

RSNA *News*



Radiography Reveals Mummy's Secrets

Also Inside:

- PET Shows Promise in Early Detection of AD
- RSNA Members and Subscribers Have Expanded Access to Scientific Literature
- MR Imaging Advances MS Diagnosis, Treatment
- New Report Released on Diagnostic Ultrasound
- Mentors Key to Successful Research Career

Advance Registration for RSNA 2003
Begins April 28

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Jackson Named Interim Chair of Radiology

Valerie P. Jackson, M.D., has been named interim chairman of the Department of Radiology at Indiana University in Indianapolis. Dr. Jackson, who delivered the Annual Oration in Diagnostic Radiology at RSNA 2002, has previously served as the John A. Campbell Professor of Radiology, director of the radiology residency program and chief of the breast radiology section. She is also president of the American College of Radiology.

Dr. Jackson succeeds **Mervyn Cohen, M.B., Ch.B.**, who resigned the chairmanship in December but remains in the department as a researcher and pediatric radiology clinician.



Valerie P. Jackson, M.D.

Kington Deputy Director of NIH

Raynard S. Kington, M.D., Ph.D., M.B.A., is the new deputy director of the National Institutes of Health (NIH). “I am delighted to have Dr. Kington at my side as deputy director during this critical time for biomedical research,” said NIH Director **Elias A. Zerhouni, M.D.** “He has shown great talent and has the right combination of skills and experience to help the NIH move forward in these revolutionary times for the biomedical sciences.”



Raynard S. Kington, M.D., Ph.D., M.B.A.



Elias A. Zerhouni, M.D.

Dr. Kington assumes the position held by **Ruth Kirschstein, M.D.**, who is now a senior advisor to Dr. Zerhouni. Board certified in internal medicine and public health and preventive medicine, Dr. Kington has worked for the NIH Office of Behavioral and Social Sciences Research and the National Institute on Alcohol Abuse and Alcoholism. He previously served as director of the Division of Health Examination Statistics at the U.S. Centers for Disease Control and Prevention.

Awards for Academic Excellence

Three radiologists received awards for academic excellence in February at the Mexican Society of Radiology and Imaging (SMRI) Annual Course of Radiology and Imaging. They are:

Kenji Kimura, M.D., of Mexico
Alberto Gómez del Campo, M.D., of Mexico,
 and **Francisco Quiroz, M.D.**, of Milwaukee.

In addition, SMRI instituted named lectures in honor of **J. Manuel Cardoso, M.D.**, 2002 RSNA second vice-president, and **Carlos Manzano Sierra, M.D.**, in recognition of their accomplishments and dedication to the field of radiology.



J. Manuel Cardoso, M.D.

Rohrbaugh Directs Office of Technology Transfer

Mark L. Rohrbaugh, Ph.D., J.D., has been appointed director of the Office of Technology Transfer (OTT) in the Office of Intramural Research at NIH. Dr. Rohrbaugh will oversee the patenting and licensing of NIH inventions and will contribute to intramural and extramural technology transfer policy. Before joining NIH in 1991, Dr. Rohrbaugh conducted molecular and cell biology research at the University of Minnesota and at two biotechnology companies in Minneapolis.

Cox Appointed IMT Director

The Academy of Molecular Imaging (AMI) has appointed **Kay Cox** as director of the Institute for Molecular Technologies (IMT)—the industry arm of AMI. Cox will work with the IMT chair and council on the growth of corporate membership and reimbursement efforts for AMI.



Kay Cox

Slater Steps Down as Assistant Secretary for Health

Eve Slater, M.D., is leaving her post as HHS assistant secretary for health. "Eve Slater is a relentless advocate for the health and well-being of all Americans," said Secretary Tommy G. Thompson. "Her tireless work on building the issues of women's health, HIV/AIDS, reducing health disparities, vaccinations, patient safety, quality of healthcare and the use of information technology in healthcare reform will leave a lasting legacy at HHS."

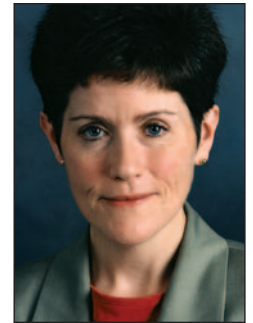
Prior to serving as assistant secretary for health, Dr. Slater was a senior vice-president at Merck Research Laboratories and was chief of the Hypertension Unit at Massachusetts General Hospital. **Surgeon General Richard Carmona, M.D., M.P.H.**, will be the acting assistant secretary for health during the search for a new assistant secretary.



Eve Slater, M.D.

Clancy Named Director of AHRQ

Carolyn M. Clancy, M.D., has been appointed director of the Department of Health and Human Service's (HHS) Agency for Healthcare Research and Quality (AHRQ). The agency is responsible for supporting research designed to improve the quality of healthcare, reduce its cost, improve patient safety, decrease medical errors and broaden access to essential services. Dr. Clancy, a graduate of Boston College and the University of Massachusetts Medical School, has served as acting director since March 2002. She is a general internist and health services researcher.



Carolyn M. Clancy, M.D.



Send your submissions for *People in the News* to rsnanews@rsna.org, (630) 571-7837 fax, or *RSNA News*, 820 Jorie Blvd., Oak Brook, IL 60523. Please include your full name and telephone number. You may also include a non-returnable color photo, 3x5 or larger, or electronic photo in high-resolution (300 dpi or higher) TIFF or JPEG format (not embedded in a document). *RSNA News* maintains the right to accept information for print based on membership status, newsworthiness and available print space.

ANNOUNCEMENTS

SBT Changes Its Name

The Society for Biological Therapy (SBT) has changed its name to the International Society for Biological Therapy of Cancer (iSBTc). Michael Atkins, M.D., iSBTc president, says the new name better reflects the society's position as an international leader in cancer research and education.



New Initiative Aims to Boost Development of Innovative Medical Products

The Food and Drug Administration has announced a broad initiative that will help make innovative medical technologies available sooner while reducing the costs of developing safe and effective medical products and maintaining the agency's consumer protection standards. The initiative affects all four FDA product review areas (drugs, biologics, devices and veterinary medicine) and will be developed in collaboration with other agencies and expert groups such as the National Institutes of Health.

To view the report, go to www.fda.gov/bbs/topics/news/2003/beyond2002/report.html.

HIPAA Security Rule Takes Effect

The Security Standards of the Health Insurance Portability and Accountability Act (HIPAA) were published in final form in the Federal Register on February 20. All covered entities, including physicians who transmit standard transactions such as claims, must comply with the Security Rule by April 21, 2005.

The Security Rule is intended to establish a level of protection for protected health information focusing on information transmitted and maintained electronically. The Security Rule specifies a series of administrative, technical and physical procedures to assure the security of protected health information.

Although the previously published proposed rule included a standard for electronic signatures, this version of the Security Rule does not include the electronic signature standard requirement. A final rule for electronic signatures will be published at a later date.

More Information

- Center for Medicare and Medicaid Services
www.cms.hhs.gov/hipaa/hipaa2/default.asp
- American College of Radiology
www.acr.org/dyna/?doc=departments/econ/hipaa/
- American Medical Association
How to "HIPPA" – Top 10 Tips (Free publication)
www.ama-assn.org/ama/pub/category/8158.html

HIPAA Alert: Compliance date for privacy standard is April 14, 2003.

More First-Time Candidates Take ARRT Primary Exam

The American Registry of Radiologic Technologists reports a 9.6 percent increase in the number of first-time candidates taking the ARRT primary examination during 2002. The most notable increases were in radiation therapy (up 12.6 percent) and radiography (up 9.9 percent). A decrease was noted in nuclear medicine technology (down 5.1 percent).

A total of 9,080 first-time candidates took the examination. That compares to 8,287 in 2001.

The full "Annual Report of Examinations" is available at www.rrt.org. Click on "Examinations" and then "Exam Statistics."

2002 ARRT Exam Statistics Summary

Examination:	CANDIDATES		1ST TIME CANDIDATES	
	ALL	1ST TIME	AVG. SCORE	PASS RATE
Radiography	10,912	8,168	83.0	88%
Nuclear Medicine Technology	337	260	83.8	90%
Radiation Therapy	863	652	81.4	86%
Total	12,112	9,080		
Cardiovascular-Interventional Technology	284	171	77.9	72%
Mammography	1,367	1,085	81.7	86%
Magnetic Resonance Imaging	1,883	1,099	80.1	77%
Computed Tomography	1,864	1,008	80.5	82%
Quality Management	69	42	78.6	71%
Sonography	28	18	70.1	28%
Vascular Sonography	13	10	80.9	80%
Bone Densitometry	214	185	80.0	81%
Total	5,722	3,618		

Exam Scores and pass rates are for first-time candidates. (A score of 75 or greater is required to pass.)

RSNA: PROGRAM & GRANT ANNOUNCEMENTS

PowerRAD 2003: Digital Image Management and Presentation

RSNA is sponsoring this one-day course on May 31, 2003, at RSNA Headquarters in Oak Brook, Ill.

Paul J. Chang, M.D., of the University of Pittsburgh Medical Center, will take participants through the process of:

- Converting radiologic images into an electronic format

- Editing images and text using lecture software

- Operating a laptop during a lecture

Attendees will get practical hands-on experience and personal instruction. The PowerRAD 2003 course includes printed lecture notes and CD-ROM software.

Up to 7.25 AMA category 1 credit hours are available.

Register online at www.rsna.org/education/shortcourses

Registration is \$199



for RSNA members and \$239 for non-members. For more information contact the RSNA Education Center staff at (630) 368-3747 or ed-ctr@rsna.org.



Strategies for Running a Successful Radiology Practice

RSNA is sponsoring a course for current and future academic chairs and leaders of private practice groups, July 11-13, 2003, in Oak Brook, Ill. During this 2½-day course, you will learn about issues relevant to future leaders

in radiology, enabling you to navigate the obstacles each leader will face. Attend sessions on financial, quality control, billing, compliance and legal issues as well as general strategies. Didactic morning lectures are followed by split



interactive breakout sessions for academic or private practice strategic planning in the afternoon on Friday and Saturday.

Register online at www.rsna.org/education/shortcourses

Registration is \$695 for RSNA members, \$275 for RSNA members-in-training and \$795 for non-members. For more information, contact the RSNA Education Center at (630) 368-3747 or ed-ctr@rsna.org.

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Radiography Reveals Mummy's Secrets

Using modern imaging technology, an international team of researchers has uncovered important information about a 5,300-year-old mummified human. The corpse, known as the iceman, displays strikingly modern anatomic features. The findings are published as an "Historical Perspective" in the March issue of *Radiology*.

Two German hikers discovered the iceman in 1991 in a snowfield in a remote part of the Tyrolean Alps. The iceman was remarkably intact after existing for five millennia covered by ice and snow and preserved in a mummified state. The body was found face down, frozen and encased in ice, except for his head, neck, shoulders and upper back. Carbon dating showed the man lived 5,300 years ago. The possessions found with him, specifically a pure copper axe, indicate he lived during the Copper Age.

Once the mummy was freed from the ice, a team of scientists and radiologists from Austria, Italy and the United States spent 10 years, from September 1991 to June 2001, obtaining images using conventional radiography, portable computed radiography and spiral CT.

"The purpose of the investigation was to obtain standard medical images of the iceman using modern imaging methods and then to interpret the images in accordance with modern radiologic knowledge about human anatomy and disease conditions," says lead author William A. Murphy Jr., M.D., professor of diagnostic radiology and John S. Dunn Sr. Distinguished Chair of Radiology at the University of Texas, M.D. Anderson Cancer Center in Houston.

"Our aim was to learn as much as

possible about the iceman through these images in a medically relevant context," Dr. Murphy says. "The imaging team tried to determine the basic anatomical features of the iceman and interpret these features in a manner that would reveal as much as possible about the individual, his life, his death and his journey through the 5,300 years following his death."

All this was done without damaging the remains.

What the Images Showed

The hot Alpine sun and cold, dry air apparently mummified the corpse, while a glacier provided shelter. Radiographic images show evidence of degenerative arthritis, frostbite, vascu-

I was very impressed that the iceman was strikingly similar to 21st century humans in terms of most anatomic features and his detected medical conditions, such as arthritis and calcified blood vessels.

— William A. Murphy Jr., M.D.

lar calcification, healed rib fractures, hairline skull fractures and a compression deformity of the thorax probably acquired while he was encased in the glacier.



William A. Murphy Jr., M.D.
M.D. Anderson Cancer Center

"The finding of most general interest was the discovery of an arrowhead in the left shoulder region," Dr. Murphy notes. Evidence of a hematoma in the adjacent tissues was also detected. These findings suggest the arrow may have caused vascular injury and contributed to the iceman's death.

"I was very impressed that the

iceman was strikingly similar to 21st century humans in terms of most anatomic features and his detected medical conditions, such as arthritis and calcified blood vessels. These observations confirmed for me that 5,300 years is an extremely short interval in terms of human evolution," he says. "The iceman is recent in that regard. Still, the iceman is prehistoric in terms of the written record."

A Unique Mummy

The iceman is unique because no other mummies are known to exist from the Copper Age or earlier periods of human evolution. "The discovery is even more remarkable because all soft tissues were preserved, as contrasted with the usual situation where only partial skeletons are discovered," he says.

The mummy was also found with personal belongings, including clothing, arrows, a knife and an axe. "The combination of an intact human from the Copper Age with all his personal possessions opens the way for a deeper

and richer understanding than ever before possible of human society during this period. Avenues of additional inquiry will continue for years to come. Imaging will provide a means to help answer many future questions,” Dr. Murphy says.

When the iceman was alive, humans already lived in communities, knew the principles of agriculture, had detailed knowledge of their environment and even knew how to smelt copper, Dr. Murphy explains. “From then until now, humans have shown relatively little anatomical change but have exhibited rapid technological achievement. Genetically, the iceman is substantially the same as modern man.”

Role of Radiology

Radiography was critical to the study of the iceman because it was the only way to evaluate the mummy in a non-destructive way.

“Radiography revealed normal anatomy and alterations of anatomy with no risk or damage to the mummy or to the scientists studying iceman,” says Dr. Murphy. “It permitted the manufacture of plastic models for additional investigation. In addition, it showed internal features without need for an autopsy. Radiography provided insights for new queries and maps for future minimally invasive testing.”

In a larger context, Dr. Murphy believes that the modern role of radiography in the evaluation of early man includes the ability to:

- Survey remains nondestructively for anatomic features
- Reveal hidden features or nonhuman artifacts
- Provide maps for future investigations and methods for precise measurements
- Allow comparisons between images of similar anatomic sites from various sets of remains
- Facilitate the development of large databases for comparative purposes



Figure 1. Radiograph shows variable shrinkage of the brain. Frontal view of the head (obtained on May 25, 1993, with the body in the supine position) shows the shrunken brain surrounded by dura mater (arrows) that did not shrink as much as the brain did. Note the falx cerebri (arrowheads) within the interhemispheric fissure. The brain exhibits variable opacity, probably due to variation in the physical and chemical alterations that accompanied an intermittent or inhomogeneous mummification process.



Figure 2. Photograph of the mummy's chest and abdomen (obtained in September 1991) dramatically illustrates the severity of dehydration and anterior thoracic collapse. The ribs have rotated in a caudal direction and are pressed against the spine, as is the sternum. The left arm is extended across the chest and is held in that position by the brittle dehydrated and frozen tissues.



Figure 3. Detail of the teeth from a lateral radiograph of the skull (obtained on May 25, 1993) shows that all teeth are worn and flattened, presumably from mechanisms of wear specific to the lifestyle of the iceman. Note absence of third molars (X = expected molar positions).



Figure 4. Detail of the right hip joint from a transverse CT section (obtained on May 3, 1994) shows evidence of osteoarthritis, as manifested by proliferative bone (arrows), osteosclerosis, and small round subarticular lucent areas. True joint space width cannot be determined because dehydration of the hyaline articular cartilage caused artificial narrowing.

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PET Shows Promise in Early Detection of AD

Is positron emission tomography (PET) ready for routine use in the detection of Alzheimer disease (AD), and should Medicare reimburse the costs? As discussion heats up over the issue, those who advocate for PET rest their case primarily on a November 7, 2001, study in *The Journal of the American Medical Association (JAMA)*. Authors of the international study of 300 patients conclude, "In patients presenting with cognitive symptoms of dementia, regional brain metabolism was a sensitive indicator of AD and of neurodegenerative disease in general. A negative PET scan indicated that pathologic progression of cognitive impairment during the mean three-year follow-up was unlikely to occur."

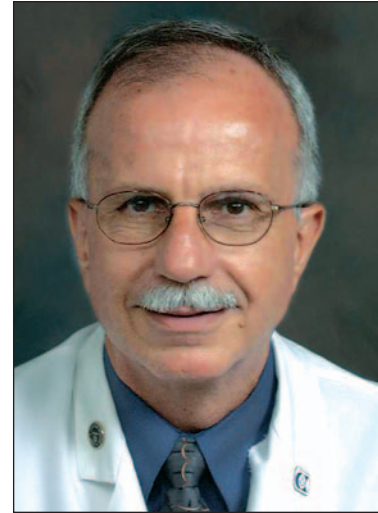
PET revealed progressive dementia with a sensitivity of 93 percent and a specificity of 76 percent. Among patients with neuropathologically based diagnoses, PET identified patients with AD and patients with any neurodegenerative disease with a sensitivity of 94 percent and specificities of 73 percent and 78 percent, respectively.

The study is especially important because the federal Centers for Medicare and Medicaid Services (CMS) is considering whether to pay for this particular use of PET. Earlier this year, the Medicare Coverage Advisory Committee (MCAC) recommended against approving PET for AD detection, and a final decision by CMS is pending.

Among politicians advocating for Medicare coverage of PET use in



Gary W. Small, M.D.
UCLA Center on Aging



R. Edward Coleman, M.D.
Department of Nuclear Medicine
Duke University Medical Center

Alzheimer is U.S. Senator Ted Stevens (R-Alaska), who calls Medicare's review "an enormous bureaucratic process delay" and "a colossal waste of taxpayers' money." Senator Stevens also says that Medicare approval of PET diagnosis of AD would stimulate further PET research and improve the diagnosis of brain disease.

PET does have a major impact before a clinician can make a diagnosis of AD in clearly defined patients with early stage problems.

—R. Edward Coleman, M.D.

But a CMS spokesman tells *RSNA News*, "The *JAMA* article did not demonstrate that the approved treatments for AD are better after a diagnosis made with a PET scan versus a diagnosis made in the usual fashion by following guidelines of the American Academy of Neurology (AAN)."

The Alzheimer's Association is among the medical societies wanting more data before making a final decision. "While we recognize the future

diagnostic potential of PET scans, their benefit (in AD) has not been demonstrated or confirmed," an official statement says.

William Thies, Ph.D., vice-president of medical and scientific affairs for the Alzheimer's Association, says, "There may be a small group of individuals who, under certain circumstances or unusual symptoms that are confusing the diagnosis, might be candidates for diagnosis using PET."

He adds that there is no consensus on patient profile or circumstances. The association says the soon-to-be published "Report of the Neuroimaging Workgroup of the Alzheimer's Association Concerning the Use of MRI and PET for Clinical Diagnosis and Investigation of Cognitive Impairment and Dementia" may shed further light on patient parameters.

The Alzheimer's Association says its position is reinforced by clinical practice guidelines of AAN, which say further studies are needed before rou-

tine use of PET can be recommended. However, the AAN assessment and conclusion were published in May 2001, six months before the report appeared in *JAMA*.

Researchers at the University of California Los Angeles (UCLA) and at Duke University Medical Center say they are convinced that the data published in *JAMA* justify routine, early detection of AD with PET, and they strongly disagree with those who say the issue is moot because “nothing can be done for these patients anyway.”

Gary W. Small, M.D., director of the UCLA Center on Aging and one of the authors of the *JAMA* study, says the superior performance of PET can pin down the presence of dementia months—even years—ahead of conventional clinical diagnosis and give patients valuable extra months of independent living.

“There are four FDA-approved drugs for AD which have been shown in clinical trials to help with memory and cognition. They can keep you out of a nursing home for an additional year,” says Dr. Small. “The drugs help with behavior and overall functioning. There are studies showing that after a year, patients taking a cholinesterase inhibitor will be at the same level, while those that don’t take the drug continue to slide.”

He adds that patients treated at very early PET-detected stages of AD could even stay with their jobs longer.

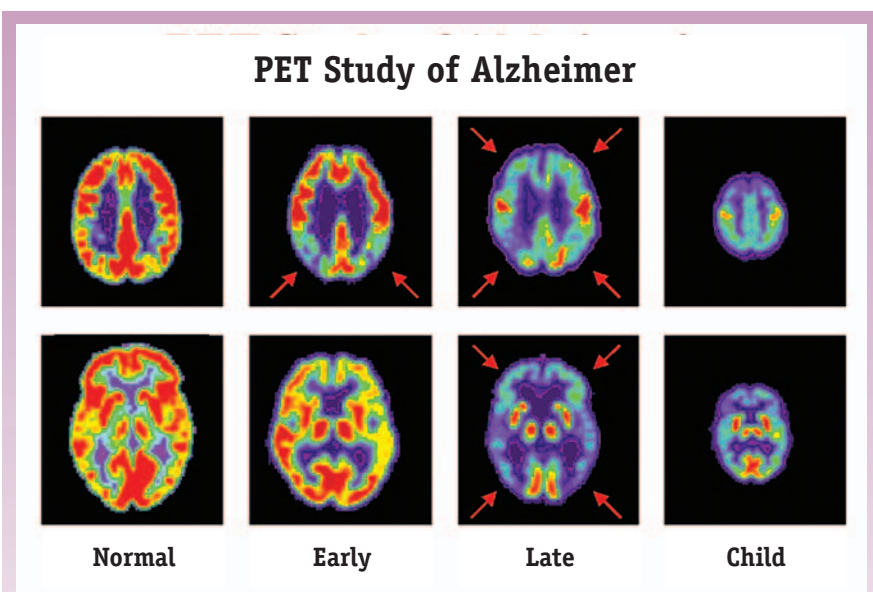
R. Edward Coleman, M.D., a professor of radiology and director of the Department of Nuclear Medicine at Duke University Medical Center, says early diagnosis of AD enables patients to be more involved in planning their own lives. “It’s clearly shown that some of the new treatments, particularly the cholinesterase inhibitors, slow the progression of disease and keep patients in the community longer.

More information:

- *JAMA* Study Abstract jama.ama-assn.org/issues/v286n17/abs/joc10908.html
- Alzheimer’s Association www.alz.org

they can for their patients. They aren’t getting paid much for reading PET scans. They get \$80 or \$90 to read a scan. PET is not easy to interpret—it takes a lot of time.”

Dr. Small concludes that the benefits of early AD detection with PET extend deep into the lives of patients and their fami-



A PET study of glucose metabolism in Alzheimer disease. The “early Alzheimer” study was performed at the stage of questionable Alzheimer disease and illustrates the characteristic metabolic deficits of Alzheimer in the parietal and temporal memory centers of the brain (arrows). Over time, the metabolic deficit spreads throughout the brain. At the late stage of disease, metabolic function of the brain in Alzheimer is similar to that of the newborn shown to far right, which corresponds to their similar behavior and functional capacity.

Images courtesy of Drs. Daniel Silverman, Gary Small and Michael Phelps from The David Geffen School of Medicine at UCLA.

Also, PET can rule out other causes of dementia. So despite what critics say, there are clear reasons to make a diagnosis of AD early. PET does have a major impact before a clinician can make a diagnosis of AD in clearly defined patients with early stage problems.”

Dr. Coleman, who helped to gather and assemble data used to prepare the *JAMA* article and who is a consultant to the editor of the RSNA journal *Radiology*, adds, “I think radiologists are interested in providing the best care

lies, “The point of diagnosis is not just to help with treatment—there are also other benefits. There have been studies showing that the relationship between caregivers and patients actually improves when there is an accurate diagnosis.”

He adds that it’s a myth that AD is a totally negative experience: “Caregivers become more empathic and I’ve found that patients and families stop doctor shopping and going from clinic to clinic. There’s a sense of relief when they get an accurate diagnosis. Even though it’s not great news, there is less uncertainty and a sense of how to move forward.” □

MR Imaging Advances MS Diagnosis, Treatment

MR imaging has made a significant impact on the ability to diagnose and treat multiple sclerosis (MS)—the most commonly diagnosed neurological disorder in young adults.

“Radiology did not play much of a role in treating or evaluating MS prior to MR. Some diagnoses of multiple sclerosis could be made with computed tomography, but MR dramatically increased the sensitivity and specificity,” says Robert I. Grossman, M.D., the Louis Marx Professor and chairman of the Department of Radiology at New York University School of Medicine.

MS affects 250,000 to 300,000 Americans, with 200 new cases diagnosed weekly, according to the National Institute of Neurological Disorders and Stroke (NINDS).

MS is a life-long chronic disease thought to be an autoimmune disorder. During an MS attack, patches of the central nervous system’s white matter become randomly inflamed causing partial destruction of insulation around the nerve fibers, or myelin, of the brain and spinal cord. Unfortunately no single test can unequivocally diagnose MS because many other diseases have similar symptoms.

“Radiology is used to image the spinal cord disease, gauge brain atrophy and study the brain’s biochemistry as well as to classify MS by contrast enhancement and by a number of other metrics,” says Dr. Grossman, who taught a refresher course at RSNA 2002 on white matter disease, specifically, the pathophysiology of MS, its manifestations and new MR methods that have been applied. Dr. Grossman

is also the recipient of a 1999 Javits Neuroscience Investigator Award from the National Institutes of Health for his work on MS.

The first symptoms of MS are often vision related—blurred or double vision, distortion of red and green or blindness in one eye. MS also causes muscular weakness, loss of coordination or balance, numbness or pain, fatigue and slurred speech. Difficulties with attention, concentration, judgment and memory are experienced by about half of people with MS. Cognitive and language abilities are rarely affected.

Although there is no cure, research suggests that early treatment can delay disability by decreasing the assault of

Most treatment protocols for MS require MR evaluation.

—Robert I. Grossman, M.D.

MS on the nervous system. Treatments may either manage symptoms or slow disease course by decreasing the number and severity of attacks. The three therapeutic objectives are halting disease progression, preventing or lessening the number of attacks and improving relapse recovery.

During the last decade, the FDA approved five new therapies as disease



Robert I. Grossman, M.D.
New York University School of Medicine

modifying agents—three interferon-beta products, glatiramer acetate and mitoxantrone. Beta interferons stop MS lesion inflammation by repairing the blood-brain barrier and reducing the lesion’s inflammatory process. A patient may experience a combination of the following benefits depending on which beta interferon is prescribed: decreased relapse rates, increased time between relapses,

decreased attack severity and reduced number of lesions. Glatiramer acetate suppresses the autoimmune attack on myelin and decreases severity and relapse frequency. Mitoxantrone is a chemotherapeutic agent that suppresses autoimmune action thus lessening the number of attacks and slowing disease progression. Steroids are also prescribed to lessen swelling and inflammation, consequently reducing attack duration and damage.

“In 1993, a paper was published in *Neurology* where they actually utilized MR as a surrogate marker of treatment efficacy. That was the first time that the FDA used MR imaging to license a drug, in that case interferon beta-1b. Subsequently, most treatment protocols for MS require MR evaluation,” Dr. Grossman says.

The behavior of MS during the first five years can provide some indication of the future course of the disease. Although there are many vari-

ables, prognosis is based upon subcategorization and disease course experience.

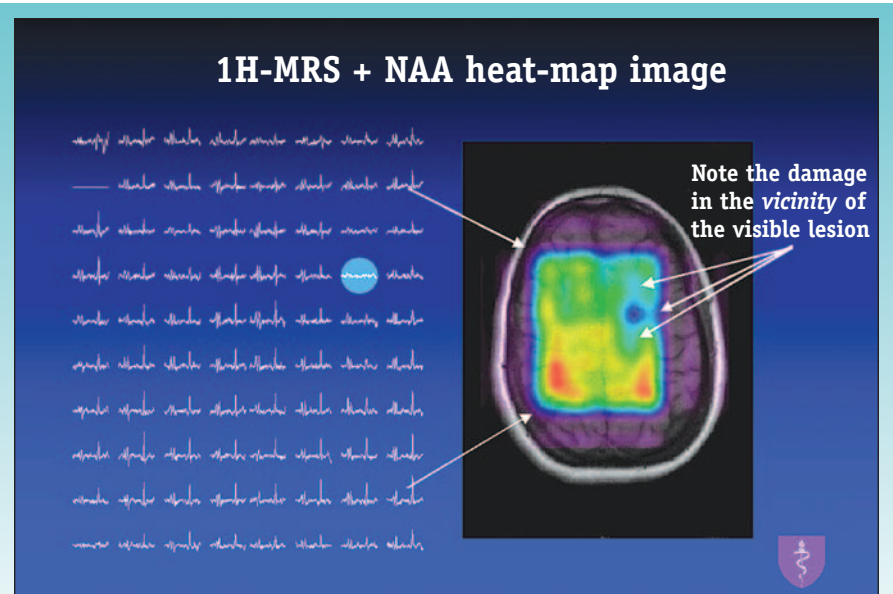
Multiple sclerosis can be subcategorized as:

- Relapsing-remitting—unpredictable relapses with new symptoms or worsening of existing symptoms followed by partial or total recovery, which may last for months or years.
- Primary progressive—slow onset and steadily worsening symptoms lacking distinct attacks. Disabilities accumulate and may stabilize or continue for months or years.
- Secondary progressive—relapsing-remitting MS later develops into a progressive disability frequently with superimposed relapses.
- Benign—complete recovery following an attack or two.

“I think radiology’s potential contribution to multiple sclerosis is extremely high. Hopefully radiology will help subcategorize patients and determine what treatments work and which do not. MR and MR spectroscopy are incredibly powerful tools that will enable us to determine specific disease burden in patients as well as determine who responds and who does not respond to a particular therapy and judge outcome,” Dr. Grossman explains.

Diffusion tensor MR, MR spectroscopy and magnetization transfer help to subcategorize disease and to assist with reversible versus irreversible determination as well as chronicle the natural history of changes.

The cost of medical care including rehabilitation and productivity loss is relatively high because MS afflicts



Three-dimensional spectroscopy of an MS patient.
Image courtesy of Drs. Robert Grossman and Oded Gonen.

young adults. NINDS estimates the economic burden of multiple sclerosis is in excess of \$2.5 billion annually.

Currently, researchers are exploring the relationship of MS to the autoimmune system, genetics and infectious agents. Most likely, many factors will be found that contribute to development of MS.

“Research on whole-brain NAA is on the cutting edge. We actually developed a technique to measure the extent of loss in the brain of NAA, which is a neuronal marker. That is very important in both treatment trials and in the natural history of disease,” adds Dr. Grossman. □

More Information About MS

- National Institute of Neurological Disorders and Stroke
www.ninds.nih.gov
- Multiple Sclerosis International Federation
www.ifmss.org.uk
- National Multiple Sclerosis Society
www.nmss.org
- Multiple Sclerosis Foundation
www.msfacts.org
- Multiple Sclerosis Society
www.mssociety.org.uk

New Report Released on Diagnostic Ultrasound

The National Council on Radiation Protection and Measurements (NCRP) has just released a 500-page report on exposure criteria for diagnostic ultrasound.

The report, written by a group of notables headed by Wesley L. Nyborg, Ph.D., professor emeritus of physics at the University of Vermont, says the report focuses on two key issues regarding ultrasound: the impact on body tissues when gas bubbles from contrast agents implode—called acoustical cavitation—and the associated issue of how tissues are affected when their temperature is boosted as a result of ultrasound.

The report also underlines a potential safety issue. Morton W. Miller, Ph.D., a research professor in the Department of Obstetrics and Gynecology at the University of Rochester Medical Center and co-author of the NCRP report, says the document flashes a cautionary yellow light about the potential health effects of elevated tissue temperatures. “The temperature increments of modern diagnostic ultrasound devices fall within the range of those already known to cause birth defects in laboratory animal models,” Dr. Miller states.

“Additionally, the literature in this area—hyperthermia and birth defects—provides no indication of whether or not the data follow simple linear or threshold kinetics. This is a very major finding, and is cause for concern,” he adds.

The NCRP report comes at a time when the Food and Drug Administration (FDA) is urging against the overuse of sonograms for the sole purpose of keepsake photos of fetuses. The FDA, as well as the American Institute

of Ultrasound in Medicine (AIUM), advises against the use of ultrasound for nonmedical purposes. A patient explanation sheet, “Why Sonograms Should Be Performed Only When Medically Indicated,” is available on the AIUM Web site at www.aium.org/consumer/entertainment/handout.pdf for physicians and sonographers to photocopy and distribute to patients.

In addition to concerns about when ultrasound should be used, specialty groups have worried about user competency.

Paul Carson, Ph.D., professor of radiological sciences in the Department of Radiology at the University of Michigan Medical Center, says almost every specialist using ultrasound equipment could use a refresher course. Dr. Carson also helped to author the NCRP report.

Asked to point out a significant passage in the report, Dr. Carson turned to page 434, which contains recommendations relating to the responsibility of users of ultrasound equipment. The recommendation states using ultrasound at a mechanical index (MI) of under 0.5 and all thermal indexes (TIs) less than 1.0 “poses negligible risk under most conditions.” But Dr. Carson notes that some contrast agents are labeled with instructions saying they can be used at MIs as high as 0.8.

Often, but not always, the higher the MI, the clearer the image will be.

But the higher the MI, the more likely it is that the agent’s bubbles will collapse, potentially causing very small points of high temperature and capillary damage. Dr. Carson explains that a radiologist often can get a perfectly clear image at an MI below 0.5 and sometimes at 0.1. He says the only reason to go to higher MIs is when a radiologist can’t see the contrast agent and is sure the failure is not due to the collapsing of the microbubbles.

Speculation about damage of diagnostic ultrasound to human tissue in medical use is just speculation. The report’s executive summary states, “A review of existing human epidemiological studies of patients examined with ultrasound leads to the encouraging conclusion that these studies do not provide sufficient justification for finding ultrasound to be the cause of any of the adverse effects investigated.”

But that comes with a huge caveat. All of the tests referred to were performed with equipment manufactured prior to 1991. That year, in response to a request from AIUM, the FDA began to allow an eight-fold increase in spatial-peak temporal-average (SPTA) in many ultrasound machines. At the same time, the FDA began requiring U.S. manufacturers to put an “output display” on machines showing the rise in temperature—or the TI—in the target tissue, such as TIB for bone, or TIS for

The FDA, as well as the American Institute of Ultrasound in Medicine (AIUM), advises against the use of ultrasound for nonmedical purposes.

Editor’s Notes: The NCRP report, “Exposure Criteria for Medical Diagnostic Ultrasound: II. Criteria Based on All Known Mechanisms,” Report No. 140, is available for \$95 at www.ncrp.com or by calling (301) 657-2652 x28.

The RSNA-ACR patient education Web site, RadiologyInfo™ (www.RadiologyInfo.org), includes extensive information about various diagnostic procedures using ultrasound.

soft tissue or TIC for cranium. Ultrasound images have become much clearer but concerns about hyperthermia in tissues have also increased.

Dr. Miller says an important part of the NCRP report is its reference to and emphasis of the fact that there isn't a "no effect" level for hyperthermia. "There are opinions on whether or not thresholds exist with hyperthermia-induced birth defects with some strong support for a total absence of thresholds," says Dr. Miller. "But the bald fact is that present data are insufficient for identifying whether or not thresholds exists; there are only opinions on their presence or absence."

The NCRP report says that heating tissues, especially fetal tissue, above an increment of one degree Celsius is not advised for a period longer than 160 seconds. That is a half-degree below the recommendation of the World Federation for Ultrasound in Medicine. Dr. Miller stresses that no one really knows what the correct number is: "Four million babies are born in the United States every year. Nearly all are scanned at least once by diagnostic ultrasound in utero. Many are scanned more than once. There is potential for ultrasound-induced hyperthermia-related birth defects." □

Making Sense of TI and MI

Thermal Index (TI): An estimate of the potential temperature increase (in degrees Celsius) within the ultrasound field. Since the mathematical model used to derive the thermal index cannot consider all possible clinical variables, the intended use of the index is to provide a relative indicator of potential biological effects due to thermal mechanisms.

Mechanical Index (MI): The relative potential for mechanical effects. The index is based primarily on the phenomenon of cavitation and considers the biological effects associated with the collapse (implosion) of microbubbles. A microbubble, which can be created and collapsed by an ultrasound field, is capable of generating extremely high temperatures and causing other forms of damage when collapsing.

Both the MI and the TI are considered dimensionless values.

Courtesy James M. Kofler, Ph.D., AAPM Liaison to the RSNA 2002 Scientific Program Committee.

Radiography Reveals Mummy's Secrets

Continued from page 5

- Provide images that permit the interpretation of features to be shared with other scientists as well as with the public

As to his personal experience studying the iceman, Dr. Murphy says, "It was an incredible privilege and a singular honor to be asked to participate in this scientific investigation along with many international scientists. The actual study of the many images was exciting and tiring because of the intensity of the effort."

He adds, "I had a constant sense of awe because the chance that a mummy of such antiquity and excellent condition would ever be found was extraordinarily unlikely," he says. "Finally, then as now, I had a strong sense of reverence and profound respect for the person I was studying." □



Professor Dieter zur Nedden (left), chairman of Radiology II at The University of Innsbruck, Austria, and William A. Murphy Jr., M.D., study a stereolithographic model of the iceman's skull created from CT data. The photograph was taken in September 1992 in Dr. zur Nedden's office in Innsbruck.

Anatomic Variants Discovered in the Iceman

- Frontal bone pacchionian granulations
- Prominent frontal eminences (supraorbital ridges)
- Diastema
- Absent third molars
- Eleven rib-bearing thoracic vertebrae
- Transitional lumbosacral segment

RSNA Members and Subscribers Have Expanded Access to Scientific Literature

RSNA members and subscribers can take advantage of the fact that the world's largest archive of full-text life science research is making it quicker and more convenient to keep abreast of the latest research in medicine, science and technology.

Stanford University-based HighWire Press has expanded its content and has added new features designed to respond to the needs of researchers.

The Web site, launched in 1995 with online production of the weekly *Journal of Biological Chemistry*, has assisted in the publication of *Radiology Online* (radiology.rsna-jnl.org), *RadioGraphics Online* (radiographics.rsna-jnl.org) and the *RSNA Index to Imaging Literature* (rsnaindex.rsna-jnl.org) since 1999.

The new and expanded features available to RSNA members and subscribers include:

- **More Content.** MEDLINE plus 348 full-text journals are available.
- **Better Searching.** Readers can easily search available journals by topic or browse by topic.
- **More Alerting.** Users can be alerted to new content that matches their specific interests in HighWire-affiliated articles or in MEDLINE.
- **Easier Access.** More than 473,000 free, full-text articles are available. Another 3,000 free articles are added each month. For articles that are not offered for free, readers have access to abstracts or can view the full article through personal or institutional sub-

scriptions or by pay-per-view access.

From the HighWire home page, highwire.stanford.edu, users can browse HighWire-hosted journals,

Of the one million full-text articles available on HighWire Press, more than 473,000 are free, including all articles from *Radiology* and *RadioGraphics* that are two or more years old.

"The articles that are free are clearly indicated," says Richard Newman, associate director for HighWire Press. "The site also has the ability to recognize a reader's location when they per-

form a search, so that when the search results are displayed, it indicates whether an article is free to everyone or free because the reader is at an institution where a subscription is available."

From the home page, under "Browse HighWire-hosted



If I perform a search within one of the RSNA journals, I can be notified the next time something that satisfies that search is published.

—Richard Newman

browse articles or search by topics. Searches can be performed using keywords and the names of authors.

"HighWire Press has opened up a new world of interlinked online information, not only in radiology, but in related fields of medicine," says Al Simonaitis, RSNA's online journal manager.

journals," users can click on "Topic" for a list of topics in the biological, medical, physical and social sciences. Under "Medical Sciences," they can click on "Radiology" for a list of radiology-related journals and articles of interest. The journals are ranked according to those publishing most frequently on radiology.

"The literature for most large fields like radiology is dispersed across many journals," says John Sack, associate publisher and director of HighWire Press. "In cases like that, the best tools are usually the alerting services, which are available via the "My E-Mail Alerts" button on the site."

A user who is interested in bone density scans could enter that phrase as

a keyword and the system will alert the user by e-mail. "The system will notify you whenever a new article is published," says Sack.

"This capability of being notified also works beautifully for authors," says Newman. "If you have written an article in one of the RSNA journals and you want to know how important your article is, you can be alerted every time somebody else cites your article."

The alerting service is very popular. "I think we have about a million of these alerts set up by users of the system," says Sack.

After registering for a free account with HighWire Press, a user can sign up for alerts by clicking on "My E-mail Alerts" on the HighWire Press home page. RSNA members and other readers of RSNA journals can also sign up for alerts through a content box within the journals themselves.

"We try to make sure that whenever people are looking at results, they have the opportunity to be alerted to future activity," explains Newman. "For

example, if I find an article within an RSNA journal, I can click on a box within that article that says, 'Alert me when this article is cited by someone.'"

"Similarly, if I perform a search within one of the RSNA journals, I can be notified the next time something that satisfies that search is published," he continues.

Among the journals hosted by HighWire Press, 44 are in the top 100 most-cited journals, as ranked by the Institute of Scientific Information, including *The New England Journal of Medicine* and the *British Medical Journal*. New journal offerings include *The Journal of the American Medical Association*, the AMA's *Archives* journals



John Sack
HighWire Press

and the *Annals of Internal Medicine*.

"But probably even more important than adding new journals is that journals with HighWire are adding back content," says Sack. "They're going back 10, 20, 50, in some cases 100 years, and putting their back content online. And that's making this stuff grow very, very fast."

"I think the important thing is that the best journals are on

HighWire Press," Sack emphasizes. "If a person is going to do literature research, they should start here. The site has all of PubMed, plus a million full-text articles and features for alerting and subject searching." □

Palm/PDA Service Now Available

HighWire Remote delivers tables of contents, abstracts and selected full-text material from current RSNA journal issues to hand-held PDAs free of charge. Palm OS (PDAs from Palm, Handspring, Sony, etc.) is now supported. Support for PocketPCs is under development. If you have a Palm OS PDA, and it is set up to sync with a PC or Macintosh computer, you can try out the feature. On the HighWire site (highwire.stanford.edu/), click on "My E-Mail Alerts" and then scroll down to the "My E-Mail Alerts and PDA Channels" section. Once installed, the application serves as many journals as the user selects.



Click on "My E-Mail Alerts."



Scroll down to "My E-Mail Alerts and PDA Channels."

Working For You

NEW!

Career Connection

The classified advertisement area of *RSNA Link* has been replaced with a larger, more personalized area called Career Connection (careers.rsna.org). This interactive module enables RSNA members to create and post their resumes online for free. It also allows them to search for jobs by criteria including keywords, job function, modality, location and salary.



NEW!

RadioGraphics Simplifies Galley Review for Authors

RSNA's Publications Department is making it easier for authors to review galley proofs of their manuscripts scheduled for publication in *RadioGraphics*. Instead of using the postal service to deliver edited manuscripts and author information forms, such as check-off lists, tables and reprint requests, authors now receive an e-mail directing them to a secure Web site in which they can download the galley proofs and appropriate forms and fax or mail them back.



RadiologyInfo™ Logo

RSNA is offering a print-quality *RadiologyInfo*™ logo for physicians to use on their prescription pads or other printed materials to remind their patients about the wealth of information available from the RSNA-ACR patient education Web site, www.RadiologyInfo.org. A logo is also available to link from a physician's Web site to *RadiologyInfo*. To download the logos, go to www.RadiologyInfo.org/legal/ri-webtms.htm.

As an added benefit, more than 40 radiologic procedures are available as handouts for physicians to download and reproduce for their patients. To access the handouts, go to www.RadiologyInfo.org/pdf/pdf-menu.htm.

SERVICE TO MEMBERS:

Medicine probably has seen more changes over the past 20 years than in any previous 100-year period. That has changed how radiologists work and how RSNA supports members' needs. I have always been impressed that RSNA's organizational structure, leadership and staff allow the flexibility needed to meet members' changing needs. Successful organizations sometimes resist change; RSNA invites it and that is, in large measure, the reason for RSNA's continued success. Through surveys as well as purchasing behavior, members tell us what they want. We need to look, listen and service their needs.

The Marketing and Communications Department has a nine-person staff and is involved in all communications with members, the media and the public. The department is also responsible for all marketing activities from creating marketing plans for the various product areas of RSNA and the Research & Education Foundation, to producing the print pieces to support those plans.

WORK PHILOSOPHY:

Establish what outcomes you would like to achieve. Plan your work. Build a strong foundation of resources, labor and procedures. And get the job done correctly, on time and within budget. A strong foundation, able and willing co-workers and a determination to overcome obstacles will allow you to successfully complete core assignments and will position you to effectively handle the unexpected.



NAME:

Joseph A. Taylor

POSITION:

Director, Marketing and Communications

WITH RSNA SINCE:

January 18, 1995

If you have a colleague who would like to become an RSNA member, you can download an application at www.rsna.org/about/membership/member-apps.html, or contact the RSNA Membership and Subscription Department at (630) 571-7873 or membersh@rsna.org.

Mentors Key to Successful Research Career



When A. Aria Tzika, Ph.D., says she is honest to her roots, she means it. The native of Greece

says, “Like Hippocrates, I am interested in promoting cures and the understanding of diseases. I’m not in this field to make a lot of money.” In order to succeed in research, she says you have to have good mentors.

“RSNA has two important roles.

One is that of helping to promote academic science and medicine, but I think RSNA’s most important role is mentorship,” Dr. Tzika says.

Early in her medical career, Dr. Tzika’s research interests focused on biomedical functional MR imaging and spectroscopy of the brain. She was the 1995 Eastman Kodak/RSNA Research Scholar. Her project was “Pediatric Brain Tumor Treatment Evaluated by Volume MRI/MRS.”

Through her research project, she found that clinical proton MR spectroscopy and hemodynamic MR imaging could add insights into the mechanism of neurologic disease, allow earlier diagnosis and provide a non-invasive diagnostic method for follow-up treatments.

Dr. Tzika says all of her research has been built upon her initial RSNA investigations. “RSNA gave me a tremendous opportunity as an early researcher,” she says. In 1998, the American Cancer Society gave her \$500,000 to continue her studies. “I stretched that grant out for four years until June of 2002. I am searching for new grant money now, but these are difficult days for funding” she adds.

Dr. Tzika is an assistant professor of surgery at Harvard Medical School

in Cambridge, Mass. She is the director of the NMR Surgical Laboratory and an assistant physiologist in the Department of Surgery at Massachusetts General Hospital in Boston. She also has an appointment to the Shriners Burns Institute.

Dr. Tzika, a citizen of the United States and Greece, studied biology in Greece. She conducted her post-graduate work in physiology and anatomy at the University of California at Berkeley. She was a postdoctoral fellow at the University of California, San Francisco (UCSF).

Her research these days has shifted from imaging and spectroscopy of the brain to molecular imaging. She says

RSNA has two important roles.

One is that of helping to promote academic science and medicine, but I think

RSNA’s most important role

is mentorship.

— A. Aria Tzika, Ph.D.

she’s thrilled that the National Institutes of Health is promoting studies on molecular imaging and that the 2003 topic of interest for the RSNA Fellow Grant is molecular imaging. “Those exciting studies will give a lot of



A. Aria Tzika, Ph.D.
1995 RSNA Research Scholar

answers to basic research questions,” she says.

She’s also conducting investigations into pediatric brain tumors, attention deficit hyperactivity disorder and, at a more basic research level, the role of mitochondria in pathophysiological states.

“I chose academic research, not clinical radiology, because I am most interested in solving puzzles of

nature,” she says. Clinical work, to her, is “too routine.” While studying at UCSF, she received a lot of exposure and background in what she needs clinically to perform her research.

Years after her work as an RSNA Scholar, Dr. Tzika continues to support the organization. She was a scientific grant reviewer for the R&E Foundation’s Roster of Distinguished Scientific Advisors and has attended nearly every RSNA Scientific Assembly since the mid-1980s.

How to Succeed as an Academic Radiology Researcher

While she loves her work, Dr. Tzika says it is not easy to be successful in this type of career. “It is difficult to survive in academic radiology research. It takes a huge commitment and you certainly will never be famous,” she adds.

Dr. Tzika says there are two keys to success, “First, you must have a desire to answer intriguing scientific ques-

Continued on next page

Continued from page 3

NEW!

BECON 2003 Symposium to Focus on Team Science

The Bioengineering Consortium (BECON) of the National Institutes of Health (NIH) has scheduled its sixth annual Symposium for June 23-24, 2003, at the Natcher Conference Center in Bethesda, Md. The Symposium, "Catalyzing Team Science," is aimed at examining the forces that encourage and discourage team approaches to biomedical research and exploring ways in which NIH, academia and others can stimulate and reward team efforts.

A preliminary agenda, along with program and registration information, are available at www.becon.nih.gov/symposium2003.htm.

Academic Research Enhancement Award (AREA)

NIH is continuing to make a special effort to stimulate research in educational institutions that provide baccalaureate or advanced training for a significant number of the nation's research scientists but that have not been major recipients of NIH support.

AREA funds are intended to support new ("type 1") and continuing ("renewal" or "competing continuation" or "type 2") health-related research projects proposed by faculty members of eligible schools and components of domestic institutions. To determine the eligibility of a school or component with regard to this requirement, applicants should consult the list of ineligible schools/components on the AREA Web page at grants.nih.gov/grants/funding/area.htm.

- Application Receipt Dates: January 25, May 25, September 25
- AIDS-related Application Receipt Dates: May 1, September 1, January 2

Mentors Key to Successful Research Career

Continued from previous page

tions, even though the answers to those questions may never be found in your lifetime. I have been very lucky in my career, but most researchers do not get to see their questions answered."

Second, Dr. Tzika says you must identify mentors early—in college, medical school or even as an associate professor. She says this is very important for young scientists to understand. "Without mentors, you can forget about your research dreams."

Thanks to phones, faxes and e-mails, mentors can live in another country and still be close at hand. "Keep your mentors close to you, especially if you are young. They will protect you from misfocusing and they'll steer you away from trouble," she advises.

Dr. Tzika doesn't just talk the talk. She has had mentors throughout her life. "Both women and men have helped me. Each recognized a different characteristic in me and pushed me. Sometimes I felt like I didn't have any choice. Now I realize I was lucky," she says.

"I would like to mentor others. This is the best way for me to repay my mentors," she adds.

For more information on RSNA R&E Foundation grants, contact Scott Walter at (630) 571-7816 or walter@rsna.org.

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Breast Imaging/Women's Imaging Radiologist

The Department of Radiology is recruiting an additional faculty member to join its breast imaging section. The combined breast imaging centers have eight mammography units, three ultrasound units and two stereotactic biopsy devices. Three full field digital mammography units will be installed. A high volume of breast imaging studies is performed including mammography, breast ultrasound and breast interventional procedures. You must be a board-certified radiologist preferably with fellowship training or significant experience in breast/women's imaging. The department offers an extremely competitive compensation package based on experience. *Interested candidates should contact and send CV to: Lawrence P. Davis, MD, FACR, Vice Chair, Department of Radiology, Long Island Jewish Medical Center, 270-05 76th Ave., New Hyde Park, NY 11040 Ph: 718-470-7235. Fax: 718-343-3893. E-mail: ldavis@lij.edu*



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Vanguard Company Spotlight

Siemens Medical Solutions



Siemens Medical Solutions is demonstrating its continued dedication to the advancement of radiologic practice with a \$1.5 million pledge to the RSNA Research & Education Foundation. The 10-year pledge will endow a Siemens Medical Solutions/RSNA Research Scholar Award. The first recipient will be named later this year.

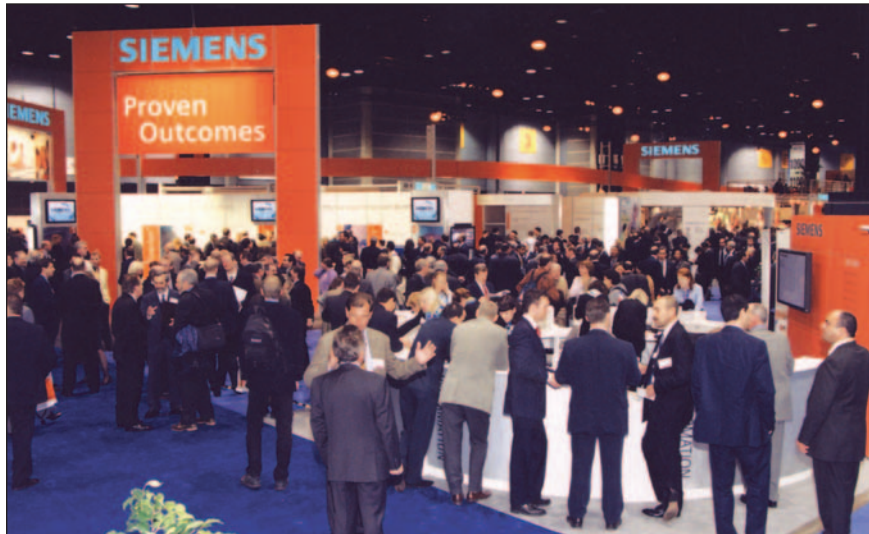
"RSNA's leadership role in the fields of scientific research and education in radiology is crucial to the future of medicine," says Thomas N. McCausland, president and chief executive officer of Siemens Medical Solutions USA. Siemens previously donated \$750,000 in support of the Siemens Medical Solutions/RSNA Research Fellow Award.

Siemens' association with the Foundation began in 1990 when Siemens became a member of the RSNA Vanguard Group of companies. Since then, 11 investigators have benefited from Siemens' commitment to patient care. The value of today's

research in tomorrow's practice is apparent in the continuing investigations of 1997 Siemens Medical Solutions/RSNA Research Fellow Pamela K. Woodard, M.D. She recently became the principal investigator at Washington University of a three-year, eight-center, \$13.5 million study funded by the National Institutes of Health (NIH) to assess the accuracy and utility of multidetector contrast-enhanced spi-

RSNA's leadership role in the fields of scientific research and education in radiology is crucial to the future of medicine.

—Thomas N. McCausland



Siemens Medical Solutions has pledged \$1.5 million in additional contributions to the RSNA Research and Education Foundation.

ral CT in searching for pulmonary embolisms. She is also the co-investigator of a \$1.5 million NIH grant to develop and optimize methods for performing coronary artery interventions under MR guidance.

Bonnie N. Joe, M.D., Ph.D., from the Mallinckrodt Institute of Radiology at Washington University in St. Louis, is the 2002 Siemens Medical Solutions/RSNA Research Fellow. Dr. Joe is investigating the technical limita-

tions of current contrast-enhanced breast MR imaging and spectroscopy and determining how to improve these techniques.

Siemens Medical Solutions is a leading supplier of integrated clinical and IT solutions to the healthcare industry. From imaging systems for use in diagnosis, therapy and treatment to IT solutions that increase clinic, office and hospital efficiency, Siemens's innovative products and services effectively address the challenges that the medical community faces daily. Siemens strives to have a positive impact on a person's lifelong health by creating an efficient healthcare system and developing equipment that promotes the best possible patient care. □

SIEMENS

For more information on the RSNA Research & Education Foundation grant programs, contact Scott Walter at (630) 571-7816 or at walter@rsna.org.

For more information about becoming an RSNA Research & Education Foundation Vanguard Company, contact Deborah Kroll at (630) 368-3742 or dkroll@rsna.org



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In memory of Robert T. Turner, M.D.

New Exhibitor's Circle Program Adds First Members

Alliance Imaging, Inc., became the first member of the new RSNA Exhibitor's Circle program.

The program enables small- to mid-size companies to annually support research at more modest levels than that required for the Foundation's continuing Vanguard program.

Recognizing the benefits of supporting research, Alliance Imaging expressed interest in joining the Exhibitor's Circle as the program was launched at RSNA 2002.

"This program offers the best of both worlds to corporate donors," says Terry Andruess, Alliance executive vice-president. "Alliance Imaging is able to support both our customers and the

radiologic community in tangible ways that foster responsible corporate stewardship."

Shortly after Alliance's commitment, two other companies joined the Exhibitor's Circle. They are Hologic Inc., and IGC—Medical Advances Inc.

Benefits of RSNA Exhibitor's Circle membership include:

- Acknowledgment in RSNA publications including *RSNA News*, the *Buyer's Guide*, the *RSNA Membership Directory* and the RSNA Research & Education Foundation Annual Report.

- Invitation to a reception for Exhibitor's Circle members and RSNA leaders
- Recognition signs at the Research &

Education Foundation Pavilion

- Exhibitor's Circle signs for exhibit booth
- Special recognition ribbon for corporate representatives for their annual meeting badge

Categories

- Platinum Circle (\$10,000 per year)
- Gold Circle (\$5,000 per year)
- Silver Circle (\$2,500 per year)
- Bronze Circle (\$1,000 per year)

For more information on becoming a member of the RSNA Exhibitor's Circle, contact Deborah L. Kroll, Managing Director: Fund Development at (630) 368-3742 or dkroll@rsna.org.

News about RSNA 2003

NEW!

Electronic Only Advance Registration and Housing Brochure

The first advance registration brochure for RSNA 2003 is available only in electronic format. Instructions on how to access the Advance Registration and Housing brochure will be mailed the week of April 21.

The brochure will be posted on *RSNA Link* (www.rsna.org) as a portable document format (PDF) file and will be available by fax-on-demand.

RSNA Link

Go to www.rsna.org and click on Advance Registration. The brochure is available as a PDF file for you to view, download and/or print.

Fax on Demand

Beginning April 21, call (847) 940-2146, then enter your fax number and a document number.

- Document 1300: entire brochure
- Document 1375: registration form only

In late June, a hard copy of the Refresher Course Enrollment brochure will be mailed. An electronic version will also be available by download or fax. Course enrollment begins June 23.

Important Dates for RSNA 2003

April 15	Deadline for abstract submission
April 28	RSNA and AAPM member registration/housing opens
May 27	General registration opens
June 23	Course enrollment opens
Oct. 10	Registration deadline for Non-North American participants to have badge wallet mailed
Oct. 31	Final advance registration deadline
Nov. 30–Dec. 5	RSNA 89th Scientific Assembly and Annual Meeting

Advance Registration and Housing Begins April 28

Advance registration for RSNA 2003 opens April 28 for members of RSNA and AAPM. General registration opens May 27. Once you download the information from *RSNA Link* (www.rsna.org) or have it faxed to you, there are four easy ways to complete the registration process:

Online (24 hours a day)

www.rsna.org/rsna/advance/registration/

Enter your membership identification number found on the mailing label of your access instructions or on the cover of *RSNA News*. The entire process takes only a few minutes. If you request hotel reservations, a hotel room deposit will be charged to your credit card.

Fax (24 hours a day)

(800) 521-6017
(847) 940-2386 outside the United States and Canada

Phone (Monday – Friday, 8:00 a.m. – 5:00 p.m. CT)

(800) 650-7018
(847) 940-2155 outside the United States and Canada

Please be ready to provide the fol-

lowing information:

- Registration information (name, organization, phone, etc.)
- Fax and e-mail address, if available
- Arrival and departure dates
- Preferred hotels
- Type of hotel room preferred (single, double, etc.)
- Special preferences (smoking, special needs, etc.)
- Credit card information (for hotel deposit)



RSNA'03

COMMUNICATION FOR
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November 30–December 5
McCormick Place, Chicago

Mail

ExpoExchange/RSNA 2003
108 Wilmot Rd., Ste. 400
Deerfield, IL 60015-0823

Keep a copy of your completed registration form for your records.

NEW

RSNA has added Hostelling International – Chicago to its block of hotels. More information will be available in the May issue of *RSNA News*.

Registration Fees

BY 10/31	ONSITE	
\$0	\$100	RSNA Member, AAPM Member
\$0	\$0	Member Presenter
\$0	\$0	RSNA Member-in-Training and RSNA Student Member
\$0	\$0	Non-Member Refresher Course Instructor, Paper Presenter, Poster Presenter, Education or Electronic (<i>infoRAD</i>) Demonstrator
\$110	\$210	Non-Member Resident/Trainee
\$110	\$210	Radiology Support Personnel
\$520	\$620	Non-member Radiologist, Physicist or Physician
\$520	\$620	Hospital Executive, Research and Development Personnel, Medical Service Organization, Healthcare Consultant, Industry Personnel
\$300	\$300	One-day registration to view the Technical Exhibits area.

For more information about registration at RSNA 2003, visit www.rsna.org, call (630) 571-7862 or e-mail reginfo@rsna.org.

2003 Preliminary Program Grid

Two important changes in the program grid this year are a longer lunch period and the addition of the case-based review courses. More information on these and other important enhancements will be included in the May issue of *RSNA News*.

	SATURDAY 11/29	SUNDAY 11/30	MONDAY 12/1	TUESDAY 12/2	WEDNESDAY 12/3	THURSDAY 12/4	FRIDAY 12/5						
8:30 a.m.		Effective Investment Strategies* 8:30-11:30	Opening Session / President's Address 8:30-10:15	Refresher Courses 8:30-10:00	Neuro Case-Based Review 8:30-10:00	Refresher Courses 8:30-10:00	IV Case-Based Review 8:30-10:00	Essentials Course 8:30-10:00	Refresher Courses 8:30-10:00	Peds Case-Based Review 8:30-10:00	Essentials Course 8:30-10:00	Refresher Courses 8:30-10:00	Refresher Courses 8:30-10:00
9:00													
9:30													
10:00													
10:30			Scientific Sessions / Associated Sciences Symposium 10:30-12:00	Neuro Case-Based Review 10:30-12:00	Scientific Sessions / Associated Sciences Symposium 10:30-12:00	IV Case-Based Review 10:30-12:00	Essentials Course 10:30-12:00	Scientific Sessions / Associated Sciences Symposium 10:30-12:00	Peds Case-Based Review 10:30-12:00	Essentials Course 10:30-12:00	Scientific Sessions 10:30-12:00	Scientific Sessions 10:30-12:00	
11:00		Scientific Sessions 10:45-12:15											
11:30		Lunch Break 11:30-1:00											
12:00 p.m.	AAPM/RSNA Physics Tutorial for Residents 12:00-2:00		Lunch, Poster Session, & Visit Exhibits 12:00-1:30	Lunch, Poster Session, & Visit Exhibits 12:00-1:30	Lunch 12:00-1:00	Lunch, Poster Session, & Visit Exhibits 12:00-1:30	Lunch 12:00-1:00	Lunch 12:00-1:00	Lunch, Poster Session, & Visit Exhibits 12:00-1:30	Lunch 12:00-1:00	Lunch, Poster Session, & Visit Exhibits 12:00-1:30	Lunch & Visit Education Exhibits 12:00-12:45	
12:30													
1:00		Effective Investment Strategies, cont.* 1:00-4:00			Essentials Course 1:00-2:30			Essentials Course 1:00-2:30				Imaging Symposium 12:45-3:15	
1:30			Plenary Session (New Horizons)** 1:30-2:45	Neuro Case-Based Review 1:30-3:00		Plenary Session (Annual Oration in Radiation Oncology)** 1:30-2:45	IV Case-Based Review 1:30-3:00		Plenary Session (Annual Oration in Radiation Oncology)** 1:30-2:45	Peds Case-Based Review 1:30-3:00		Plenary Session (RSNA/AAPM Symposium)** 1:30-2:45	
2:00													
2:30	AAPM/RSNA Physics Tutorial on Equipment Selection 2:15-5:15							Essentials Course 2:45-4:15					
3:00			Scientific Sessions 3:00-4:00			Scientific Sessions 3:00-4:00			Scientific Sessions 3:00-4:00			Essentials Course 2:45-4:15	
3:30				Neuro Case-Based Review 3:30-5:45			IV Case-Based Review 3:30-6:00			Peds Case-Based Review 3:30-5:00			
4:00		Image Interpretation Panel 4:00-5:45											
4:30			Focus Sessions 4:30-6:00			Refresher Courses 4:30-6:00			Oncodiagnosis Panel and Focus Sessions 4:30-6:00			Refresher Courses 4:30-6:00	
5:00													
5:30													
6:00													

*A registration fee is charged for this program.

** Awards/Ceremonies to begin at opening of Plenary Session (1:30-1:45)

RSNA 2003 Exhibitor News

NEW

Changes for Exhibitors at RSNA 2003

Exhibitors should be aware of a few important changes for RSNA 2003. Industry feedback played a role in some of the changes, while the current business climate played a role in other changes. All changes are included in the *Exhibitor Prospectus*.

Exhibit Hours

Hours of operation have been modified for the RSNA 2003 Technical Exhibition. Instead of the traditional closing at 6 p.m. Sunday through Wednesday, the technical exhibition will close at 5 p.m. Hours will remain 10 a.m. to 2 p.m. on Thursday.

Setback Rule

The setback requirement for freeform exhibit display components has been reduced by one foot. Exhibits of 1,400 square feet or less will be allowed a one-foot setback. Exhibits of 1,500 square feet and over will be allowed a three-foot setback.

Use of Guidewires

Exhibit structures can no longer be supported from the overhead steel structure of the building without prior approval. Use of guidewires must be submitted with exhibitor floor plans for review and approval.

Housing

Exhibitors will find it easier to secure housing online this year. This includes securing individual and block housing. The allotment has increased to four rooms per 100 square feet. Non-refundable block housing is no longer available.

Advertising at RSNA 2003

Many opportunities exist for promoting your exhibit at RSNA 2003—the world's largest annual medical meeting. For more information, see www.rsna.org/advertising/index.html or contact:

Jim Drew
Director of Advertising
(630) 571-7819
jdrew@rsna.org

Judy Kapicak
Advertising Manager
(630) 571-7818
jkapicak@rsna.org



The RSNA 2002 Technical Exhibition represented 657 companies and medical associations from around the world.

NEW

Technical Exhibit Hours

Sun., Nov. 30–Wed., Dec. 3	10:00 a.m.–5:00 p.m.
Thurs., Dec. 4	10:00 a.m.–2:00 p.m.



RSNA'03
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Exhibitor Prospectus

The RSNA 2003 *Exhibitor Prospectus* was mailed in late March. To achieve maximum available space and assignment points, send your completed application to RSNA Headquarters as soon as possible. The first-round space assignment deadline is May 5, 2003.

For more information, contact RSNA Technical Exhibits at (630) 571-7851 or e-mail: exhibits@rsna.org. For up-to-date information about technical exhibits at RSNA 2003, go to www.rsna.org/rsna/te/index.html.

June Exhibitor Planning Meeting

Booth assignments will be released June 24 at the Exhibitor Planning Meeting and Luncheon. All exhibitors for RSNA 2003 are invited to attend at Rosewood Restaurant and Banquets near Chicago's O'Hare International Airport.

Important Exhibitor Dates for RSNA 2003

May 5	First-round space assignment deadline
June 24	Exhibitor Planning/Booth Assignment Meeting
July 3	Technical Exhibitor Service Kit mails
Oct. 31	Exhibitor Badge deadline
Nov. 30–Dec. 5	RSNA 89th Scientific Assembly and Annual Meeting

www.rsna.org



RSNA News Available in PDF

Back issues of RSNA News are now available in portable document format (PDF). The issues, dating back to June 2002, are available at www.rsna.org/publications/rsnanews/archive/. When the current issue is posted each month, readers may choose to view the entire issue as a PDF or view each individual section as a Web page.

Stats for RSNA 2002

A two-page recap of RSNA 2002 (www.rsna.org/rsna/2002recap.pdf) is posted in the annual meeting section under "Professional Registration" and "Technical Exhibitors."

The recap includes statistics on technical exhibits, scientific sessions, refresher courses and final registration figures.

Online Registration for RSNA Courses

RSNA will sponsor one spring and one summer course this year. The spring course is "PowerRAD 2003: Personal Digital Image Management and Presentation," which will be held on Saturday, May 31, at RSNA headquarters in Oak Brook, Ill. The summer course is "Strate-

gies for Running a Successful Radiology Practice," which will be held July 11-13 at The Lodge in Oak Brook.

Course objectives are available on page 3. Online registration is now open at www.rsna.org/education/shortcourses/.

Register Now for RSNA 2003

Advance registration for RSNA 2003 opens April 28 for RSNA and AAPM members. Within the next few days, you will receive a flyer explaining how to access the registration system using your Internet browser through RSNA Link or by fax-on-demand service. See page 22 for more detailed instructions.

Members are encouraged to register early to receive hotel lodging of their choice. General registration opens May 27.



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New Procedures added to RadiologyInfo™

RadiologyInfo™ (www.RadiologyInfo.org), the patient education Web site co-sponsored by RSNA and ACR, continues to expand. Two **interventional procedures** were recently added. Information on uterine fibroid embolization is in the Women's subsection of Interventional Radiology. Radiofrequency ablation of liver tumors is in a new Abdominal subsection.

Cryosurgery and vertebroplasty will added soon.



Membership Applicants Listed Online

The names of candidates for RSNA membership are now listed in the "Who's Who" subsection of RSNA Link (www.rsna.org/about/whoswho/candidates.html). Society members are asked to review the names and follow the directions provided if they have a question concerning the eligibility of an applicant.

A new list of membership candidates will be posted each month.

connections Your online links to RSNA

RSNA Link
www.rsna.org

Radiology Online
radiology.rsna.org

Radiology Manuscript Central
radiology.manuscriptcentral.com

RadioGraphics Online
radiographics.rsna.org

RSNA Virtual Journal Club
vjc.rsna.org

Education Portal
www.rsna.org/education/etc.html

CME Credit Repository
www.rsna.org/cme

RSNA Index to Imaging Literature
rsnaindex.rsna.org

NEW!
RSNA Career Connections
careers.rsna.org

RadiologyInfo™
RSNA-ACR public information Web site
www.radiologyinfo.org

RSNA Online Products and Services
www.rsna.org/member-services

RSNA Research & Education Foundation Make a Donation
www.rsna.org/research/foundation/donation

Medical Meetings

May – June 2003

MAY 4–9

American Roentgen Ray Society (ARRS), 103rd Annual Meeting, San Diego Convention Center, San Diego
• www.arrs.org/meeting/

MAY 7–10

Society for Pediatric Radiology (SPR), Annual Meeting, Fairmont Hotel, San Francisco • www.pedrad.org

MAY 10

Molecular Imaging, ASTRO/ACR Symposium, Washington Hilton, Washington, D.C. • www.astro.org

MAY 10–13

Australian and New Zealand Society of Nuclear Medicine (ANZSNM), 33rd Annual Scientific Meeting, Sheraton on the Park, Sydney, Australia • www.anzsnm.org.au

MAY 10–15

ACR Annual Meeting & Chapter Leadership Conference, Washington Hilton, Washington, D.C. • (703) 716-7545

MAY 10–15

American College of Medical Physics (ACMP), Annual Meeting, Sagamore Inn, Lake George, N.Y. • www.acmp.org

MAY 10–16

International Society for Magnetic Resonance in Medicine (ISMRM), 11th Scientific Meeting and Exhibition, Metro Toronto Convention Center, Toronto, Ontario
• www.ismrm.org/03/

MAY 11–18

Radiology in Italy, Medical College of Wisconsin & the Universities of Brescia and Parma, Parma and Stresa, Italy
• www.radiologyintl.com

MAY 18–21

Radiology Business Management Association (RBMA), Radiology Summit, Hyatt Regency San Antonio • www.rbma.org

MAY 31

PowerRAD 2003: Digital Image Management and Presentation, RSNA Headquarters, Oak Brook, Ill. • (630) 368-3747 or ed-ctr@rsna.org

JUNE 1–4

10th Congress of the World Federation for Ultrasound in Medicine and Biology (WFUMB), Montreal Convention Center, Quebec • (800) 638-5352 or www.aium.org

JUNE 1–4

American Board of Radiology (ABR), Oral Exams for Diagnostic Radiology, Radiologic Physics, Radiation Oncology, Louisville, Ky. • www.theabr.org

JUNE 2–6

European Society of Pediatric Radiology (ESPR), Annual Meeting, Magazzini del Cotone-Porto Antico, Genoa, Italy
• www.espr2003genoa.org

JUNE 6–7

Advanced Course in Grant Writing, RSNA Department of Research, RSNA Headquarters, Oak Brook, Ill.
• (630) 368-3758 or dor@rsna.org

JUNE 7–10

Society for Computer Applications in Radiology (SCAR), 20th Symposium for Computer Applications in Radiology, Hynes Convention Center, Boston Sheraton Hotel, Boston
• (703) 757-0054

JUNE 14–16

Canadian Association of Medical Radiation Technologists (CAMRT), Annual General Conference, Winnipeg, Manitoba
• www.camrt.ca

JUNE 15–17

UK Radiological Congress, Birmingham, UK
• www.ukrc.org.uk

JUNE 15–19

American Medical Association (AMA), Annual Meeting, Hyatt Regency, Chicago • (312) 464-5000

JUNE 17–20

European Society of Gastrointestinal and Abdominal Radiology (ESGAR), 14th Annual Meeting and Postgraduate Course, Budapest, Hungary • www.esgar.org

JUNE 21–25

Society of Nuclear Medicine (SNM), 50th Annual Meeting, Ernest N. Morial Convention Center, New Orleans
• www.snm.org

JUNE 23–24

BECON 2003 Symposium on Catalyzing Team Science, Natcher Conference Center, National Institutes of Health, Bethesda, Md. • www.becon1.nih.gov/symposium2003.htm

JUNE 25–28

Computer Assisted Radiology and Surgery (CARS), 17th International Congress and Exhibition, London QEII Conference Centre, London • www.cars-int.de

JUNE 26–28

National Congress of the Swiss Society of Radiology (SSR), Lucerne • www.sgr-ssr.ch/

JULY 11–13

Strategies for Running a Successful Radiology Practice, RSNA Headquarters, Oak Brook, Ill. • (630) 368-3747 or www.rsna.org/education/shortcourses

NOVEMBER 30–DECEMBER 5

RSNA 2003, 89th Scientific Assembly and Annual Meeting, McCormick Place, Chicago • www.rsna.org