receptor Scintigraphy"

Irene Virgolini, Amir Kurtaran, Markus Raderer, Maria Leimer, Peter Angelberger, Ernst Havlik, Shuren Li, Werner Scheithauer, Bruno Niederle, Peter Valent and Hans-Georg Eichler

J Nucl Med 1995; 36: 1732-1739

Peptide receptor scintigraphy is a new and promising method of locating various types of tumors. Except for somatostatin, VIP receptor imaging has been the most studied of the peptide receptors. VIP, a 28-amino acid peptide, and its cell surface receptors are widely distributed throughout the body. The authors of this article had previously reported the results of ¹²³I VIP receptor imaging in a larger group of 38 patients with similar types of tumors (Virgolini I, Raderer M, Kurtaran A, et al. Vasoactive intestinal peptide-recep-

tor imaging for the localization of intestinal adenocarcinomas and endocrine tumors. *N Engl J Med* 1994;331:1116-1121.) The present study provides dosimetry, safety and biodistribution data. One shortcoming of this study is that only patients with tumors were studied. The authors tried to control for the effects of the tumors in various ways, but since some of the tumors were hormonally active, it is uncertain how well these results apply to patients without tumors.

This paper reports on a study whose primary aim was to determine the biodistribution, safety and absorbed dose of ¹²³I VIP (vasoactive intestinal peptide). Eighteen patients who had been referred to the University of Vienna, Vienna, Austria for suspected VIP positive tumors formed the study population. Tumors studied included 3 pancreatic adenocarcinomas, 3 colonic adenocarcinomas, 3 pheochromocytomas, 3 medullary thyroid cancers, 4 carcinoids and 2 gastrinomas. Patients were injected with 4 to 5 mCi of ¹²³I VIP and imaged at several time points over 24 hr. Urine, blood and feces were collected over the same period. Ninety-three percent of the injected dose was excreted in the urine over 24 hr. The lung had the highest uptake of any organ at all imaging times. The target organ was the thyroid at 386 mrad/mCi. The effective dose was 104 mrem/mCi. Except for a transient drop in blood pressure, there were no side effects. Of 18 patients, 9 had positive scans.

Human Studies: "Positron Tomographic Assessment of Estrogen Receptors in Breast Cancer: Comparison with FDG-PET and In Vitro Receptor Assays"

Farrokh Dehdashti, Joanne E. Mortimer, Barry A. Siegel, Landis K. Griffith, Thomas J. Bonasera, Maureen J. Fusselman, Diana D. Detert, P. Duffy Cutler, John A. Katzenellenbogen and Michael J. Welch

J Nucl Med 1995; 36: 1766-1774

Breast cancer can be treated with chemotherapy or by administration of sex steroids, primarily estrogens. The

response to endocrine therapy is much higher in patients whose tumors are positive for estrogen receptors (ERs) than in patients whose tumors are negative. Currently, a biopsy and in vitro analysis of the tumor is required to determine its ER status, and only the status of the biopsied lesion is known. Other lesions are presumed to have the same ER status. ER imaging with PET is conceptually a better method of determining the ER status of all tumors in a patient assuming there is a high correlation between ER status in vitro and radiolabeled estrogen (¹⁸F-fluoroestradiol, FES) imaging in vivo. The authors in this study have demonstrated this correlation. FES imaging, however, is available at only a few centers. If there is a correlation between FDG (¹⁸F-fluorodeoxyglucose) and FES uptake, FDG could serve as a surrogate for FES imaging. The results of this study demonstrate there is no correlation between the uptake of these two agents, and thus FDG uptake gives no information about whether endocrine or chemotherapy is more appropriate in a given patient.

This study describes the relationship between the uptake of two PET radiotracers, FDG and FES, in 53 women with suspected breast cancer. Thirty-two women had primary breast lesions, 24 of which were cancer. Another group of 21 women had suspected metastatic or recurrent disease, which was confirmed in 19 patients. Twenty-three of 24 women with primary breast cancers and 17 of 19 patients with recurrent/metastatic disease had biopsies in which the estrogen receptor (ER) status of the tumor was determined. Both groups of patients had whole-body PET scans with FES and FDG. In patients with primary breast lesions, the FES scan was positive in 6 of 10 ER positive patients (sensitivity 60%) and negative in 13 of 13 ER negative patients (specificity 100%). FDG scans were read as definitely or probably abnormal in 22 of 24 patients (sensitivity 91%). In metastatic/recurrent patients, the FES scan was positive in 9 of 10 ER posi-

tive patients (sensitivity 90%) and negative in 7 of 7 ER negative patients (specificity 100%). All 19 patients had definitely or probably abnormal FDG scans (sensitivity 100%). In 43 malignant lesions subjected to quantitative analysis, there was a poor correlation ($r=0.15$, p value not significant) between uptake of the two agents.

Human Studies: "In Vivo Protein Synthesis Rate Determination in Primary or Recurrent Brain Tumors Using L-[1-¹¹C]-Tyrosine and PET"

A.T.M. Willemsen, A. van Waarde, A.M.J. Paans, J. Pruim, G. Luurtsema, K.G. Go and W. Vaalburg
J Nucl Med 1995; 36: 411-419

This study was primarily a description of a new form of parametric brain imaging using data obtained from ¹¹C-TYR PET studies. The main idea behind this method is that some measure of tumor function is sufficiently different from that of normal brain that it can be used to identify tumors on PET images. Several different types of quantitative and parametric imaging methods have been described for PET studies to improve sensitivity and/or specificity in detecting disease. This study was not designed to test how well this method performed clinically compared to other modalities. In particular, the authors did not state whether the PSR method was more useful than simple image interpretation of the ¹¹C-TYR brain images. As with any method, the usefulness of this technique can only be assessed by a well-designed clinical trial.

In this study, the amino acid tyrosine labeled with ¹¹C-TYR was used to study brain tumors. In an attempt to improve tumor detection over PET scanning with FDG, the authors developed a method for measuring the protein synthesis rate (PSR) of tumors and normal brain using ¹¹C-TYR. The primary purpose of this paper is to describe a five-compartment model of ¹¹C-TYR from which a parameter of tissue metabolism, the PSR, is derived using standard kinetics analysis. The method was applied to 11 patients with brain tumors. Results are expressed as

the ratio of the PSR for the tumor divided by the PSR of the contralateral normal brain region. Two patients were excluded from this analysis: one patient in whom there was no increased uptake in the tumor and another for unstated reasons. In the 9 remaining patients, the average tumor to normal brain PSR ratio was 1.72 with all nine patients showing greater tumor than normal brain uptake.

Laboratory Studies: "Metaiodobenzylguanidine as an Index of Atrioventricular Nodal Adrenergic Activity"

Keith G. Lurie, Michael W. Dae, John Dutton, Sara J. Velazquez-Rocha and J. William O'Connell

J Nucl Med 1995; 36: 1096-1101

The sympathetic nervous system exerts a major influence on myocardial function. Sympathetic stimulation increases the heart rate, the force of myocardial contraction and the speed of electrical impulses in the heart. Sympathetic neurons innervate all portions of the heart and directly modulate the function of both conducting tissues and muscle cells. Abnormalities in sympathetic function appear to play a major role in various forms of heart disease. MIBG has been used to study cardiac sympathetic activity and has helped to better define the role of the sympathetic nervous system in health and disease. Gamma camera images, however, do not have the resolution to determine whether abnormalities in cardiac MIBG studies are due to changes in neurons affecting the conduction system or the myocardium. The authors have demonstrated a method that allows these systems to be studied separately so that their individual contributions to the manifestations of various types of heart disease can be elucidated.

This is an autoradiographic study of the perfusion and adrenergic activity of the atrioventricular node (AVN) and the His bundle (the major structures conducting electrical impulses from the atria to the ventricles) in rat hearts. The authors used ¹²⁵I and ¹²³I-MIBG as markers for sympathetic neurons and ²⁰¹Tl-thallos chloride and ^{99m}Tc-ses-

gional basis, there was approximately 50% greater uptake of MIBG in the AVN and His bundle than in the surrounding myocardium. Perfusion to these tissues was similar indicating that the findings were not due to differences in blood flow. When corrected for differences in the extracellular space which was greater in the AVN and His bundle than in the myocardium, cellular uptake of MIBG was approximately three times greater in the AVN and His bundle.

Dosimetry: "Generalized Approach to Absorbed Dose Calculations for Dynamic Tumor and Organ Masses"

S. Marty Goddu, Roger W. Howell and Dandamudi V. Rao

J Nucl Med 1995; 36: 1923-1927

Dosimetry calculations are usually based on the assumption that the irradiated tissue does not appreciably change its volume over time. This assumption is incorrect for tumors which may show either shrinkage due to therapy or growth during the time that radiation is delivered. This study presents a method for adjusting dosimetric estimates based on tumor growth patterns. As the authors point out, however, tumors rarely change volume rapidly over the time in which radiation is delivered, and these dosimetry adjustments would be required in only a few clinical situations at present.

In this article, the authors develop a mathematical model that incorporates tumor growth characteristics into estimates of dosimetry. The main conclusion was that dosimetry is altered in tumors that have doubling or shrinkage half-times that are comparable to or less than the effective half-life of a radiopharmaceutical in the tumor. In particular, tumors that shrink rapidly receive a higher radiation dose than tumors that are static while tumors that grow rapidly receive a smaller dose. The authors present dosimetric data from an in vitro tumor study showing how tumor growth is affected by irradiation with tritiated thymidine.

Special Contribution: "Neuropeptide Receptors in Health and Dis-

ease: The Molecular Basis for In Vivo Imaging"

Jean Claude Reubi

J Nucl Med 1995; 36: 1825-1835

Neuropeptides are a diverse group of small peptides (generally less than 30 amino acids) that were for the most part initially discovered in the central nervous system. It was soon appreciated that many of these peptides were produced in numerous tissues throughout the body. Effects of neuropeptides are mediated by binding to cell surface receptors on target tissues. The clinical importance of neuropeptide receptor imaging derives from the fact that many tumors have increased numbers of neuropeptide receptors. At present, the only widely available receptor imaging agent is ¹¹¹In-octreotide. However, new somatostatin analogs that can image a wider range of tumors and imaging agents for other receptors are being developed. VIP receptors in particular occur on a wide variety of tumors. At present, only ¹²³I-labeled VIP has been tested clinically, but it is not an ideal agent, and other analogs are being sought.

In this article, Dr. Reubi reviews current knowledge of neuropeptides and their receptors and explores the relationship to clinical imaging. The article deals almost exclusively with somatostatin, but there are short summaries of work being done with VIP, substance P and alpha-melanocyte-stimulating hormone. The review concentrates on in vitro work that has clarified results of clinical experience with somatostatin receptor imaging agents, primarily ¹¹¹In-octreotide. The five known somatostatin receptor subtypes are discussed along with their significance for clinical imaging.

ACNP/SNM Government Relations Committee Activities

Contributed by David Nichols, Associate Director ACNP/SNM Government Relations Office

SNM Annual Meeting

Several issues were discussed at the

Denver meeting of the ACNP/SNM Government Relations Committee in conjunction with the SNM Annual Meeting. The first issue dealt with the National Academy of Sciences Institute of Medicine (NAS/IOM) report and a resolution proposed by the committee. Supporting previous positions taken by the leadership of both organizations, the committee approved a resolution that read:

Be it resolved that the ACNP and SNM endorse the NAS/IOM report conclusions regarding the inappropriate regulation of the use of byproduct material in medicine (as contained in 10 CFR Part 35) and endorse the need for urgent regulatory reform. Be it further resolved that the ACNP and SNM offer their active support to state and federal agencies to achieve the necessary regulatory reform.

This resolution, considered by the governing bodies of both ACNP and SNM, now puts the organizations officially on record with regard to the NAS/IOM report. In addition, the Technologist Section's National Council discussed this issue and passed the following resolution:

Be it resolved that the SNM-TS supports the principles identified in the NAS/IOM report, recognizing the complexities surrounding the implementation of the NAS/IOM recommendations.

Be it also resolved the SNM-TS (through the ACNP/SNM Government Relations Committee) brings forward its knowledge and expertise as an integral part of discussions and resolutions pertaining to the development of implementation plans.

There was also considerable debate about the implementation of the NAS/IOM recommendations. To tackle this complex issue, a task force was formed from the government relations committee and charged with examining the report, extracting those points that are agreeable to the nuclear medicine community and developing an implementation plan to achieve the final goals of the community. This task

force consists of Robert F. Carretta, MD, Lynne Roy, CNMT, Roy Brown and Carol S. Marcus, PhD, MD. The task force hopes to present a final implementation plan to the leadership by the middle of July.

The committee also reviewed activities involving FDA reform, noting that provisions addressing the approval of radiopharmaceuticals was already in the Senate bill, and likely to be placed in the House legislation. This legislative effort dovetails with a regulatory effort already under way in the FDA's Medical Imaging Drugs Advisory Committee (MIDAC). On July 23, 1996, the MIDAC will review a draft "points to consider" document that will outline some of the criteria FDA would use to approve radiopharmaceuticals.

The other major item of discussion on the Government Relations Committee was the creation of a nuclear medicine political action committee (PAC). This PAC would channel contributions from the nuclear medicine community to congressional candidates who are supportive of issues concerning nuclear medicine. This issue was tabled until the February 1997 meeting where a more detailed presentation could be made.

American Medical Association Annual Meeting

During its 1996 Annual Meeting, the AMA considered several resolutions on issues that are being followed by the nuclear medicine community. The first resolution dealt with support for the conclusions raised by the NAS/IOM report. In 1995 the ACNP offered a resolution seeking the support of the AMA for the conclusions of the NAS/IOM report. Following that meeting, the ACNP and SNM met with staff at the ACR to work out compromise language that all three organizations could support. That compromise resulted in the AMA approving the following resolution:

1. The AMA supports Congressional action to address the urgent need for reform of the regulation of medical use (diagnostic and therapeutic)

of reactor generated byproduct material and supports enabling legislation for the incorporation of regulations for the medical use of reactor-generated byproducts into existing state regulatory programs.

2. The AMA encourages state and interested specialty medical societies to participate in the reform process in order to ensure that states have the requisite resources and expertise to regulate all ionizing radiation in medicine and assure its safe and effective use in patients.

3. The AMA will monitor the progress of legislative and regulatory efforts to reform federal rules and regulations for the use of reactor-generated byproducts in medicine.

4. The AMA supports the immediate relaxation of enforcement of the NRC's Quality Management Rule and the redress of other aspects of the Medical Use Program (10 CFR 35) that are unnecessarily intrusive, overly prescriptive and costly.

This resolution will be extremely helpful in the ACNP/SNM congressional campaign to show that organized medicine, outside of nuclear medicine, agrees that reform of the current regulatory system for nuclear medicine and radiation oncology needs to be addressed.

The AMA also addressed the issue of implementation of the resource-based practice expense study currently being conducted by the Health Care Financing Administration (HCFA). The HCFA recently announced that facility survey data currently being collected would not be available prior to the HCFA publishing a proposed rule implementing the practice expenses. This is due to a congressional mandate that the practice expenses values be in place by January 1, 1998. The AMA supported a resolution that would seek a delay in the implementation of the practice expenses until all of the useful information could be gathered by the HCFA. Presumably this would push back implementation of the practice expense data by one year until January 1, 1999.

ACNP News

The IOM Report and the NRC
*Contributed by Sharon Surrel, CNMT
ACNP Program Director*

Background

In his 1996 State of the Union Address, President Clinton declared, "The era of big government is over." The recommendations from the National Academy of Sciences Institute of Medicine (IOM) Committee for Review and Evaluation of the Medical Use Program of the Nuclear Regulatory Commission (NRC) point in this direction.

The IOM was chartered in 1970 by the National Academy of Sciences (NAS) to enlist distinguished members of the appropriate professions in the examination of policy matters pertaining to the health of the public. The IOM acts under both the NAS's 1863 congressional charter responsibility to be an advisor to the federal government and its own initiative in identifying issues of medical care, research and education.

Today, the NRC regulates nuclear reactor-generated byproduct materials used in medicine, which account for only about 10% of radioactive materials used in medicine. The remaining 90%, which uses both machine-produced radioactive materials and naturally occurring and accelerator-produced radioactive materials (NARM), is regulated primarily by the states.

Three events played an important role in prompting the IOM report reviewing the NRC's Medical Use Program: a November 1992 radiation incident in Indiana, Pennsylvania that resulted in the death of a patient; a December 1992 week-long series of articles in the *Cleveland Plain Dealer* on the hazards of radiation medicine; and a May 1993 congressional hearing, chaired by Senator John Glenn, on the regulation of radiation medicine. Although incidents of misadministration of ionizing radiation are rare, the inadvertent exposure of a patient to a high dose of radiation drew attention to the need to examine current regulatory practices.

During the summer of 1993, prompted by this sequence of events, the NRC negotiated with the IOM to undertake an independent review and evaluation of the NRC's Medical Use Program. The review was intended to complement an internal management review already under way within the NRC.

The Issues

In examining the existing NRC Medical Use Program, the IOM Committee compared the regulation of byproduct material with the regulation of other sources of medically used ionizing radiation and with the regulation of medicine in general. The scope of this comparison was undertaken with an awareness by all parties involved that suggested the entire regulatory system needed to be examined. In particular, a major question for the IOM Committee was whether the quantitative risks associated with reactor-generated byproduct materials used in radiation medicine justified the extent to which byproduct materials are regulated compared to other sources of radiation medicine and to medicine in general.

Radiation in Medicine: A Need for Regulatory Reform is the IOM's completed report of their findings. The successes and problems of radiation medicine and the clinical applications of ionizing radiation are discussed in full. The report examines the existing regulatory system of radiation used for medical purposes. It specifically looks at the NRC's Medical Use Program. The discussion of the current regulatory system pertaining to radiation medicine and the evolution of that system, together with an examination of several aspects of the risks that are associated with ionizing radiation in medicine, are the centerpiece of the report. The report focuses on an appropriate regulatory model for ionizing radiation used in medicine. Seven alternative regulatory models are laid out including a discussion of the pros and cons of each. The report concludes with its recommendations.

The IOM Committee reviewed the following issues:

- Is greater uniformity of regulation

of all ionizing radiation in medicine desirable? Is it practicable?

- Should regulation of all ionizing radiation in medicine be consolidated so that byproducts, machine-produced radiation and NARM are all regulated by the states?
- Would restructuring regulatory authority, by expanding the state role to include byproduct materials in their present radiation control programs, adequately protect the public's health and safety?
- Assuming that a limited federal role in the oversight of radiation in medicine is desirable, should the NRC or some other federal entity be involved?

The ACNP Response

The American College of Nuclear Physicians (ACNP) through the Joint ACNP/SNM Government Relations Office is doing everything possible to alleviate the unnecessary regulatory burden imposed on members through onerous NRC regulation. The ACNP Board of Regents, recognizing the importance of the IOM report, approved the following Government Relations Committee resolution:

Be it resolved that the ACNP Board of Regents endorse the NAS-IOM report's conclusions regarding the inappropriate regulation of the use of byproduct materials in medicine (as contained in 10 CFR 35) and endorse the need for urgent regulatory reform.

Be it further resolved that the ACNP offer its active support to state and federal agencies and other organizations to achieve the necessary regulatory reform.

IOM Key Conclusions

The IOM Committee established the following key conclusions:

- Uniform regulation of all types of ionizing radiation in medicine is desirable.
- Regulation of all ionizing radiation, including byproducts in medicine, NARM and machine-produced radiation, should be consolidated at the state level.
- A federal agency, experienced in

matters of public health, should oversee some aspects of the use of radiation in medicine.

- Eliminating the NRC's Medical Use Program does not alter the basic structure of federal regulation. The federal government retains responsibility for regulating the generation, transport, nonmedical use and disposal of radionuclides, for approving radiopharmaceuticals, and for certifying or approving equipment that generates ionizing radiation in medicine.

IOM Recommendations

The IOM Committee made the following recommendations to Congress, the NRC and the Conference of Radiation Control Program Directors and the States. The committee recommended that Congress should eliminate all aspects of the NRC's Medical Use Program, 10 CFR Part 35, and those regulatory activities conducted under 10 CFR Part 20 that are applicable to medical uses. The committee also recommended that Congress should direct the Secretary of Health and Human Services to support, coordinate and encourage the following activities involving regulation of all ionizing radiation in medicine:

- Support the operation of the Conference of Radiation Control Program Directors.
- Provide a venue for the review and evaluation of Suggested State Regulations for Control of Radiation.
- Assist states in implementation of their regulations.
- Aid in assessment of the effectiveness of state programs through the collection and analysis of data.
- Help develop survey methods by which the rate of adverse events for a wide range of procedures and devices might be measured.
- Monitor the effects of deregulation.
- Enhance training and standards for health care personnel.
- Investigate future significant radiation medicine incidents.

The NRC should immediately relax

enforcement of 10 CFR 35.32 and 35.33 through its present mechanisms.

The NRC should initiate formal steps under the Administrative Procedure Act to revoke Part 35 in its entirety if Congress fails to act within two years in response to the two recommendations to Congress above. The NRC should separate the costs of formulating regulations from the costs of administering those regulations.

The Conference of Radiation Control Program Directors should incorporate into its Suggested State Regulations for Control of Radiation any relevant concepts from 10 CFR 35 that are not already integrated in those suggested regulations.

All state legislatures should enact enabling legislation to incorporate the regulation of reactor-generated byproducts into existing state regulatory programs.

The Conference of Radiation Control Program Directors and the states should continually reevaluate their regulations and procedures pertaining to radiation medicine to ensure congruence with evolving scientific understanding of radiation bioeffects and to be in accord with advances in knowledge regarding benefits and risks related to medical and biomedical research uses of ionizing radiation in medicine.

The hard-bound text, *Radiation in Medicine: A Need for Regulatory Reform*, is available for purchase from the National Academy Press, 2101 Constitution Ave. NW, Lock Box 285, Washington, DC 20055; call 800-624-6242 (or 202-334-3313 in the Washington metropolitan area) or visit the NAP on-line bookstore at <http://www.nas.edu/nap/bookstore>. Copies of the report summary are

available in limited supply from the Division of Health Care Services, Institute of Medicine; 202-334-2165 or by fax 202-334-3862.

■ News Briefs

DOE Releases Final EIS on Molybdenum-99

The U.S. Department of Energy (DOE) released the final environmental impact statement (EIS) analyzing DOE's proposed action and alternatives for medical isotope production of ⁹⁹Mo and related isotopes (DOE/EIS-0249). DOE's Medical Isotopes Production Project would establish a domestic production source to ensure that a reliable source of ⁹⁹Mo is available to the U.S. medical community. DOE's preferred alternative is to modify the annular core research reactor and adjacent hot cell facility at Sandia National Laboratories, New Mexico and the chemistry and metallurgy research facility at Los Alamos National Laboratory, New Mexico for production of medical isotopes.

Currently, the entire U.S. supply of ⁹⁹Mo is produced by a Canadian company, Nordion International, Inc. of Kanata, Ontario, using a single production facility. Molybdenum-99 is the source of ^{99m}Tc which, according to DOE, is used in about 36,000 medical diagnostic procedures a day in the U.S. The short half-life of 66 hr for ⁹⁹Mo and the even shorter half-life of 6 hr for ^{99m}Tc mean that neither radioactive isotope can be stockpiled. Therefore, DOE says that a disruption in the current supply would cause a shortage of these isotopes in the U.S. in a matter of days.

Health Physics Society Issues Position on Low Doses of Radiation
The Health Physics Society (McLean,

VA) recently adopted the position that quantitative estimates of health risks should be "limited to individuals receiving a dose of 5 rem [0.05 Sv] in one year or a lifetime dose of 10 rem in addition to natural background." Risk estimates for doses below these levels should be expressed only qualitatively and should emphasize the likelihood of no adverse health effects. This position statement was published in the society's March 1996 newsletter.

Dr. Kenneth Mossman (Arizona State University), former chairman of the Scientific and Public Issues Committee which wrote the society's position statement, says, "The Health Physics Society is advocating changes in culture in how you regulate at very low doses of carcinogens." He points out that the public can save billions of dollars by changing regulations so industry doesn't have to provide protection against very low radiation levels which do not create a health risk.

The society's position statement explains that the linear, no-threshold model is an "oversimplification of the dose-response relationship and results in an overestimation of health risks in the low dose range." This model for estimating health effects is based on the two assumptions that radiation exposure at any dose is a health risk and that the effects of even low doses are in direct proportion to the dose received. The statement points out that predictions of adverse health effects for exposures below 10 rem are only extrapolated risk estimates based on epidemiological studies of humans exposed to relatively high doses at high dose rates, such as Japanese atomic bomb survivors and medical patients.