August 2009 • Volume 19, Number 8

RSNA News

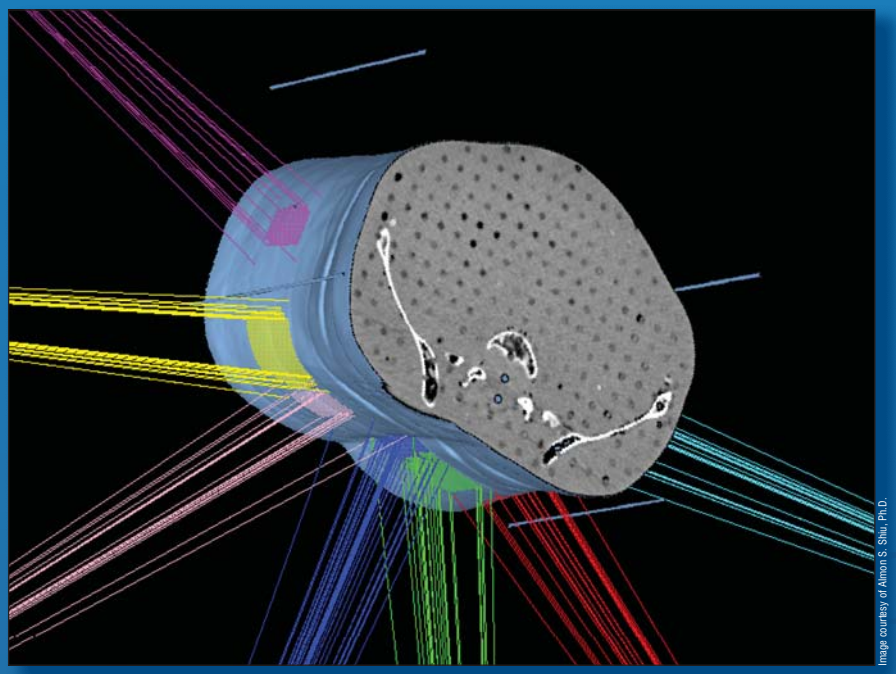

Image courtesy of Almon S. Shiu, Ph.D.

Stereotactic Body Radiotherapy Effective for Treating Spine Tumors

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- Revised Pediatric Guidelines Aid Radiologists in Detecting Child Abuse
- Early Radiology Exposure Could Lure Medical Students to Specialty
- Robotic System Aids CT-Guided Needle Biopsy
- Chicago Events and Attractions Shine at RSNA 2009

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Letters to the Editor
E-mail: *rsnanews@rsna.org*
Fax: 1-630-571-7837
RSNA News
820 Jorie Blvd.
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Subscriptions
Phone: 1-888-600-0064
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AAPM President Stresses Need for Medical Imaging Physics Residences

FOLLOWING the American Association of Physicists in Medicine's (AAPM) second 2012 Summit, AAPM President Maryellen L. Giger, Ph.D., called for academic institutions, hospitals and private practices to work toward creating more residency programs for medical imaging physics graduates. The summit focused on American Board of Radiology requirements for graduate education that will be implemented for 2012–2014.

"In their future jobs, graduating medical physicists will have various clinical physics responsibilities including the acceptance of imaging systems, performance of quality assurance for image quality and dose," said Dr. Giger. "In order to be trained appropriately, they need not only the didactic training that they receive in their graduate education programs, but also 'on-the-job' clinical experiences similar to radiology residents. They need to work with clinical medical physicists in diagnostic radiology departments and/or freestanding imaging practices. To do so, they need the support of both the department and the institution."

In the past year, the number of therapy residency programs accredited by the Commission on Accreditation of Medical Physics Educational Programs (CAMPEP) increased from 20 to 24, with 12 more under review, Dr. Giger reported. However, the number of CAMPEP-accredited residency programs in imaging only increased from two to three, with only one more under review. AAPM is now working with various academic programs and private practice imaging physics groups to potentially create "hub and spoke" residencies, in which medical physics residents could rotate through different groups to gain experience across a wide range of instrumentation and procedures and to help residencies attain CAMPEP accreditation. The profession needs additional support if it is to achieve a sufficient number of residency slots to accommodate graduating medical imaging physicists, she added.

"It is estimated that approximately 200 master's-level and 100 Ph.D.-level medical physics students graduate per year in this country," said Dr. Giger. "For those who pursue a clinical medical physics career, necessary clinical training via medical physics residency programs needs to be available. It is extremely important to have a strong supply of properly trained, clinically qualified medical physicists to serve the clinical practice of radiology/imaging/nuclear medicine. Thus there is a critical need to appropriately train medical physicists and to make sure all graduates can obtain clinical training via residencies."

Residences could be connected with academic hospitals, clinical practice groups or private imaging groups that could sponsor residents, Dr. Giger noted. AAPM is also developing a Web-based program that will enable residents to track their training and check off requisites as they complete rotation in different departments and centers.

"This need must be recognized and addressed," said Dr. Giger. "We encourage academic institutions, hospitals and private practices to support medical physics residencies, noting that having a resident costs less than someone who might work as an apprentice.

"During residency training, the institution/practice can assess the resident as someone who might be a good candidate for a position later," Dr. Giger continued. "In addition, when an institution/practice does hire a medical physicist who has been through a residency, they will be more confident in the candidate as he/she will have been clinically trained in all aspects of medical imaging physics."

Image Gently Campaign Named to Associations Advance America Honor Roll

The Alliance for Radiation Safety in Pediatric Imaging has been named to the 2009 American Society of Association Executives' Associations Advance America Honor Roll in recognition of its Image Gently campaign.

The Alliance for Radiation Safety is a coalition of 41 organizations, including RSNA, dedicated to raising awareness and promoting education about radiation protection for children during medical imaging examinations. The Image Gently Web site offers educational materials for practitioners, including protocols for optimizing pediatric CT techniques, and information and tools for parents to keep track of their children's imaging records. For more information, or to join the more than 2,700 providers who have taken the Image Gently pledge, visit *imagegently.org.*

2009 Editorial Fellows Selected

RSNA has named José María García Santos, M.D., of Morales Meseguer University Hospital in Murcia, Spain, as the 2009 William R. Eyler Editorial Fellow. Samantha Lynn Heller, M.D., Ph.D., of New York University Medical Center, is the Trainee Editorial Fellow.

Dr. García is editor-in-chief of *Radiología*, the official journal of the Spanish Society of Medical Radiology (SERAM) and serves as an international liaison for the editorial board of the *American Journal of Roentgenology.* He said he hopes the fellowship will help him promote relationships between Spanish- and English-language journals and enhance the quality of *Radiología*. "I will dedicate the knowledge and experience gained from this fellowship to increase links between Spanish and English radiologic journalism, help forthcoming editors in Spain, improve education of Spanish-speaking radiologists interested in medical journalism and improve the professionalism of *Radiología*," Dr. García said.

Dr. Heller brings a unique background in language and the humanities to *Radiology* and *RadioGraphics.* She majored in history and literature at Harvard University and completed her doctorate in English literature at Columbia University in New York, focusing her dissertation on changing perceptions of science and technology in Renaissance England. "Over time, however, I found that understanding the cultural implications of science was no longer enough," she said. "I wanted to understand the science itself and this interest ultimately encouraged me to start a career in medicine."

José María García Santos, M.D.

Samantha Lynn Heller, M.D., Ph.D.

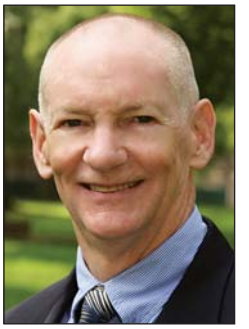
Part of her decision to choose radiology as a specialty came from witnessing the crucial need for a radiologist's insight and expertise prior to a medical decision, Dr. Heller said. "I also loved the idea of always being able to—indeed, needing to—master changing technology which could then be used to improve understanding of disease."

Both fellows will work with *Radiology* Editor Herbert Y. Kressel, M.D., in Boston and *RadioGraphics* Editor William W. Olmsted, M.D., in Bethedsa, Md. The Eyler fellowship lasts one month and trainee fellowship lasts one week. Each fellow will also visit the RSNA Publications and Public Information Division at RSNA Headquarters in Oak Brook, Ill. During the final weeks of fellowship, Dr. García will work with the RSNA editorial team at RSNA 2009.

For more information about the RSNA Editorial Fellow program, go to *RSNA.org/Publications/Editorial_fellowships.cfm.*

AUR Gold Medals Awarded to Sullivan, Kazerooni

THE Association of University Radiologists (AUR) awarded its 2009 gold medals to **Daniel C. Sullivan, M.D.,** and **Ella Annabelle E. Kazerooni, M.D., M.S.** Dr. Sullivan, a professor in the Department of Radiology at Duke University, serves as RSNA Science Advisor and heads RSNA's Quantitative Imaging Biomarkers Alliance (QIBA). Dr. Kazerooni is a professor in the Department of Radiology at the University of Michigan in Ann Arbor as well as the director of cardiothoracic radiology and vice-chair for clinical affairs.



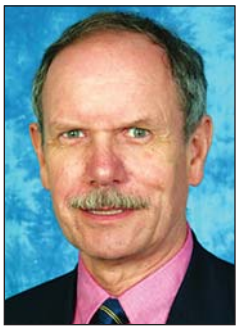
Daniel C. Sullivan, M.D.

Ella Annabelle E. Kazerooni, M.D., M.S.

SNM Names Officers, Bestows Awards

SNM has named **Michael M. Graham, M.D., Ph.D.,** as its 2009–2010 president. Dr. Graham is a professor of radiology and director of nuclear medicine at the University of Iowa Carver College of Medicine in Iowa City. SNM also named **Dominique Delbeke, M.D., Ph.D.,** of Nashville, Tenn., as president-elect and **George Segall, M.D.,** of Palo Alto, Calif., as vice president-elect.

SNM also awarded its 2009 Paul C. Aebersold Award to **Michael R. Kilbourn, Ph.D.,** a professor of radiology at the University of Michigan Medical School in Ann Arbor, for his accomplishments in advancing radiochemistry and radiopharmaceutical development. The award recognizes outstanding achievement in basic science applied to nuclear medicine.



Michael M. Graham, M.D., Ph.D.

Alan Davison, Ph.D., Alun G. Jones, Ph.D., and **Michael J. Abrams, Ph.D.,** received SNM's 2009 Georg Charles de Hevesy Nuclear Pioneer Award. Dr. Davison is a professor emeritus of chemistry at the Massachusetts Institute of Technology in Cambridge and Dr. Jones is a professor of radiology at Harvard Medical School and Brigham and Women's Hospital in Boston. Dr. Abrams, of Custer, Wash., has been active in the research, discovery and development of pharmaceuticals for more than 25 years.

Costello Named UMA President

Philip Costello, M.D., a professor and chair of the Department of Radiology at the Medical University of South Carolina in Charleston, was elected president of University Medical Associates (UMA), a group of 663 physicians providing specialty care on campus and at multiple outpatient clinics. Dr. Costello serves on the editorial board for the *Daily Bulletin*, the official newspaper for RSNA's annual meeting. UMA supports the university's educational, medical and research purposes.

Philip Costello, M.D.

Lawrence Awarded ASTRO Gold Medal

Theodore Lawrence, M.D., Ph.D., will receive the 2009 gold medal from the American Society for Radiation Oncology (ASTRO). Dr. Lawrence is the Isadore Lampe Professor and chair of radiation oncology at the University of Michigan Medical School in Ann Arbor. Dr. Lawrence delivered the Annual Oration in Radiation Oncology at RSNA 2006.

Theodore Lawrence, M.D., Ph.D.

Patlas Awarded CAR Young Investigator Award

The Canadian Association of Radiologists (CAR) has awarded **Michael Patlas, M.D.,** its Young Investigator Award. Dr. Patlas, an associate professor of radiology at McMaster University and fellowship program director and staff radiologist at Hamilton General Hospital, both in Ontario, Canada, is credited with single-handedly developing a unique MR imaging research fellowship at Hamilton.

Michael Patlas, M.D.

PET

Tip of the Month

Avoid placing a gamma camera near a PET scanner or near PET patients. The 511 keV photons used in PET will interfere with the proper functioning of the gamma camera.

American Association of Physicists in Medicine

RSNA News Send news about yourself, a colleague or your department to *rsnanews@rsna.org*, 1-630-571-7837 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.

RSNA Board of Directors Report

At its June meeting, the RSNA Board of Directors approved a number of collaborations with other societies, focusing on such issues as adult radiation dose and international radiology education. The Board also looked ahead to RSNA 2009 and approved the Society's 2009–2010 budget.

Collaborations Advance Radiologic Science and Education

RSNA has teamed up with the American College of Radiology (ACR) on several initiatives, including formation of a task force for an adult radiation protection program. The task force will address issues of dose management and reduction similar to those tackled by the Image Gently pediatric campaign, of which RSNA and ACR are members.

RSNA and ACR also will collaborate on an international observership program, with each organization sponsoring an international radiologist as he or she spends six weeks learning at an institution in the U.S. The first radiologists to participate in the program later this year will be from Iraq.

At this year's annual meeting, RSNA will promote the Face of Radiology campaign, developed by ACR to inform the public about who radiologists are and how they fit into a patient's healthcare. RSNA and ACR will also host a joint Residents Reception at RSNA 2009.

RSNA and the American Association of Physicists in Medicine are set to unveil the first phase of Web-based physics teaching modules at RSNA 2009. Phase 1 includes modules on radiography, fluoroscopy, mammography, CT, ultrasound, MR imaging, nuclear medicine and radiation biology. The modules are designed to improve the basic science education of radiology residents and will also benefit practicing radiologists. The Board has approved development of the Phase 2 modules, which will address basic science principles and special considerations.

RSNA will work with the European Society for Therapeutic Radiology and Oncology to present a March 2010 conference, "Imaging for Treatment Assessment and Radiation Therapy."

Also next March, RSNA will cosponsor the GU Cancer Symposium, an American Society of Clinical Oncology program focusing on genitourinary radiology and oncology.

RSNA 2009 Just Months Away

Plans continue for RSNA 2009 sessions, including one featuring representatives from the National Institutes of Health Small Business Innovation Research (SBIR) program. Annual meeting attendees can learn about the availability of SBIR funding for researchers in the advancement of medical imaging technologies. SBIR aims to strengthen the role of small businesses in meeting federal research and development needs and increases private sector commercialization of innovations developed through its program. In a separate session, past SBIR recipients will discuss their experiences with the program.

Also planned for RSNA 2009 is an expansion of the Digital Mammography Training and Self-Assessment Workshop, which will also address breast tomosynthesis and breast MR.

Burton P. Drayer, M.D.
Chairman, 2009 RSNA Board of Directors

In other annual meeting business, the Board approved making the Trainee Research Prize available to recipients from anywhere in the world. The prize, recognizing an outstanding scientific presentation in each subspecialty presented by a resident/physics trainee, fellow or medical student, formerly was restricted to only North American abstract submissions. Recipients receive a certificate and a $1,000 check during their designated presentation periods.

RSNA will collaborate with the Society of Chairs in Academic Radiology Departments to provide space at RSNA 2009 to department representatives wanting to interview prospective candidates for radiology fellowships.

Starting with RSNA 2010, attendees will be able to view materials from all scientific presentations—including those presented orally in scientific sessions—at the computers in the Lake-

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side Learning Center along with electronic education exhibits.

RSNA Journals Expand Reach

RSNA will participate in Global Outreach Radiology, or GO-RAD, a new virtual journal launched by the International Society of Radiology. *Radiology* Editor Herbert Y. Kressel, M.D., and *RadioGraphics* Editor William W. Olmsted, M.D., will select articles from their respective journals to contribute to GO-RAD, where they will be available free to radiologists in developing nations.

The Board approved the journal editorial fellows for 2009. José María García Santos, M.D., of Morales Meseguer University Hospital in Murcia, Spain, is the 2009 William R. Eyler Editorial Fellow. Samantha Lynn Heller, M.D., Ph.D., of New York University Medical Center, is the Trainee Editorial Fellow. More information about Drs. García and Heller can be found on Page 2.

At its June meeting, the Board also approved a change to the eligibility requirements for RSNA Research & Education (R&E) Foundation grants—starting with the next round of grant applications, due in January 2010, all applicants must be members of RSNA. More information about the change and the research and education grants offered by the R&E Foundation can be found on Page 19.

I look forward to seeing all of you at RSNA 2009.

BURTON P. DRAYER, M.D.
CHAIRMAN, 2009 RSNA BOARD OF DIRECTORS

■ Note: In our continuing efforts to keep RSNA members informed, the chairman of the RSNA Board of Directors will provide a brief report in *RSNA News* following each board meeting. The next RSNA Board Meeting is in September 2009.

MY TURN

Our Past as Prologue: 1991–2010

WHEN I mention 1991, it doesn't seem like such a long time ago. However, when considered in the context of a seemingly endless cascade of technological advances—like PACS, high-field strength MR, multidetector CT and molecular imaging—the two decades since *RSNA News* was first published have been amazingly full.

Born in 1991 at the behest of the RSNA Board of Directors as a quarterly printed newsletter, the purpose of *RSNA News* was improving the Society's communication with its membership. Lacking widespread electronic means of communication, RSNA relied on a *Radiology* section called "Bulletin Board" to disseminate information. A new outreach vehicle was sorely needed.

My Turn
ONE RADIOLOGIST'S VIEW

RSNA tapped Robert E. Campbell, M.D., to serve as *RSNA News* Contributing Editor, charged with overseeing publication of activities of the now 25-year-old RSNA Research & Education Foundation. Dr. Campbell has been the "glue" of the Editorial Board ever since—such a consistent publication history brings us to our 20-year celebration, which we will showcase throughout 2010.


Bruce L. McClennan, M.D.

Think back to your life and practice in 1991 and then look ahead as *RSNA News* shares the specialty's success with past stories, including annual meeting chronicles—did you know we first made use of the North Building at McCormick Place in 1991? You'll easily recognize that the people, clinical advances and technological milestones we detailed are now part of your everyday professional lives.

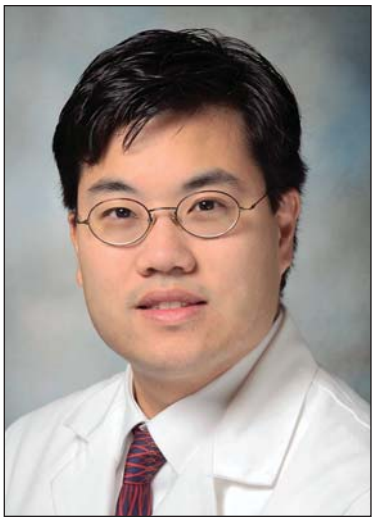
There is plenty of which to be proud. Each month, as a new issue is sent to more than 40,000 people worldwide, you'll find some of the best news from throughout RSNA history—handpicked by the *RSNA News* Editorial Board—to remind us all that our first two decades are a striking prologue for the present day and a template for even brighter times ahead for RSNA.

Bruce L. McClennan, M.D., is a professor of diagnostic radiology at Yale University School of Medicine and an attending at Yale New Haven Hospital. Dr. McClennan finishes a six-year term as RSNA News *editor at the end of this year.*

Stereotactic Body Radiotherapy Effective for Treating Spine Tumors

STEREOTACTIC BODY RADIOTHERAPY (SBRT) is a highly effective alternative treatment for some cancer patients with spinal metastases, according to new research from The University of Texas in Houston.

For patients treated with SBRT, researchers found that the six-month and one-year progression-free survival rates for spinal metastasis were 90 percent and 84 percent respectively, according to the study's lead author Eric L. Chang, M.D., an associate professor in the Department of Radiation Oncology and director of the central nervous system stereotactic radiation program at the university's M.D. Anderson Cancer Center. Patients involved in the trial also reported reductions in pain, fatigue and sleep disturbances.



Eric L. Chang, M.D.
The University of Texas in Houston

Dwight E. Heron, M.D.
University of Pittsburgh Cancer Institute

The study was presented at the American Association of Neurological Surgeons annual meeting in San Diego.

"SBRT offers patients a minimally invasive treatment option they previously did not have," said Dr. Chang. "We are also able to offer patients a degree of pain control and to decrease their pain medications, minimizing the side effects from those medications."

> *SBRT offers patients a minimally invasive treatment option they previously did not have. We are also able to offer patients a degree of pain control and to decrease their pain medications, minimizing the side effects from those medications.*
>
> Eric L. Chang, M.D.

In the study, researchers evaluated 121 cancer patients with metastases to the spine who underwent intensity-modulated, near simultaneous, CT image-guided SBRT, said Dr. Chang.

Researchers used a stereotactic body frame system consisting of a whole-body vacuum cushion and plastic fixation sheet used to immobilize patients for the treatment period, which lasts approximately one hour.

The team performed MR imaging of the spine within 30 days of patient enrollment, every three months for the first year and every six months after that. Patients also evaluated their own pain and other discomfort using instruments including the validated Brief Pain Inventory and the M.D. Anderson Symptom Inventory.

Technique Controls Tumor Progression, Pain

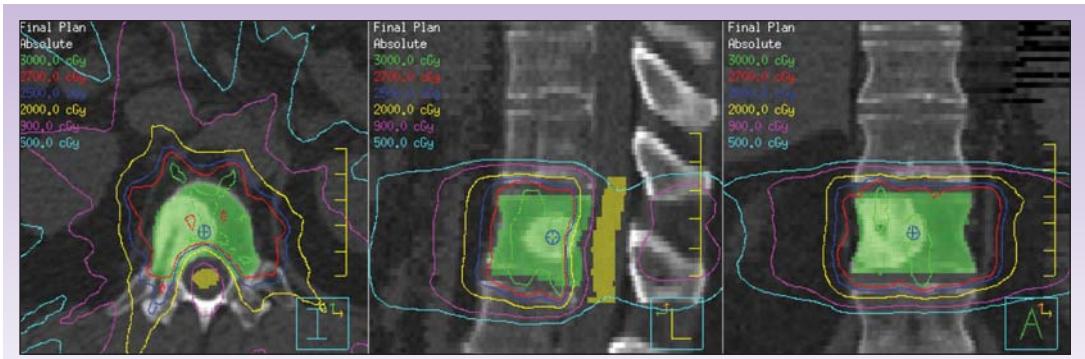
Six months after treatment with SBRT, 90 percent of the patients were progression-free and one year after treatment 84 percent had no progression of spinal tumors, researchers found.

The method also proved to be effective in terms of pain control. At the trial's baseline, 27 percent of patients were pain-free. At three months, 50 percent reported being pain-free and at six months, 59 percent reported being completely pain-free.

"We were surprised at how quickly the treatment began working," said Dr. Chang. "Within two to four weeks we could already see the reduction of pain pretty dramatically across the board in the patients we treated.

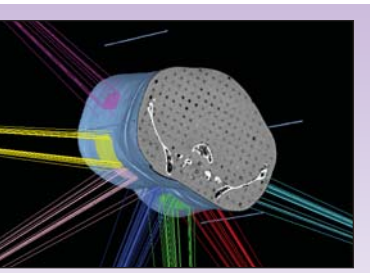
"The other surprising finding is that other areas of symptomatology were affected by this intervention as well," Dr. Chang continued. "Patients reported reduction in fatigue, drowsiness and sleep disturbances. No damage to the spinal cord was reported."

Dr. Chang said it is particularly encouraging to have SBRT as an option for patients who suffer from certain melanomas or renal cell tumors that often do not respond to conventional



Using CT image-guided stereotactic body radiotherapy (SBRT), the six-month and one-year progression-free survival rates for spinal metastasis were 90 percent and 84 percent respectively, researchers found. Previously irradiated T12 spinal metastasis from lung cancer showing biopsy-proven progression (note biopsy tract through the pedicle of the axial image of spine on the left). The re-irradiation treatment plan to deliver SBRT is shown in the axial, sagittal and coronal images.

Images courtesy of Almon S. Shiu, Ph.D



ON THE COVER
Typical multiple co-planar beam arrangement utilized for delivery of SBRT for spinal metastases.

radiation therapy or for patients who have previously undergone radiation and are not candidates for further radiation treatments.

"The findings here are quite interesting and important, especially in the subgroup of patients who had prior radiation therapy to the spine," said Dwight E. Heron, M.D., an associate professor of radiation oncology at the University of Pittsburgh Cancer Institute (UPCI).

"We know in excess of 50 to 60 percent of patients who have cancer will develop bone metastasis over their lifetime," said Dr. Heron. "It can be fairly challenging, particularly if a patient has had radiation that is commonly used to treat the spine for palliation. If they have had radiation before, it's difficult to retreat the same or adjacent area a second time because the spinal cord can only tolerate a certain dose of radiation without significant toxicity.

"Our options after patients have failed a course of radiation are limited," Dr. Heron concluded. "We can treat them with a nerve block and then perhaps prescribe narcotics, but that usually has an adverse impact on the patient's overall quality of life."

Dr. Heron said he believes the M.D. Anderson prospective study corroborates the findings UPCI researchers have gathered retrospectively in their use of SBRT for spinal metastases in more than 750 patients.

Treatment Applications Could "Explode"

Drs. Chang and Heron feel the next step in this research is to collect more medical evidence so that insurance companies will consider SBRT a reliable treatment option.

The case for using SBRT is best made in a certain subset of patients whose histologies, like tumors from kidneys or certain skin cancers such as melanomas, tend to be a bit more resistant to conventional radiation, Dr. Heron said.

"In those cases, these higher doses of radiation may actually be more efficacious as the first attempt to control these tumors and offer patients pain relief," he said. "We need to show insurance companies that using this more expensive technology upfront before using the cheaper approach is better because you don't have to do a second course of radiation and because patients get pain relief. We can get them off narcotics and possibly avoid some spinal complications that we see in the more traditional approach."

Dr. Chang predicts a growing demand for the use of SBRT in clinical application. "I think application of this treatment could explode in the future because there is a large unmet need for this type of treatment."

In contrast to the relative ineffectiveness of conventional therapies, Dr. Chang said he and his team were encouraged to see a reduction in pain and growth in the so-called radioresistant tumors.

"Our team has been frustrated in the past by how these radioresistant cancers can continue to grow after treatment with conventional radiation," he said. "When a particular treatment fails, patients want to know what options they have. If this technique is not available, they really don't have another option except surgery or palliative medicine. That's why we apply it to the most difficult cases to get the maximum benefit for patients."

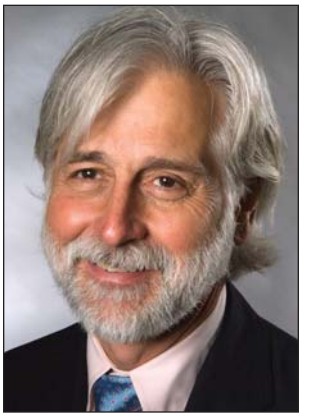
Continued on Page 9

Radiation Oncology at RSNA 2009

An RSNA 2009 refresher course, "What Diagnostic Radiologists Need to Know about Radiation Oncology (RC118)," will include a section on "Radiosurgery in the Head and Body," presented by Dwight E. Heron, M.D. Other presentations include, "Basic Concepts in Radiation Oncology" by Stephanie A. Terezakis, M.D., "Radiation Therapy Techniques," by Ruth F. Lavigne, M.D., and "Applications of PET in Radiation Oncology," by Billy W. Loo Jr., MD., Ph.D.

Registration for these and all RSNA 2009 courses is under way. For more information, go to *RSNA2009.RSNA.org*.

Revised Pediatric Guidelines Aid Radiologists in Detecting Child Abuse



Paul K. Kleinman, M.D.
Harvard Medical School

Alan S. Brody, M.D.
University of Cincinnati College of Medicine

Caroline L. Hollingsworth, M.D., M.P.H.
Duke University Medical Center

RADIOLOGISTS facing the grim task of assessing potential child abuse now have newly revised imaging guidelines as part of a new policy statement from the American Academy of Pediatrics (AAP) that more closely mirror recommendations from the American College of Radiology (ACR).

The 2009 AAP policy statement, "Diagnostic Imaging of Child Abuse," published in the May issue of the AAP journal, *Pediatrics,* was updated from the association's 2000 policy based on newer research and clinical experience, according to lead author Paul K. Kleinman, M.D., a professor of radiology at Harvard Medical School and director of musculoskeletal imaging at Children's Hospital, both in Boston. For example, new research was the impetus for new recommendations to include oblique views of the ribs to check for fractures, said Dr. Kleinman.

"A major objective of the updated version is to bring the views and recommendations in line with those of the ACR so that there is consistency," said Dr. Kleinman, an internationally recognized expert in pediatric radiology and the detection of child abuse.

> *Radiologists see patterns of injury that correlate with abuse. We can offer a very important piece of the puzzle.*
> **Caroline L. Hollingsworth, M.D., M.P.H.**

The revised document also serves as a reminder of the importance of imaging in identifying the extent of physical injury when abuse is present and the necessity of elucidating all of the imaging findings that may point to an alternative diagnosis. The guidelines also emphasize the importance of close collaboration between clinician and radiologist.

"Doctors are obligated to check for abuse," said AAP statement co-author, Alan S. Brody, M.D., a professor of radiology and pediatrics at the University of Cincinnati College of Medicine and Cincinnati's Children's Hospital and Medical Center. "Questions about radiation exposure may come up. The decision to use ionizing radiation is a risk/benefit decision. The risk of cancer from a series of radiographs is extremely small. Determining whether or not someone is physically harming a child is a huge and potentially life-saving benefit."

Specifically, the updated AAP guidelines examine the use of CT, ultrasonography and MR imaging for head trauma, CT for potential abdominal trauma and the pros and cons of radiographs, CT and MR imaging for spine injuries. The review also discusses guidelines for radionuclide bone scans.

Digital Impact Acknowledged

One major change between 2000 and 2009 has been the migration from radiographs to PACS. While there were fundamental principles guiding the radiographic skeletal survey with film screen technique, "there are many more variations with digital, such as adjusting the blackness or the whiteness of the picture, which was not something you could do with film screen radiographs," Dr. Kleinman said.

The newly revised AAP recommendations, that mirror ACR standards and appropriateness criteria, charge radiology departments with providing an adequate level of diagnostic detail at the lowest radiation dose possible.

"Digital offers attractive options when it comes to brightness, magnifi-

cation and the ability to share pictures with colleagues, but there is also more latitude in deciding on an appropriate technique," Dr. Kleinman said.

Dr. Brody said using PACS does not change the requirement for high-detail images. This allows radiologists to identify and interpret injuries correctly so that a child is not put back into an abusive situation and caretakers are not falsely accused of abuse.

Radiology is Important Piece of Complex Puzzle

Dr. Kleinman said the revised AAP guidelines enhance radiology's connection to a new subspecialty recently approved by AAP, child abuse pediatricians, which "has given us a new opportunity to build consensus," he said. "Working closely with radiologists, these physicians strive to find an accurate diagnosis for the protection of children at risk and assist social and legal bodies of assessment.

"Child abuse is a complex problem," Dr. Kleinman added. "It is challenging to be able to make an accurate diagnosis and differentiate from conditions that may simulate or mimic it, as in cases of bone disease, and exclude them."

"Radiologists see patterns of injury that correlate with abuse," said Caroline L. Hollingsworth, M.D., M.P.H., an assistant professor of radiology and pediatrics at Duke University Medical Center in Durham, N.C., and chair of the pediatrics subcommittee of the RSNA Education Exhibits Committee. "We can offer a very important piece of the puzzle."

Imaging can play an important role in what she said is an underreported issue. For example, radiology can help with general dating of some injuries. When radiologists are asked to estimate when an injury occurred, "We can say: 'It's older than two weeks,' but we can't say 'Last Thursday,'" said Dr. Hollingsworth.

Radiologists must remind others of the judicious use of CT and try not to over-image children when the suspicion of child abuse is low, Dr. Hollingsworth said. Radiologists also must be aware of potential diseases that mimic abuse, as in cases of bone disease, and exclude them. "We can help clinicians guide those parents," Dr. Hollingsworth said.

Clinician, Radiologist Collaboration Urged

In the revised guidelines, researchers emphasize the importance of close collaboration between clinician and radiologist and stress that diagnostic imaging of suspected inflicted injury in infancy and childhood should be performed with at least the same rigor used in evaluating accidental trauma and naturally occurring disease.

"To be confident that the imaging studies are acquired and interpreted in a thorough and informed manner, clinicians charged with reporting and providing evidence in cases of suspected abuse should work in close collaboration with radiologists experienced in pediatric imaging," the authors concluded.

Dr. Brody said he thinks the revised AAP document is so important that it should be posted on radiologists' walls so they can refer to it on a regular basis.

"These are guidelines for events that, happily, don't come up that often in general practice. They should be handy when needed," he said.

Learn More

- An online version of "Diagnostic Imaging of Child Abuse" is available at: *pediatrics.aappublications.org/cgi/content/full/123/5/1430.*

Pediatric Radiology Series Planned for RSNA 2009

A Pediatric Radiology Series will be among the multisession courses offered at RSNA 2009. The courses, to be held Sunday, Nov. 29, through Tuesday, Dec. 1, include presentations on imaging of pediatric spine trauma, head and neck emergencies in children, pediatric chest trauma and pediatric CT angiography.

Registration for this and all RSNA 2009 courses is under way. For more information, go to *RSNA2009.RSNA.org.*

RSNA 2009 Quality Counts

Stereotactic Body Radiotherapy Effective for Treating Spine Tumors

Continued from Page 7

Utilization Barriers Remain

Along with convincing insurance companies of its efficacy, cost and the small number of well-trained teams performing SBRT on the spine are current barriers to increased utilization of the methodology, Dr. Chang said. However, both he and Dr. Heron said they believe research results like those presented by M.D. Anderson and UPCI teams will create demand.

"I think as the technology gets better and the cost comes down, we may start looking at this as the primary way to treat radioresistant tumors," said Dr. Heron.

Drs. Chang and Heron agreed that changes involving increased use of SBRT must be considered thoughtfully.

Dr. Chang said he believes having a well-trained staff is essential to replicating the outcomes seen at M.D. Anderson. Dr. Heron stressed the importance of careful deliberation for each team considering SBRT for spinal metastases.

"I'm always cautious here," said Dr. Heron. "It's great to have great technology. At the same time, just because you have a hammer, doesn't mean everything you see is a nail."

Learn More

- For more information on stereotactic body radiotherapy, visit the International Radiosurgery Association at *www.irsa.org*

Early Radiology Exposure Could Lure Medical Students to Specialty

IMPROVING perceptions and increasing early efforts to expose medical students to radiology could help counteract recent waning interest in the specialty, according to radiology professors.

"Some of the shift has to do with students' misperceptions about what radiologists actually do and the central role that we often play in patient care," said David M. Hovsepian, M.D., a professor of radiology at Stanford University Medical Center and vice-chair of the *RSNA News* Editorial Board. "We can't expect them to choose a career in radiology if we don't make this clear to them from the very start of their training."

David M. Hovsepian, M.D.
Stanford University Medical Center

Terry Desser, M.D.
Stanford University Medical Center

While radiology remains in the top 10 specialty choices, it has fallen from number five in 2007 to number eight in 2009, according to the National Residency Matching Program. The private, nonprofit corporation's 2009 report includes nearly 37,000 applicants and 4,000 graduate programs.

Dr. Hovsepian said the ebb is partly due to limited federal funding for postgraduate medical education which pays for training up to five years, discouraging potential applicants who might discover radiology while training in other programs.

"It used to be that you could complete a residency in medicine, for instance, and then do radiology and the government would keep paying for your training," Dr. Hovsepian said. "Now you have to choose your career path to do radiology specifically. From the standpoint of maintaining robust programs, we lose some vitality as well, since our residents now come from a less diverse pool as a result of that limitation."

> *We need to be the ones teaching them anatomy and about imaging and the manifestations of pathophysiology on imaging early in their training, so they recognize what we do and what we contribute.*
>
> **Terry Desser, M.D.**

It is, in fact, the perception of a better lifestyle that keeps radiology among the top specialties, said Terry Desser, M.D., residency program director of Stanford's radiology department.

"They're looking for what's going to be intellectually stimulating, emotionally fulfilling and lucrative," Dr. Desser said. "Many students seem to be starting families at an earlier age and they all have massive amounts of debt, so they make a very practical calculation. They look at the income potential and lifestyle and radiology winds up pretty high on their list."

Subspecialization is Asset and Liability

Drs. Hovsepian and Desser agree that subspecialization adds credibility to a radiologist's work, but expressed concern about the impact on appeal to students. "Training in radiology can't be lengthened in perpetuity," said Dr. Desser. "We're competing with specialties where the entire length of training is three years."

Another concern, Dr. Desser said, is the compartmentalizing of emerging radiologists. Medical students often say they are attracted to radiology because of the broad knowledge base required to interact with multiple specialties, she said. "If radiologists are seen as pigeonholed and subspecialized, then that appeal potentially goes away."

Subspecialization is a trend driven by the market, and private practices attach a higher value to fellowship-trained radiologists, said Howard P. Forman, M.D., M.B.A., a professor of diagnostic radiology and management at Yale University School of Medicine and chair of the American College of

Stereotypes Drive Perception of Radiology

RADIOLOGISTS are more than familiar with the stereotypes surrounding their specialty. David Wen, a student finishing his first year at the University of Minnesota Medical School in Minneapolis, admits much of his knowledge of radiology stems from rumor.

"It seems the day-to-day routine of a radiologist entails sitting around waiting for someone to ask you to interpret films," said Wen, who is considering specializing in cardiothoracic surgery. "There's perhaps a lack of social interaction with colleagues in other fields because radiologists are not meandering around, but waiting to be consulted."

Wen said he believes it is important that students work one-on-one with radiologists to better understand their role and dispel current stereotypes.

"To some extent medical students still think radiologists are antisocial geeks," said Terry Desser, M.D., residency program director of Stanford University's radiology department. She referred to "The 12 Medical Specialty Stereotypes," a 2007 comic series by then-medical student Michelle Au, now an anesthesiologist in Atlanta. A panel labeled "Radiology: Rich in the Dark" depicts two white eyeballs in a black room with an X-ray image accompanied by the clink-clink "sound of counting gold dubloons."

"That's not an appealing model, especially for women," Dr. Desser said. "Now that women make up such a large percentage of medical students, we need to be cognizant of the fact that we can't just appeal to students with our cool technology."

For radiologists who want to survive in a competitive market, the days of "easy hours" are over, said David M. Hovsepian, M.D., a professor of radiology at Stanford University Medical Center and vice-chair of the *RSNA News* Editorial Board.

"You can't sit there waiting for the phone to ring," said Dr. Hovsepian. "Somebody's going to outsource you to another specialty or will quickly move in to fill the gap."

Naturally, radiology's allure also depends on the current job market. "If there's worry that those jobs are going to disappear, the turnaround is pretty quick in terms of drop-off applications and people leaving the specialty," Dr. Desser said. "We saw this in the 1990s during the Clinton healthcare reform. It'll be interesting to see how specialty choices play out next year vis-à-vis the Obama healthcare changes."

Radiology (ACR) Committee on Radiologist Resources. "As long as that trend continues, we'll continue to see residents doing one or two fellowships at a minimum," he said.

Campus Charisma a Necessity

Immensely important to students' exposure are radiologist role models, Dr. Desser said. "I see some extremely strong radiology departments that for some reason don't get many applicants, while other schools, where there is a particularly charismatic individual or two, have huge numbers of radiology applicants."

Aaron Eifler, a second-year student at Northwestern University's Feinberg School of Medicine in Chicago, attributes his current career path to his mentors' guidance. Eifler's work in interventional radiology, investigating a novel treatment for pancreatic cancer that combines intraarterial catheter-targeted delivery, MR perfusion monitoring and a functionalized gold nanoparticle, earned him a 2009–10 Howard Hughes Medical Institute Research Training Fellowship.

"Awareness of prestigious research opportunities like this might help induce more medical students to consider this path," said Reed A. Omary, M.D., M.S., vice-chair of research for radiology at Northwestern and an RSNA Research & Education (R&E) Foundation grant recipient who has mentored Eifler since the student's undergraduate years.

"Without question, I wouldn't have the success or productivity I've had without Dr. Omary and my co-mentor [C. Shad Thaxton, M.D., Ph.D., an assistant professor of urology]," said Eifler. "Visibility on campus is extremely important. If you have a great lecturer in a certain specialty, you might try to get involved and do research with that person."

Venu Vadlamudi, M.D., a diagnostic radiology resident at Michigan State University's College of Human Medicine in Flint, is using his status as a resident and leader within organizations, including the Michigan State Medical Society and the American Medical Association (AMA), to recruit medical students on behalf of RSNA and the specialty. "Students may not fully understand what it is we do until they rotate with us," said Dr. Vadlamudi, who helped staff RSNA's booth at AMA's Medical Specialty Showcase in June. "Outreach from the radiology community will allow us to continue to attract the best and the brightest to this dynamic field."

Radiologists face an uphill battle in getting face time in the medical student curriculum, said Dr. Desser, but the fight is worth the effort. "We need to be the ones teaching them anatomy and about imaging and the manifestations of pathophysiology on imaging early in their training, so they recognize what we do and what we contribute."

Learn More

- The National Residency Matching Program's 2009 Main Residency Match report is available at *www.nrmp.org.*

Resident Recruitment Explored at RSNA 2009

AN RSNA 2009 refresher course, "The Life Cycle of Radiology Resident Recruitment (RC702)," offers insight into the ebb and flow of interest in radiology residencies. Janet E. Bailey, M.D., will present a section on recruitment and Felix S. Chew, M.D., will speak on current trends.

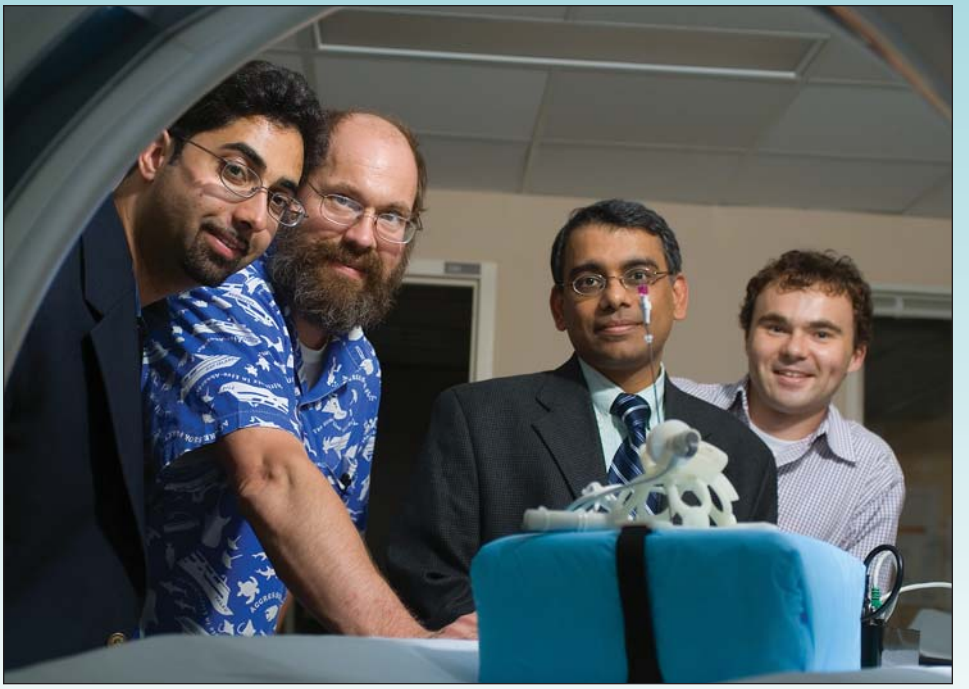
Registration for this and all RSNA 2009 courses is under way. For more information, go to *RSNA2009.RSNA.org.*

RSNA 2009 Quality Counts

Robotic System Aids CT-Guided Needle Biopsy

LUNG BIOPSIES and ablations are just some of the procedures that could become less complicated and more precise if a newly designed robotic system that aids in CT-guided percutaneous medical procedures earns FDA approval and makes its way into clinical practice.

The robotic biopsy device, called Robopsy, has the potential to impact the healthcare industry far beyond lung procedures, said Rajiv Gupta, M.D., Ph.D., a radiologist at Massachusetts General Hospital (MGH) in Boston. Dr. Gupta has been collaborating on the project since 2004 with Conor Walsh and Nevan Hanumara, doctoral candidates at the Massachusetts Institute of Technology (MIT), and Alex Slocum, Ph.D., a professor in MIT's Department of Mechanical Engineering.



Inventors of Robopsy *(left to right)* Nevan Hanumara, Alexander Slocum, Ph.D., Rajiv Gupta, M.D., and Conor Walsh, pictured with the robotic system *(forefront)* that aids in CT-guided percutaneous procedures. Designed to sit over a patient's chest during a CT scan, the device grips, orients and inserts a biopsy needle or ablation probe while that patient remains inside the CT gantry.
Photo courtesy of Stuart Garfield.

"Robopsy has the potential to change how a number of image-guided procedures are performed," said Dr. Gupta. "It can also open new ways to approach procedures that are currently performed through open surgery."

For example, with minor modification, the device could aid in the placement of ventricular drainage catheters in the head, said Dr. Gupta.

Designed to sit over a patient's chest during a CT scan, the device grips, orients and inserts a biopsy needle or ablation probe while that patient remains inside the CT gantry. The small, lightweight and disposable actuator can target lesions as small as 5 millimeters and significantly cut procedure times, saving the patient time under anesthesia and cost per procedure, said Dr. Gupta.

"Currently these are manual procedures that are performed in what are essentially blind steps," said Dr. Gupta. "It would be much easier if the probe could be placed under the command of the physician while imaging is under way. A real-time feedback loop is possible with a device like this."

MIT Students Create Prototype

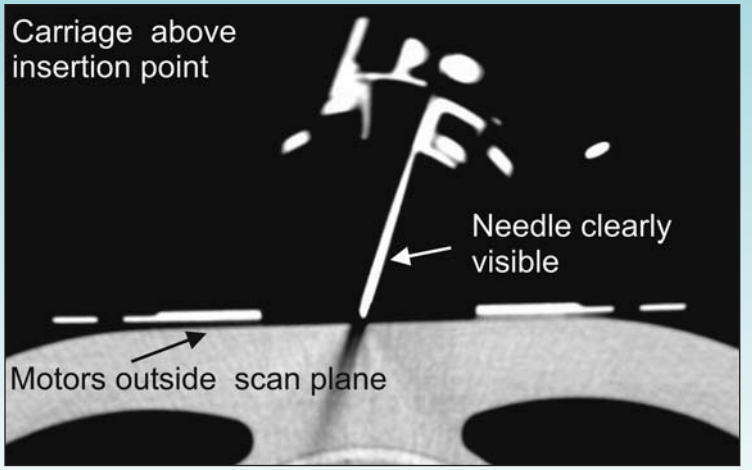
The device has been under development since Dr. Gupta made a presentation to Dr. Slocum's mechanical engineering class at MIT about five years ago. The class was held in conjunction with the Center for Integration of Medicine and Innovative Technology (CIMIT), a non-profit consortium of Boston teaching hospitals and engineering schools.

Intrigued by Dr. Gupta's presentation, students Walsh and Hanumara began creating a prototype for the device during the course.

"We thought that it sounded like a great problem we could work on," Hanumara said. "Three months later we decided to file the provisional application for a patent and we've been moving ahead with it ever since."

Hanumara and Walsh hope the device will eventually have many useful applications for radiologists.

"We tried to design the system to be as general as possible," said Walsh. "We initially focused on percutaneous needle insertions guided by CT, but they could potentially be guided by MR imaging or ultrasound as well."



A CT scan of the Robopsy prototype demonstrates minimal distortion to the images, which allows the needle to be clearly visualized.
Image courtesy of Robopsy team.

This image of the Robopsy prototype shows the lightweight, patient-mounted device attached to the box housing electronics for controlling the motors.
Photo courtesy of Robopsy team.

Physicians Aid Design Process

Along with Dr. Gupta, the team has worked closely with physicians including Joanne Shepard, M.D., division chief of chest radiology at MGH, from whom they sought input on designing the device to better suit physicians' needs.

Although Robopsy was originally designed to be controlled with a joystick, designers discovered radiologists preferred using 2D scans and were more comfortable working off a computer screen.

"As one doctor said to us, 'I work in a 2D environment. My son might enjoy using a joystick like he does in a video game, but I don't want it,'" Hanumara said. "We got rid of that. We made that transition from thinking, 'Let's add all the cool engineering features' to 'Let's just include what the doctors need.'"

Another key was making sure the device actually aided doctors without hindering them in the process.

"It has to be fast," Walsh said. "Anything that slows a physician down at all is realistically not going to get adopted. The way our device works, all the doctor has to do is follow the same steps that are currently performed. They place the robot on the patient and once the device is scanned, we have software that semi-automatically figures out where the needle is and determines all the necessary equations. All the doctor is really left to do is just point and click."

The group also had to be careful in assuring doctors that the device is not intended to replace them, but to serve as a time-saving aid that also benefits patients by enabling earlier diagnoses and reducing the risk of complications through more precise probe placement.

At RSNA 2006, Hanumara and Dr. Gupta privately demonstrated the system to about 30 interventional radiologists—some who were resistant to the technology, fearing they would be replaced by a machine.

"That was a very small minority," Hanumara said. "The majority was favorably impressed by Robopsy's simplicity, size and functionality and expressed willingness to try it. Many suggested other soft tissue procedures where they could envision the device being useful."

Robopsy has the potential to change how a number of image-guided procedures are performed. It can also open new ways to approach procedures that are currently performed through open surgery.

Rajiv Gupta, M.D., Ph.D.

Prototypes Prepared for FDA Approval

Despite the generally positive reception, Robopsy needs FDA approval before it can be marketed to the healthcare industry. As a step in that direction, the team has formed a manufacturing partnership to prepare the device for production. The prototypes that come from that process will be used in seeking FDA approval.

"The device is fairly close, but the process of bringing a device to the FDA is expensive," said Dr. Gupta, who added that further testing is also under way.

The team, which has raised $300,000 so far from CIMIT, the Department of Radiology at MGH and the Massachusetts Technology Transfer Center, estimates it will need $3 million to bring Robopsy to market.

"Our primary goal is to try to get this device out as quickly as possible so it can be used by physicians and assist patients," Walsh said. □

Learn More

■ For more information on Robopsy, go to *www.robopsy.com.*

Chicago Events and Attractions Shine at RSNA 2009

FROM ITS world-class museums and bustling theater scene to its delectable dining and family-friendly activities, Chicago offers a stellar lineup of attractions sure to please everyone attending RSNA 2009. In keeping with our economy-conscious times, be sure to check out our Insider's Guide to Chicago's Best Deals.

RSNA Tours & Events

RSNA is sponsoring a series of tours and events during RSNA 2009. The RSNA Tours & Events brochure is available at *RSNA2009.RSNA.org.* Click Tours & City Events in the left-hand column.

Please look for the RSNA TOUR icon next to event listings in this article, signifying that a pre-arranged RSNA package is available. Enroll for tours and events online when registering for the annual meeting or while adding courses.

Museums

Art Institute of Chicago

American Gothic, 1930, by Grant Wood, is part of the permanent collection at the Art Institute of Chicago.

THE Art Institute's world-renowned permanent collection includes a noteworthy exhibition of surrealistic paintings and Impressionist art now showcased in the stunning Modern Wing, RSNA TOUR 20 which opened in 2009. The 264,000 square foot addition elevates the Art Institute of Chicago to the position of second largest U.S. art museum and allows the museum to exhibit a larger portion of its vast collection.

In November, visitors can explore *Apostles of Beauty: Arts and Crafts from Britain to Chicago,* the first Arts and Crafts exhibition at the museum in more than 30 years. It includes designs from the movement's notables such as Frank Lloyd Wright, William Morris and Gustav Stickley. Another special exhibition this winter is *Playing with Pictures: The Art of Victorian Photo Collage.*

- 111 S. Michigan Ave.
  Tickets: 1-312-930-4040
  www.artic.edu
  www.ticketmaster.com

Field Museum

RSNA TOUR 13 While visiting The Field Museum, say hello to Sue, the largest, most complete and best preserved Tyrannosaurus rex fossil ever discovered. Sue is only one of the many noteworthy specimens in the Field's permanent collection. The *Evolving Planet* exhibit explores four billion years of evolution, allowing visitors to touch a real dinosaur bone and the teeth of a mastodon and a wooly mammoth. Families may be interested in the new Crown Family Play Lab for children, which features interactive exhibits exploring science, anthropology, technology, nature, art and music, complete with a soundproof drum room.

The recently opened Ernst & Young 3-D Theater, Chicago's only completely digital 3-D theater, helps bring favorite museum topics to life. Movie tickets are $5 per person plus basic museum admission.

The Nature of Diamonds examines the uniqueness of the gem as it journeys from diamond mine to dealer. The exhibit includes noteworthy pieces by Fulco di Vedura, Cartier and Boucheron and works from Tiffany & Co. designed by Frank Gehry and Elsa Peretti.

- 1400 S. Lake Shore Dr.
  1-312-922-9410
  www.fmnh.org

Museum of Contemporary Art

THE MCA's permanent collection represents trends in art after 1945, with a special emphasis on Surrealism (1940s and 1950s), Minimalism (1960s), conceptual art and photography (1960s to the present), installation art and art by local artists. The collection includes paintings, sculpture, photography, video, film and installations.

This winter, MCA will host the most significant American exhibition of British artist Liam Gillick's work. The various media and formats consider how art and architecture influence interpersonal communication and vice versa. A complementary exhibit, curated by Liam Gillick himself, provides context for the artist's work.

Italics: Italian Art Between Tradition and Revolution explores Italian art and expression from the late 1960s to the present and demonstrates how these 75 Italian artists have forged new identities from their country's history.

Twentieth century artist Alexander Calder's work holds a place in many hearts with his colorful mobiles and stabiles. *Alexander Calder in Focus* is a small exhibit of his works from 1927 to 1968.

Michelangelo Pistoletto, Le trombe del giudizio, 1968.
Collezione Cittadellarte-Fondazione Pistoletto Collection, Biella.

- 220 E. Chicago Ave.
  1-312-280-2660
  www.mcachicago.org

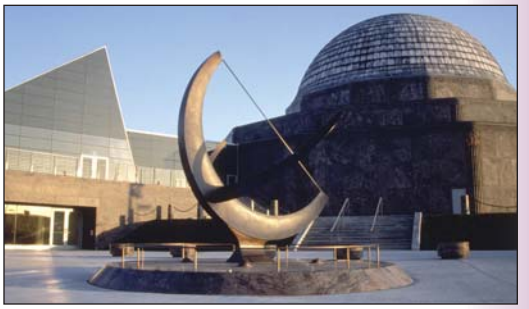
Shedd Aquarium

THE AQUARIUM is home to aquatic life from around the world, with a special emphasis on crowd favorites such as sharks—*The Wild Reef* offers one of the most diverse displays of sharks in North America. See Chicago's treasured Beluga whales, dolphins and penguins in Fantasea, located in the newly renovated Oceanarium. A 15-foot, walk-in yellow submarine has been added to the greatly enhanced under water viewing level. Visitors can also enjoy seahorses, otters and seals. Penguin petting is a must. Watch a diver hand feed a variety of species in the *Caribbean Reef*, a 360-degree tour of a 90,000 gallon underwater reef community. The Shedd, a principal part of the Museum Campus, is a tasteful blend of contemporary and 1930s architecture situated on the shore of Lake Michigan.

- 1200 S. Lake Shore Dr.
  1-312-939-2438
  www.sheddnet.org

Adler Planetarium

PLANETARIUM visitors now can view the newly restored Gemini 12 spacecraft in the *Shoot for the Moon* exhibit, where cutting-edge technology helps tell the story of America's part in the space race. Planetarium shows play continuously throughout the day in two theaters. The StarRider Theater provides a virtual reality experience, while the Sky Theater depicts stars and other nighttime wonders projected on Adler's distinctive dome. *Telescopes: Through the Looking Glass*, is a special exhibit celebrating the 400th birthday of the telescope. Learn how these amazing instruments have changed our concepts of the universe and our place in it.



The Adler Planetarium is located on a scenic section of the Museum Campus jutting into Lake Michigan.

- 1300 S. Lake Shore Dr.
  1-312-922-7827
  www.adlerplanetarium.org

Smith Museum of Stained Glass Windows

Located on the east end of Navy Pier, this free museum houses the nation's largest permanent collection of Tiffany stained glass windows. The museum has more than 150 stained glass works—some dating back to the 1890s—by artists including John LaFarge, Louis Sullivan, Louis Comfort Tiffany, Frank Lloyd Wright, Franz Mayer and F.X. Zettler. Admission is free and public tours are offered at no extra charge most Thursdays at 2 p.m.

- 600 E. Grand Ave.
  1-312-595-5024

Peggy Notebaert Nature Museum

Perched on the edge of a Lincoln Park lagoon, this museum welcomes children of all ages to explore nature in unusual and innovative ways. Permanent exhibits include the Look-in Animal Lab, Extreme Green House, Mysteries of the Marsh and the Butterfly Haven.

- 2430 N. Cannon Dr.
  1-773-755-5100
  www.chias.org

Chicago History Museum

The Chicago Historical Society has created an urban museum, which presents the fascinating multicultural RSNA TOUR 33 heritage of the region in creative, up-to-date exhibits. The museum's collection includes over 22 million artifacts and documents. Check the Web site for neighborhood tours, lectures, performances and events.

- 1601 N. Clark St.
  1-312-642-4600
  www.chicagohs.org

Lincoln Park Conservatory

A tropical oasis features greenery from around the world. Seasonal features include a Christmas show in December.

- 2391 N. Stockton Dr.
  1-312-742-7736
  www.chicagoparkdistrict.com/index.cfm

Museum of Science and Industry

Photo Credit: JB Spector, Museum of Science and Industry

Earth Revealed is one of the permanent exhibits at the Museum of Science and Industry.

THE Museum of Science and Industry is one of the most popular tourist destinations in Chicago and is the only remaining building from the 1893 World's Columbian Exposition. RSNA TOUR 30

Permanent exhibits include the U-505 World War II submarine, the fascinating Coal Mine and Colleen Moore's Fairy Castle. The recently redesigned Henry Crown Space Center features the Apollo 8 Command Module. The newest exhibit, *You! The Experience* provides interactive opportunities to inspire us all to optimize our personal health and well being. In *Smart Home: Green + Wired*, ecofriendly living is demonstrated in a three-story, sustainable "green" home that has been erected on the museum's property.

The special exhibit *Art + Science = Architecture* features unbelievable likenesses of many of the world's most famous buildings that are completely fabricated with oversized LEGO blocks. Annual seasonal exhibits include the *Christmas Around the World* and *Holidays of Light.*

The museum's Omnimax theater is a five-story, domed, wraparound theatre. Check the Web site for current showings.

■ 57th St. and Lake Shore Dr.
1-773-684-1414
www.msichicago.org

The Insider's Guide to Chicago's Best Deals

Take advantage of the many great deals and free activities available at many of the city's most popular destinations. Here is a rundown of the best free attractions in town along with their "free" days and times.

- Chicago History Museum, 1601 N. Clark St. (Monday)
- Museum of Contemporary Art, 220 E. Chicago (Tuesday)
- Charnley-Persky House Museum, 1365 N. Astor St. (Wednesday)
- Clarke House Museum, 1827 S. Indiana Ave. (Wednesday)
- Glessner House Museum, 1800 S. Prairie Ave. (Wednesday)
- Art Institute of Chicago, 11 S. Michigan Ave. (Thursday evenings, 5–9 p.m.)
- Notebaert Nature Museum, 2430 N. Cannon Dr. (Thursday)
- Chicago Children's Museum at Navy Pier, 700 E. Grand Ave. (Sunday, Dec. 6, admission is free for those 15 and under)
- Field Museum, 1400 S. Lake Shore Dr. (Dec. 2)
- Shedd Aquarium, 1200 S. Lake Shore Dr. (Nov. 30)

Always free:

- Chicago ArchiCenter, 224 S. Michigan Ave.
- Chicago Cultural Center, 78 E. Washington St.
- City Gallery at the Historic Water Tower, 806 N. Michigan Ave.
- Lincoln Park Conservatory, 2391 N. Stockton Dr.
- Lincoln Park Zoo, 2200 N. Cannon Dr.
- Millennium Park Welcome Center, 201 E. Randolph St.
- Museum of Contemporary Photography, 600 S. Michigan Ave.
- Navy Pier, 600 E. Grand Ave.
- Smith Museum of Stained Glass Windows, 600 E. Grand Ave.

McDonald's Thanksgiving Parade

Santa Claus, Ronald McDonald, and many other characters and personalities will march down State Street on Thanksgiving Day for the annual parade from 8:30–11 a.m.

Macy's Holiday Windows

A winter favorite for many is to take the family to view the animated window displays installed for the holidays at the Macy's store at 111 N. State Street.

Christkindlmarket Chicago and the Santa House

Opening November 26, Christkindlmarket Chicago is the largest and most renowned German winter holiday market in the U.S. attracting visitors from the city and around the world. Christkindlmarket is located on Daley Plaza between Washington and Dearborn Streets.

Save Money, Avoid Ticket Lines with CityPass

A CityPass ticket booklet containing admission tickets to the Shedd Aquarium, Adler Planetarium, Field Museum and Museum of Science and Industry, as well as the Hancock Observatory, is available for $69.00 and can save you up to 40 percent on all admissions and allow you to skip ticket lines at each venue. Once you start using the CityPass, you have nine days to visit all of the included attractions. Visit *www.citypass.com/city/chicago.html.*

Theater

RSNA TOUR 27

The Addams Family

Enjoy the family dynamics of this famous monster family, which may resemble yours.

- Ford Center for the Performing Arts
  Oriental Theatre
  24 W. Randolph St.
  1-312-902-1400
  www.ticketmaster.com

American Buffalo

Tension and humor ripple through playwright David Mamet's simple dialogue.

- Steppenwolf Theatre
  1650 N. Halsted Ave.
  1-312-335-1650
  www.steppenwolf.org

Cirque du Soleil

Vaudeville and Cirque du Soleil come together in Chicago for this one-of-a-kind performance.

- The Chicago Theatre
  175 N. State St.
  1-312-902-1500
  www.ticketmaster.com
  www.thechicagotheatre.com

Late Nite Catechism

This witty performance examining the Baby Boomer parochial school experience is a longtime favorite among those taught by nuns and also serves as a wry introduction to Catholicism.

- Royal George Theatre
  1641 N. Halsted St.
  1-312-902-1400
  www.ticketmaster.com

The Second City

The Main Stage of Chicago's favorite comedy venue features well-established actors and skits and a smaller ETC stage features up-and-coming Chicago comics.

- Main Stage and ETC stage
  1616 N. Wells St.
  1-312-337-3992
  www.secondcity.com

The Snow Queen

Hans Christian Andersen's popular winter tale will be performed for a fourth holiday season.

- Victory Gardens Mainstage
  at the Biograph
  2433 N. Lincoln Ave.
  1-773-871-3000
  www.victorygardens.org

Young Frankenstein – The New Mel Brooks Musical

This live-on-stage comedy is as hilarious and scary as the film version but with singing and dancing. Winner of the 2008 Outer Critics Circle Award and the *Broadway.com* Audience Award for Best Musical.

- Cadillac Palace Theatre
  151 W. Randolph St.
  1-312-902-1400
  www.ticketmaster.com

Family Performances

A Christmas Carol

This production of the famous Dickens tale makes even Scrooge seem magical.

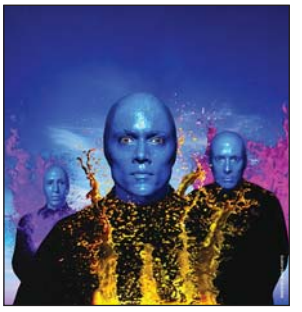
- Goodman Theatre
  170 N. Dearborn St.
  1-312-443-3800
  www.goodman-theatre.org

Rewired

by Blue Man Group

Performance art and comedy meet music. Certainly not conventional theater, the performance is furiously paced and loud. Blue Man has a well-earned position as one of the most popular performances in the city.

- Briar Street Theatre
  3133 N. Halsted
  1-773-348-4000
  www.blueman.com
  www.ticketmaster.com



Family Activities

American Girl Place

Shoppers at American Girl Place may choose among the beautiful dolls. Call to make a reservation for lunch, tea or dinner.

- Water Tower Place
  835 N. Michigan Ave.
  1-877-247-5223
  www.americangirl.com

Chicago Children's Museum

More than 12 interactive exhibits and new programs offer hours of creative play. Hands-on exhibits are creatively focused on science, literacy, humanities and the arts.

"Snow Much Fun" offers a winter wonderland of fun including an "ice rink" where children can skate in their stocking feet to festive, wintry music.

- 700 E. Grand Ave. (on Navy Pier)
  1-312-527-1000
  www.chichildrensmuseum.org

Navy Pier IMAX Theatre

The Navy Pier IMAX theatre will announce its complete holiday film schedule in late autumn. Included will be "A Christmas Carol" in 3D.

- 700 E. Grand Ave.
  1-312-595-5629
  www.imax.com/chicago

Lincoln Park Zoo

The Lincoln Park Zoo is the oldest zoological garden in the country, as well as one of the most modern. Casting a festive glow on the zoo grounds, the Zoo-Lights Festival is a popular nighttime activity. This event is open Friday through Sunday evenings.

- 2200 N. Cannon Dr.
  1-312-742-2000
  www.lpzoo.com

Symphony and Opera

Lyric Opera of Chicago

RSNA TOUR 28 The world renowned Lyric Opera of Chicago performs in one of North America's most beautiful opera houses, the Civic Opera House, which opened in 1929. Tickets go on sale in August.

Photo credit: Lauri Eriksson.

Karita Mattila sings the title role of Katya Kabanova

Katya Kabanova
December 1 and 4

A poignant story of a young Russian woman's decision to pursue love at all costs.

By Leoš Janáček; Conductor: Markus Stenz with Karita Mattila, Judith Forst and Brandon Jovanovich

- 20 N. Wacker Dr., 1-312-332-2244 x5600
  www.lyricopera.org

Chicago Symphony Orchestra

December 3 RSNA TOUR 40

Conductor: Markus Stenz

Program: Mendelssohn: *Violin Concerto,* Mahler: *Symphony No. 4*

December 4

Conductor: Markus Stenz

Mahler: *Symphony No. 4*

- 220 S. Michigan Ave.
  1-312-294-3000
  www.cso.org

Research & Education Foundation Donors

THE Board of Trustees of the RSNA Research & Education Foundation and recipients of Foundation grants gratefully acknowledge the contributions made to the Foundation May 16 – June 19, 2009.

Thanks to the support of individuals, corporations and private practices, the Silver Anniversary Campaign has reached $14.35 million of its $15 million goal.

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Celebrating 25 years, the RSNA R&E Foundation provides the R&D that keeps radiology in the forefront of medicine. Support your future, donate today at RSNA.org/campaign.

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Austin, Texas

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Changes Announced for R&E Foundation Grant Programs

The RSNA Research & Education (R&E) Foundation has made several changes to its grant programs. Most notably, RSNA membership is required for all applicants.

New elements of R&E grant programs include:

- RSNA membership will be required for all grant applicants. Those considering applying for an R&E grant should confirm their RSNA membership status or become a member.
- The amount of the Research Seed Grant has increased from $30,000 to $40,000 for a one-year project. The grants enable young researchers to begin pilot study projects that often lead to substantial subsequent funding.
- Eligibility, project scope and budget for the Education Scholar Grant have been restructured to allow great flexibility in the types of education projects that can be funded.

RSNA membership is free for medical students, radiology residents and fellows. Applicants who are members-in-training or are in another non-dues paying category must name a scientific advisor or co-investigator who is an RSNA member.

For more information on becoming a member, visit *RSNA.org/Membership.*

What R&E Has to Offer

R&E Foundation offers grants up to $150,000, with something for everyone from medical students to full-time faculty. Understanding the scope of R&E grants and awards can help ensure that deserving individuals benefit from available funding. Posters outlining the purpose, nature of projects and amount and eligibility of various grant programs *(see right)* can be downloaded at *RSNA.org/Foundation/grantposters.cfm.*

EDUCATION GRANTS

Deadline—Jan 10

• Education Scholar Grant: Provides funding opportunities for individuals with an active interest in radiologic education. Part-time salary support and educational expenses for up to two years. *Open to international applicants.*

• RSNA/AUR/APDR/SCARD Radiology Education Research Development Grant: Provides one-year research project opportunities for individuals seeking to advance the science of radiologic education. *Open to international applicants.*

RESEARCH GRANTS

Deadline—Jan 15

• Research Resident/Fellow Grant: Gives young investigators not yet professionally established in the radiologic sciences an opportunity to develop competence in research techniques and methods. To be used for salary and/or non-personnel research expenses.

• Research Scholar Grant: For junior faculty members who have completed conventional resident/fellowship training programs but have not yet been recognized as independent investigators. Provides salary support for two years.

• Research Seed Grant: Enables investigators throughout the world to gain experience in defining objectives and testing hypotheses in preparation for major grant applications to corporations, foundations and governmental agencies. Supports the preliminary or pilot phase of scientific projects. *Open to international applicants.*

RESEARCH MEDICAL STUDENT GRANT

Deadline—Feb. 1

• Makes radiology research opportunities possible for medical students and encourages them early in their medical careers to consider academic radiology as an option for their future. Provides stipend for students to complete three-month research projects.

More Information

Applicants for R&E research and education grants can begin preparing their applications starting in October. For more information on all Foundation grant and recognition programs, including current and past grant projects, go to *RSNA.org/Foundation* or contact Scott Walter, M.S., Assistant Director, Grant Administration at 1-630-571-7816 or *swalter@rsna.org.*

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Journal Highlights

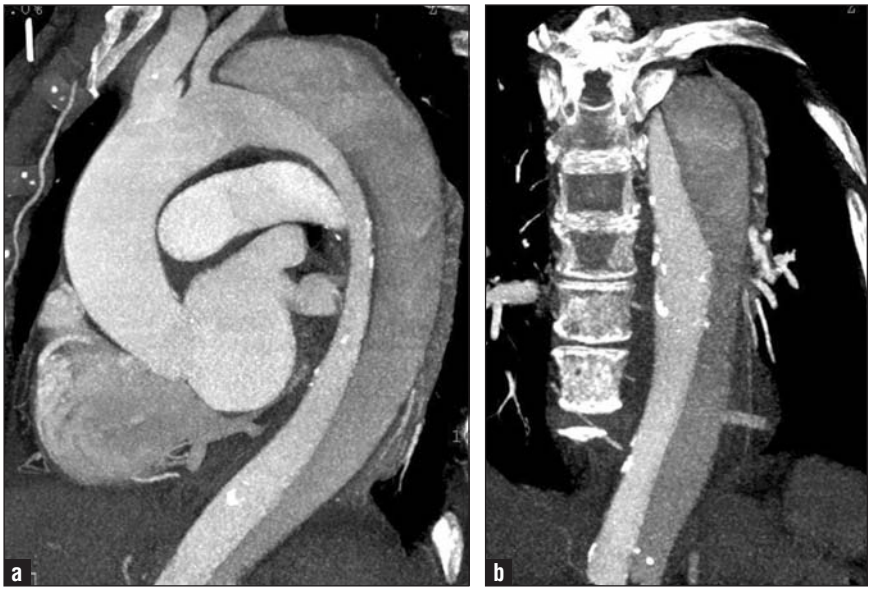
The following are highlights from the current issues of RSNA's two peer-reviewed journals.

Triple-Rule-Out CT Angiography for Evaluation of Acute Chest Pain and Possible Acute Coronary Syndrome

While diagnosing chest pain is a complex problem for the emergency department physician, triple rule-out CT can be a powerful tool for evaluating and triaging patients with a low to moderate risk of acute coronary syndrome (ACS) where diagnostic catheterization is not indicated.

In a review article in the August issue of *Radiology, (RSNA.org/radiology),* Ethan J. Halpern, M.D., of Thomas Jefferson University in Philadelphia, details how an optimized triple rule-out protocol provides excellent image quality for evaluating aortic and coronary and pulmonary arteries while minimizing contrast agent dose and radiation exposure. Specifically, the author addresses:

- The clinical role of triple rule-out CT
- Hardware and radiation issues
- Triple rule-out CT technique and image quality
- Patient selection, preparation and monitoring
- Setting up the triple rule-out scan
- Contrast agent injection and timing of image acquisition
- Image interpretation



Triple-rule-out (TRO) CT angiogram of a 79-year-old woman with recent onset of vague chest discomfort.

TRO CT demonstrates type B aortic dissection extending from distal aortic arch to the descending aorta. *(a)* Oblique slab maximum intensity projection (MIP) image shows the entire aortic arch with dissection flap extending into the abdomen. *(b)* Coronal slab MIP image again demonstrates the dissection with asymmetric enhancement of true and false lumina.

(*Radiology* 2009;252:332-345) © RSNA, 2009. All rights reserved. Printed with permission.

"Triple rule-out CT precludes the need for additional diagnostic testing in more than 75 percent of patients with low to intermediate risk of ACS," Dr. Halpern concludes. "In a properly selected population, coronary CT can provide a cost-effective evaluation with reduced diagnostic time, lower costs, and fewer repeat evaluations for recurrent chest pain as compared with standard diagnostic evaluation."

RSNA Journals Celebrate Impact Factor Increases

Impact factors for RSNA's peer-reviewed journals continue to rise. According to the recently released 2008 Citations Reports® from the Thomson/Institute for Scientific Information Annual Citation, *Radiology* has an impact factor of 5.996 (up from 5.561 in 2007) and *RadioGraphics* has an impact factor of 3.095 (up from 2.542). *Radiology* continues to have the highest impact factor among general diagnostic imaging journals and leads all imaging journals in total citations—44,847 in 2008. Citations Reports covers more than 7,500 of the world's peer-reviewed journals in approximately 200 disciplines.

Appearance of Normal Cranial Nerves on Steady-State Free Precession MR Images

WHEREAS traditional MR imaging sequences may lack the spatial resolution necessary to define smaller structures such as cranial nerves, steady-state free precession (SSFP) sequences allow much higher spatial resolution and clearer depiction of tiny intracranial structures.

In an article in the July-August issue of *RadioGraphics (RSNA.org/radiographics),* Sujay Sheth, B.A., Barton F. Branstetter IV, M.D., and Edward J. Escott, M.D., of the University of Pittsburgh School of Medicine, describe how SSFP sequences allow precise differentiation between branches of the facial and vestibulocochlear nerves, accurate detection of small masses in the cerebellopontine angles and internal auditory canals and detailed evaluation of the endolymph and perilymph within the inner ear.

RadioGraphics

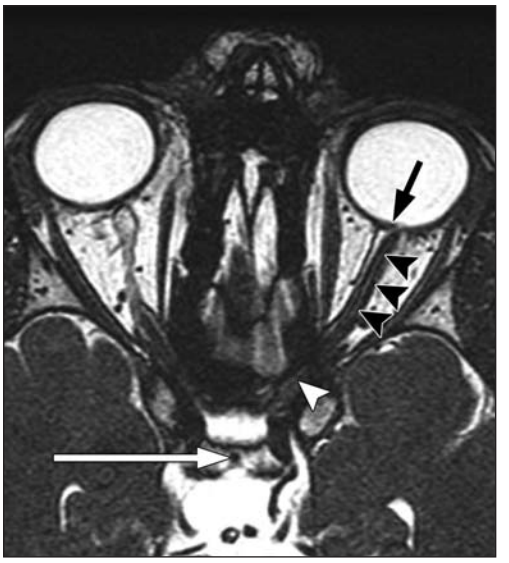
Specifically the authors:

- Identify the expected course of each of the 12 cranial nerves
- Differentiate cranial nerves from other curvilinear structures visible on high-resolution MR images
- Describe pitfalls in the diagnosis of cranial nerve abnormalities

"SSFP sequences depict these nerve segments in greater detail and can provide important information about the relationship of the nerves to pathologic processes," the authors conclude.

"To take full advantage of this information, radiologists must be familiar with the expected nerve anatomy and relevant anatomic landmarks."

This article meets the criteria for 1.0 *AMA PRA Category 1 Credit™*.



Optic nerve.
Axial oblique 0.8-mm-thick steady-state free precession (SSFP) MR image shows three of four segments of the optic nerve: the retinal *(black arrow)*, orbital *(black arrowheads)* and canalicular *(white arrowhead)* segments. The infundibulum of the pituitary gland *(white arrow)* is also seen. The fourth (cisternal) segment of the optic nerve would be visible on superior images.

(*RadioGraphics* 2009;29:1045–1055) © RSNA, 2009. All rights reserved. Printed with permission.

Radiology in Public Focus

Media Coverage of *Radiology*

In June, media outlets carried 331 news stories generated by articles appearing in print and online editions of *Radiology*. These stories reached an estimated 94 million people.

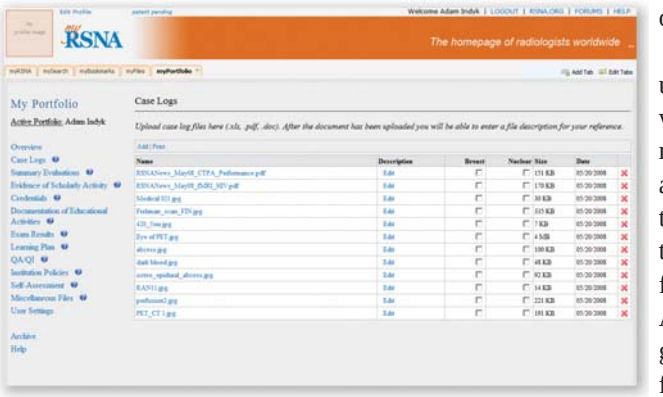
June coverage included *New York Magazine, Archeology Magazine, Press-Enterprise* (Riverside, Calif.), *Daily News* (Salt Lake City), *Bismarck Tribune* (N.D.), *Diagnostic Imaging, Radiology Today, Health & Medicine Week, Women's Health Weekly,* WTOL-TV (Toledo), KESQ-TV (Palm Springs, Calif.), KION-TV (Monterey, Calif.), KRDO-TV (Colorado Springs, Colo.), WREX-TV (Rockford, Ill.), WTXL-TV (Tallahassee, Fla.), WOI-TV (Des Moines), WBAY-TV (Green Bay, Wis.), KVIA-TV (El Paso), KVOA-TV (Tucson, Ariz.), WFTX-TV (Fort Myers, Fla.), WATE-TV (Knoxville, Tenn.), WTVF-TV (Nashville, Tenn.), KTRV-TV (Boise, Idaho), Yahoo!, *nydailynews.com, Canada.com,* and *guardian.co.uk.*

August Outreach Activities Focus on Brain Imaging

In August, RSNA's 60-Second Checkup radio program will focus on imaging of the brain, including the role of imaging in the management of acute stroke.

Working For You

Resident Learning Portfolio Now Available via myRSNA®



RSNA's free Web-based Resident Learning Portfolio, customizable with an institution's individual program materials, is now available via myRSNA®, the free personal homepage for RSNA members. Residents can add their information and files to create a personalized learning record.

The Resident Learning Portfolio can now be accessed in two ways: from Resources for Residents in the RSNA education portal at *RSNA.org/my_portfolio* and via myRSNA at *RSNA.org/myRSNA*. By using the direct links, residents will be taken directly to the myPortfolio tab on myRSNA after log-in.

Additionally, all files uploaded to myPortfolio will be integrated into myFiles. Users will find a myPortfolio folder near the root of their myFiles tree and can drag and drop files into their portfolio. Administrators and program directors can upload files for multiple residents.

Institutions must be registered to use the Resident Learning Portfolio. To get involved, e-mail *residents_portfolio@rsna.org.*

New Online Educational Offerings on InteractEd®

Several new Refresher Course programs from RSNA 2008 are now available online for *AMA PRA Category 1 Credits*™ as an RSNA member benefit:

- Meeting Technical Aspects While Sustaining a Successful Breast MR Imaging Program
- Pediatric Trauma? Accidental or Inflicted
- Diffuse Liver Disease: Deposition Disorders and Vascular Abnormalities
- CT Imaging – Dose Assessment in Clinical Practice
- Optimize Your Body MR Practice: Cutting-Edge Breast MR imaging.

To view these new programs, visit *RSNA.org/education.* For additional information on other available products, contact the Education Center at 1-800-381-6660 ext 3753 or 1-800-272-2920.

RSNA Education

RSNA Discusses Membership at SNM Annual Meeting

RSNA representatives, including Susan M. Anderson, M.L.S., assistant director: scientific affairs *(right)*, were on hand in June to discuss RSNA membership benefits at SNM's 2009 annual meeting in Toronto. The technical exhibits area at the meeting drew an estimated 3,438 attendees.

Program and Grant Announcements

Writing a Competitive Grant Proposal

January 29–30, 2010 • RSNA Headquarters, Oak Brook, Ill. • Registration Deadline—December 15

REGISTRATIONS are being accepted for the Writing a Competitive Grant Proposal workshop designed for researchers in radiology, radiation oncology, nuclear medicine and related sciences who are interested in actively pursuing federal funding.

A limited number of slots are available for this 1½-day intermediate-level program that combines didactic and small group interactive sessions designed to help radiologic researchers understand and apply the key components of writing a competitive grant proposal. Topics to be covered the NIH grant review process, developing specific aims and funding opportunities.

Guided by a faculty of leading researchers with extensive experience in all aspects of grant applications and funding, the program will focus on developing realistic expectations and provide tools for getting started. Faculty includes G. Scott Gazelle, M.D., Ph.D., M.P.H., of Massachusetts General Hospital in Boston, King C. Li, M.D., of Methodist Hospital in Houston, Robert Nordstrom, Ph.D., of the National Cancer Institute in Bethesda, Md., Ruth Carlos, M.D. of the University of Michigan Health System in Ann Arbor and Elizabeth Burnside, M.D., M.P.H., of the University of Wisconsin in Madison.

The course fee is $175. Registration forms can be found at *RSNA.org/CGP.* Contact Fiona Miller at 1-630-590-7741 or *fmiller@rsna.org* for further information.

Revitalizing the Radiology Research Enterprise

Application Deadline—September 11

Representatives from radiology, radiation oncology and nuclear medicine are invited to attend a 1½-day workshop on strategies for developing and expanding research programs in radiology and radiation oncology departments. Presentations, case studies and group discussions will be used to nurture radiology cultures that highly value research and educate radiology leaders in developing research programs and methods to identify, develop, mentor and reward radiologic and radiation oncologic scientists for research in imaging and image-guided therapy. The workshop will focus topics of general interest but is especially directed toward academic radiology departments not currently in the top tier relative to existing extramural funding.

Proposed topics include:

- Image research: strategy and models
- Radiology research training
- Case presentations of research program initiatives: impact of internal and external reviews
- Funding sources

Limited space is available. Download registration forms at *RSNA.org/rrre2009.* For more information, contact Fiona Miller at 1-630-590-7741 or *fmiller@rsna.org.*

New Days for Financial Seminars at RSNA 2009

Two investment seminars will be offered at RSNA 2009. "Effective Real Estate Investment Strategies," will be presented by J. Michael Moody, M.B.A. on Saturday, Nov. 28, and "Asset Protection and Retirement Planning in the New (Stimulus?) Era," will be presented by Barry Rubenstein, B.S., J.D., L.L.M., on Monday, Nov. 30. This year's new two-day format offers attendees more flexibility.

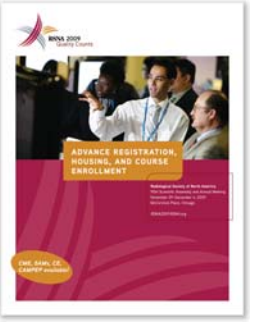
In challenging financial times, these simple and direct educational seminars specifically tailored for the medical professional will provide attendees with the tools necessary to achieve real estate and investment goals.

To register, go to *RSNA.org/register* or use the Registration and Housing Form 1 included in the Advance Registration, Housing and Course Enrollment Brochure. Additional fees apply for these seminars and you must be registered for the annual meeting to sign up. These seminars do not qualify for *AMA PRA Category 1 Credit™.* For more information, contact the RSNA Education Center at 1-800-381-6660 x7772 or e-mail *ed-ctr@rsna.org.*

News about RSNA 2009

Enroll Now for Courses

COURSE ENROLLMENT for RSNA 2009 is under way. Online enrollment occurs instantly, while faxed or mailed registration forms are processed in the order they are received. The RSNA 2009 Advance Registration, Housing and Course Enrollment brochure was mailed in late June and is also available at *RSNA.org/register.* You must be registered for RSNA 2009 in order to enroll for courses.



CME Update: Earn up to 90.75 *AMA PRA Category 1 CME Credits*™ at RSNA 2009

INTERNATIONAL VISITORS

International Letters Available—Act Now for Visa

Personalized letters of invitation to RSNA 2009 are available for request at *RSNA2009.RSNA.org.* Click International Visitors. This section of the annual meeting Web site also includes important information about the visa application process. Visa applicants are advised to apply as soon as they decide to travel to the U.S. and at least three to four months in advance of their travel date. International visitors are advised to being the visa process now.

Registering for RSNA 2009

There are four ways to register for RSNA 2009:

❶ Internet—Fastest way to register!
Go to *RSNA.org/register*

❷ Fax (24 hours)
1-800-521-6017
1-847-996-5401

❸ Telephone
(Monday–Friday, 8:00 a.m.–5:00 p.m. CT)
1-800-650-7018
1-847-996-5876

❹ Mail
Experient/RSNA 2009
568 Atrium Dr.
Vernon Hills, IL 60061
USA

RSNA® 2009
Quality Counts

November 29–December 4, 2009
McCormick Place, Chicago

Important dates for RSNA 2009

October 23	International deadline to have full-conference materials mailed in advance
November 6	Final discounted advance registration, housing and course enrollment deadline, to have full-conference materials mailed in advance
Nov. 29 – Dec. 4	RSNA 95th Scientific Assembly and Annual Meeting

Register by Nov. 6 to receive the discounted registration fee and full conference materials mailed to you in advance. International visitors must register by Oct. 23 to receive these materials in advance. Registrations received after Nov. 6 will be processed at the increased fee and conference materials must be obtained at the McCormick Place Convention Center. No hotel reservations will be accepted after Nov. 6.

Registration Fees

BY 11/6	ONSITE	
$0	$100	RSNA/AAPM Member
$0	$0	RSNA/AAPM Member Presenter
$0	$0	RSNA Member-in-Training, RSNA Student Member and Non-Member Student
$0	$0	Non-Member Presenter
$150	$250	Non-Member Resident/Trainee
$150	$250	Radiology Support Personnel
$680	$780	Non-Member Radiologist, Physicist or Physician
$680	$780	Hospital or Facility Executive, Commercial Research and Development Personnel, Healthcare Consultant and Industry Personnel
$300	$300	One-day registration to view only the Technical Exhibits

■ For more information about registering for RSNA 2009, visit *RSNA2009.RSNA.org*, e-mail *reginfo@rsna.org* or call 1-800-381-6660 x7862.

News about RSNA 2009

Receive Registration Materials Prior to the Meeting

Registration Materials

RSNA will mail registration materials in advance of the annual meeting to all North American attendees who register by **November 6**. RSNA will mail materials in advance of to all international attendees whose registration was received by **October 23**.

Registration materials include:

- **Name badge and holder**–RSNA will track attendance in the Technical Exhibit Halls rooms using radiofrequency identification, also known as RFID. No personal information is stored on the RFID badge, only an identification number. RFID is used to obtain total attendance counts and exhibit floor traffic. Attendees wishing to opt out of this program should visit an onsite Help Center.

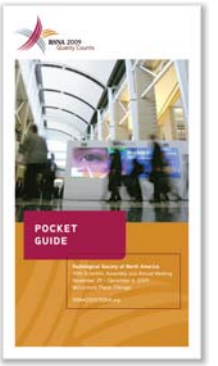
- **Course and tour tickets** (as requested)
- **Attendance vouchers for CME or CE credit**
- **Free pass for the Chicago Metra Electric Line train system**
- **Airport shuttle discount coupon**

Registration materials also include an ExpoCard™ and *Pocket Guide*:

ExpoCard™

ExpoCard ™ is an electronically personalized business card attendees can use at the technical exhibition to request exhibitor information. The card is encoded with the holder's name, institution, address, e-mail, address, phone/fax numbers and radiologic specialty. Attendees who prefer that exhibitors contact them at a different address than the one used during advance registration should provide alternate information directly to the exhibitor at the point of contact. Attendees may also visit either Help Center at McCormick Place to change the registration and ExpoCard detail.

Pocket Guide



The RSNA 2009 *Pocket Guide* is an easy-to-use reference guide with two main sections:

Overview of the RSNA Scientific Assembly and Annual Meeting

- Complete A-Z listing of everything available to attendees
- Room assignments for the scientific sessions, refresher courses and plenary sessions
- Floor plans of each building and each floor of McCormick Place

Traveling to and from McCormick Place

- Shuttle bus schedules, routes and boarding locations
- Taxi fees, loading and unloading areas
- Airport transportation service with times, costs and boarding information
- Complete Metra Electric Line Train System schedule outlining station locations, times and drop-off destinations
- Parking lot locations, hours and fees

Transportation information is also available online. Go to *RSNA2009.RSNA.org* and click Transportation.

"Radiology and the Family Physician" Builds Professional Bridges

A COURSE co-presented by RSNA and the American Academy of Family Physicians (AAFP), "Radiology and the Family Physician," will offer the opportunity for family physicians and radiologists to learn what they need and can expect from each other. Participants can engage in a dialogue to improve communication and optimize patient care.

The course will be presented by AAFP fellow Robert W. Bales, M.D., M.P.H., assistant professor of clinical family medicine at the University of Illinois College of Medicine at Rockford, and RSNA presenter Carol M. Rumack, M.D., a professor of radiology and pediatrics at the University of Colorado Denver School of Medicine. It will be held Monday, Nov. 30, from 8:30 a.m. to 10 a.m. Enrollment for this and all RSNA 2009 courses is under way.

For more information, see refresher courses for Monday, Nov. 30 at online course enrollment at *RSNA2009.RSNA.org/attendees/reg/course_enrollment.cfm.*

News about RSNA 2009

Technical Exhibition

2009 Exhibitor List Available

THE Technical Exhibition at the RSNA annual meeting, showcasing many new technologies and ideas, will span three exhibit halls and feature approximately 600 confirmed exhibitors, including 46 first-time companies.

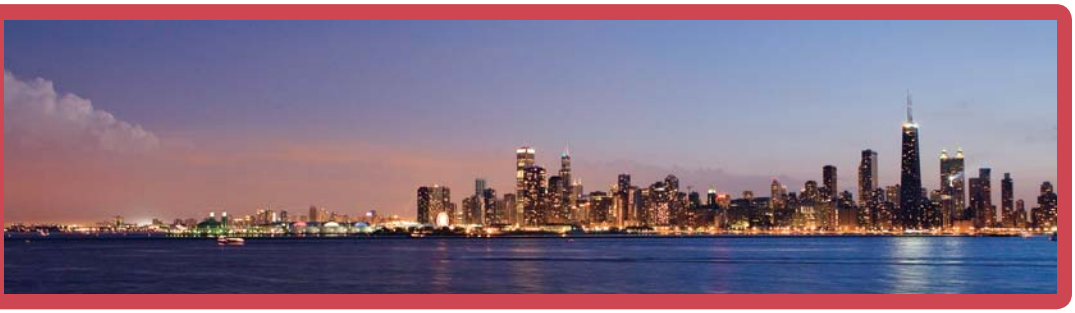
To see a list of participating companies, along with an interactive floor plan, visit *RSNA2009.rsna.org/exhibitor_list.cfm.*

More than 60 Exhibitors Attend RSNA Planning Meeting

John Jaworski, CEM, technical exhibit services manager for RSNA, addressed the more than 60 exhibitors who attended the RSNA Technical Exhibitors Planning Meeting held in June in Rosemont, Ill. Exhibitors were given space assignments and a registration update on RSNA 2009.

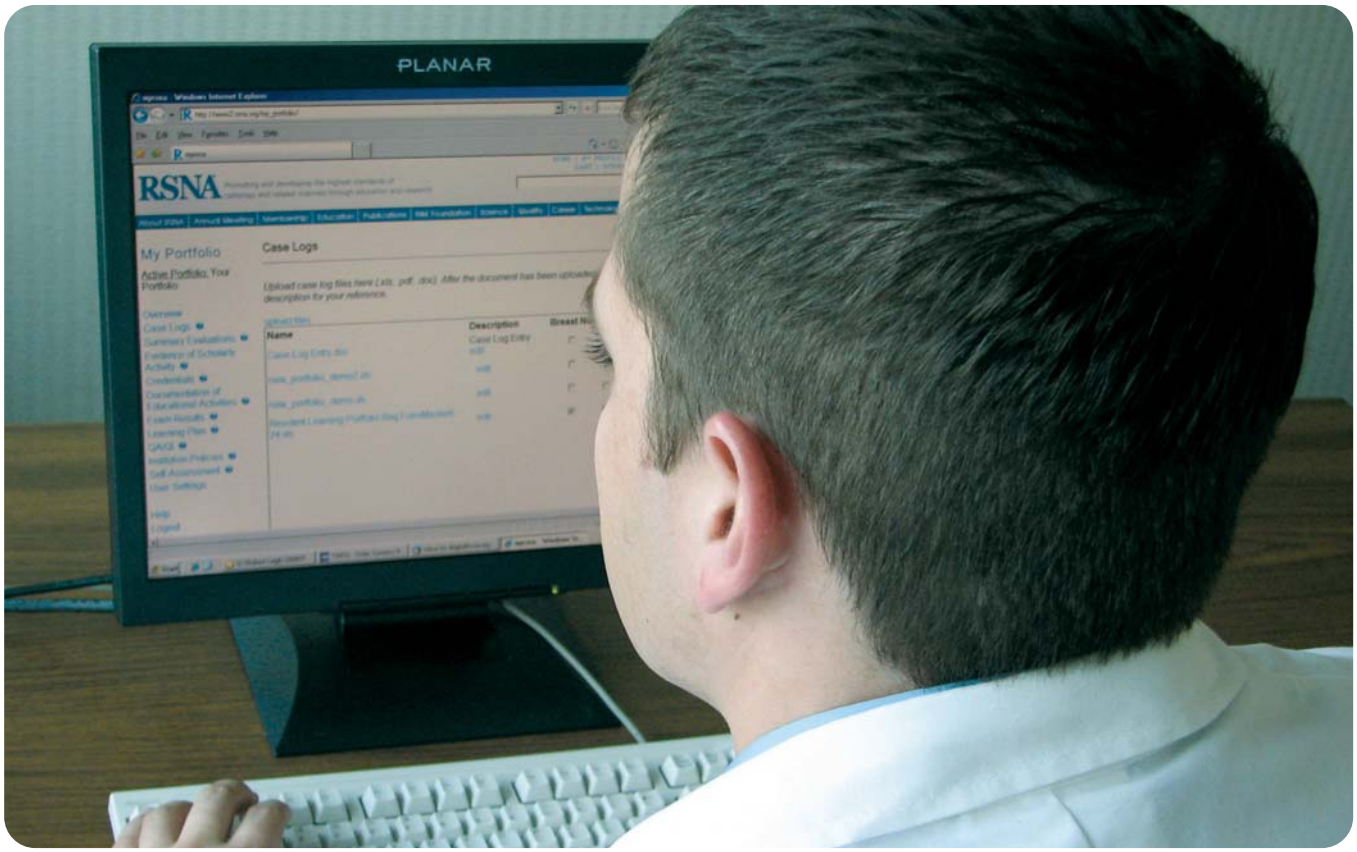
Chicago Attractions Headline RSNA 2009

For more information about Chicago events and attractions at RSNA 2009, see the roundup article on Page 14.



Resident Learning Portfolio

makes documenting educational progress easier



Track all of the requirements for your program and the ACGME with RSNA's Resident Learning Portfolio

- Organize a learning plan
- Document CME and educational activities
- Record exam results
- Easily access evaluations
- Store credentials
- Verify QA/QI projects

Get started today at *RSNA.org/myportfolio.*

My Portfolio is a free Web-based portfolio for residents developed by RSNA in collaboration with the education committee of the Association of Program Directors in Radiology (APDR). The dual access design of **My Portfolio** also provides program directors and coordinators the ability to better track residents' development and the overall success of their programs for ACGME.

RSNA Education

Association of Program Directors in Radiology

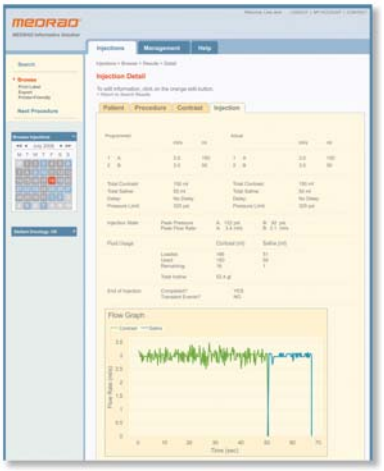
Questions? Contact us at *residents_portfolio@rsna.org* or call 1-800-381-6660 x7772.

Product News

NEW PRODUCT

Large-Display Multimedia Projectors for Medical Education

Canon U.S.A., Inc., *(www.usa.canon.com)* introduces two new high-resolution REALiS Multimedia Projectors, the REALiS WUX10 Mark II D and REALiS SX80 Mark II D. The products feature a DICOM Simulation mode for compliance with the DICOM Part 14 standardized display function for display of grayscale images. This new mode will provide medical educators with greater flexibility when training and conducting lectures and conferences where a large display is needed. The two projectors are not cleared or approved for medical diagnosis and should not be used for these purposes. Both new multimedia projectors will allow the user to calibrate directly on the projector rather than having to purchase additional equipment.



NEW PRODUCT

Contrast Injection Monitoring Application

MEDRAD, Inc. *(www.medrad.com)* has launched Manage.Report, an informatics application that enables healthcare professionals to immediately access clinical and administrative information associated with radiology patients' contrast injections from nearly anywhere. Manage.Report automatically captures and logs in a secure database essential patient- and radiology-management information concerning contrast injections delivered by the MEDRAD Stellant® CT injector.

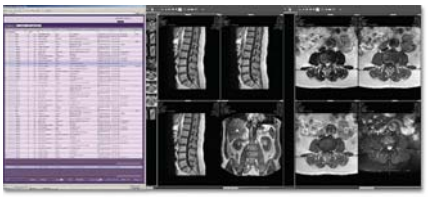
NEW PRODUCT

Multidetector CT Systems

Toshiba America Medical Systems *(www.medical.toshiba.com)* introduces the Aquilion® Premium and Aquilion CX multidetector CT systems. The Aquilion Premium includes 160 detector rows and coverage up to 8 cm in a single rotation. This system is also field-upgradeable to an Aquilion ONE. The Aquilion CX features reconstruction of up to 28 images per second, Quantum Advantage detector technology and a patient couch that can accommodate up to 660 pounds. The CX features a 72 kW generator for wider mA scanning flexibility, coneXact® software for higher definition images for extremities and IACs, SUREExposure™ including QDS and Boost3D™ and double the console storage capacity of a conventional 64-detector CT.

NEW PRODUCT

PACS/DICOM-compatible Multimodality Mammography Viewer



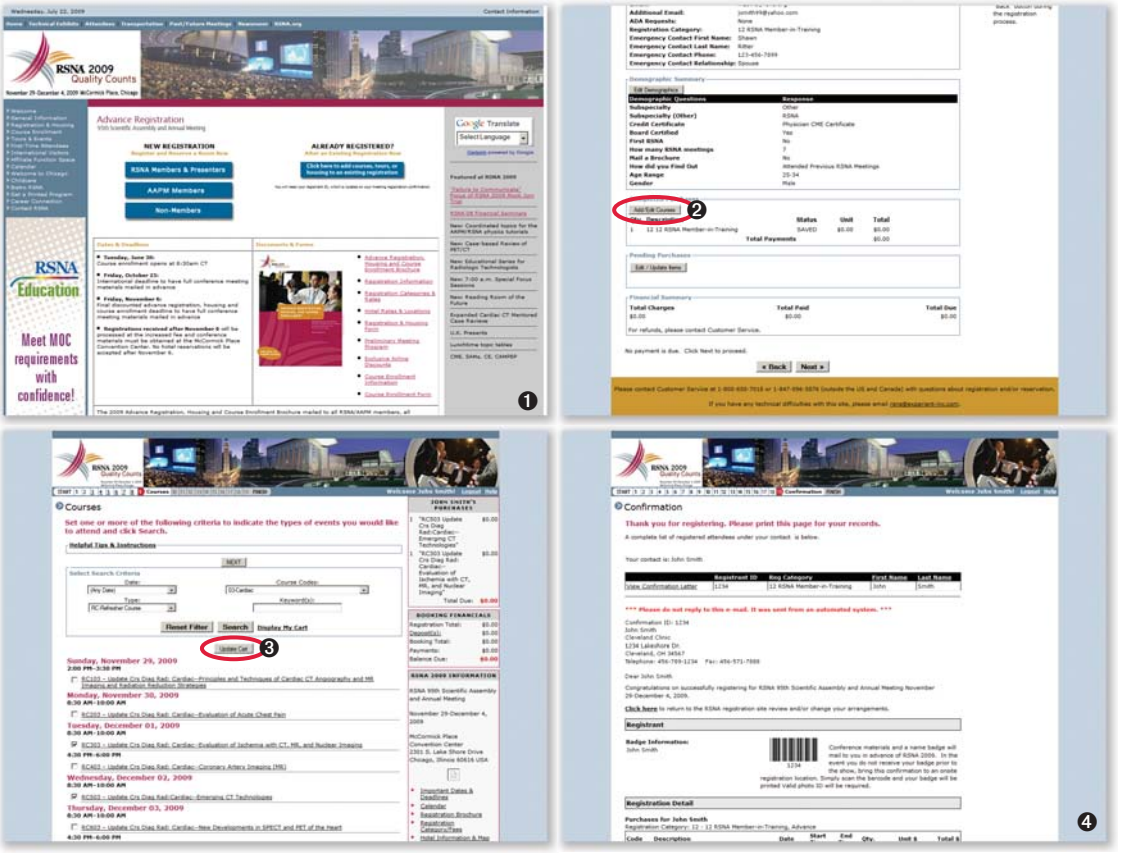
Viztek *(www.viztek.net)* announces a full-featured mammography viewer that seamlessly integrates with its Opal-RAD PACS solution as well as any PACS-supporting DICOM Query/Retrieve to deliver high-quality display of detailed mammography exams. The multimodality viewer eliminates the need for a separate mammography workstation and utilizes the same image database as general patient images for streamlined image management and storage. It supports diagnostic quality viewing of full-field digital mammography and computed radiography and MR breast images. Specialized features include Quad Zoom, chest wall justification with back-to-back breasts and measurement tools. The viewer supports all major computer aided detection systems and is configurable for simultaneous grayscale and color monitor capabilities.

RSNA News Information for *Product News* came from the manufacturers. Inclusion in this publication should not be construed as a product endorsement by RSNA. To submit product news, send your information and a non-returnable color photo to *RSNA News,* 820 Jorie Blvd., Oak Brook, IL 60523 or by e-mail to *rsnanews@rsna.org.* Information may be edited for purposes of clarity and space.

RSNA.org

RSNA 2009 Course Enrollment

Online enrollment for RSNA 2009 courses is under way. You must be registered for RSNA 2009 to enroll for courses. Go to *RSNA.org/register* to get started.



❶ On the 2009 Registration, Housing and Course Enrollment page, select New Registration to start a new registration or Already Registered to add courses to an existing registration. From this page you can also download the Advance Registration, Housing and Course Enrollment brochure.

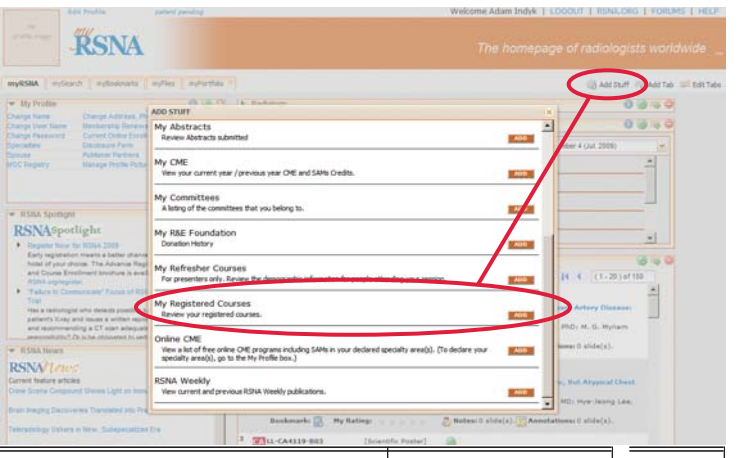
❷ On the Registration Summary Page select "add/edit" under the Completed Purchases section. You will be taken to the course page where you can search courses by date, course code course type or keyword.

❸ After selecting courses, click Update Cart to add items and continue searching or Next to move to the next page. You will continue to the Tour Page to select city tours and events and the Bistro-RSNA page to purchase lunch tickets. Click Update Cart or Next at the bottom of each page to confirm your selections and/or continue to the next page.

❹ Review the Registration Summary page for pending courses, tours and tickets. Click Next at the bottom of the page. You will be taken to the payment screen to complete any transactions involving fees. A meeting confirmation will appear on the page and a confirmation will arrive via e-mail within 24-48 hours.

Track RSNA 2009 Registered Courses

RNSA members can easily track their RSNA 2009 course enrollment with myRSNA® at *RSNA.org*. Once logged on, click myRSNA on the top left-hand side of the page. Members who have registered for courses can go to My Profile and select Current Online Enrollments to view their courses schedule as well as course numbers, titles, dates times locations and course descriptions. If you don't see the Current Online Enrollments category, you can add this widget by selecting Add Stuff on the upper right-hand corner of the myRSNA interface.



RSNA News

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1-630-571-7837 Fax
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CALENDAR

Medical Meetings August – October 2009

AUGUST 30–SEPTEMBER 3
12th World Congress of the World Federation for Ultrasound in Medicine and Biology (WFUMB), Sydney Convention and Exhibition Center, Darling Harbor, Australia • *www.wfumb2009.com*

SEPTEMBER 2–SEPTEMBER 5
International Skeletal Society (ISS), 36th Annual Meeting, The Capital Hilton, Washington D.C. • *www.internationalskeletalsociety.com*

SEPTEMBER 10–13
European Society of Urogenital Radiology (ESUR), European Symposium on Urogenital Radiology, Royal Olympic Hotel, Athens, Greece • *www.esur2009.gr*

SEPTEMBER 13–17
National Cancer Institute (NCI), Academy of Molecular Imaging (AMI) and the Society for Molecular Imaging (SMI), Imaging in 2020: A Conference on Molecular Imaging, Jackson Lake Lodge, Jackson Hole, Wyo. • *www.Imagingin2020.com*

SEPTEMBER 19–23
Cardiovascular and Interventional Radiological Society of Europe (CIRSE), Annual Scientific and Postgraduate Educational Meeting, Lisbon Congress Center, Portugal • *www.cirse.org*

SEPTEMBER 22–24
National Institute of Health (NIH) State-of-the-Science Conference: Diagnosis and Management of Ductal Carcinoma In Situ (DCIS), Natcher Conference Center, Bethesda, Md. • *consensus.nih.gov/2009/dcis.htm*

SEPTEMBER 23–26
AMI, SMI, the European Society for Molecular Imaging (ESMI) and the Federation of Asian Societies for Molecular Imaging (FASMI), World Molecular Imaging Congress 2009, Palais des Congress de Montreal • *www.wmicmeeting.org*

SEPTEMBER 30–OCTOBER 3
American Society of Emergency Radiology (ASER), Annual Meeting, Loews Royal Pacific Resort, Orlando, Fla. • *www.erad.org*

OCTOBER 1–3
European Society for Magnetic Resonance in Medicine and Biology (ESMRMB), 26th Annual Meeting, Maritim Pine Beach Resort, Antalya, Turkey • *www.esmrmb.org*

OCTOBER 2–6
North American Society for Cardiac Imaging (NASCI), 37th Annual Meeting, Omni Orlando Resort at ChampionsGate, Florida • *www.nasci.org*

OCTOBER 3–4
Society for the Advancement of Women's Imaging (SAWI), 2009 Symposium, Westin Chicago River North • *www.sawi.org*

OCTOBER 7–11
American Society of Head and Neck Radiology (ASHNR), 43rd Annual Meeting, Sheraton New Orleans Hotel • *www.ashnr.org*

OCTOBER 8–10
American Society for Clinical Oncology (ASCO), Breast Cancer Symposium: Integrating Emerging Science into Clinical Practice, San Francisco Marriott • *www.breastcasymposium.org*

OCTOBER 10–14
European Association of Nuclear Medicine (EANM), Annual Congress, Barcelona International Convention Center, Spain • *eanm09.eanm.org*

OCTOBER 11–13
Radiology Business Management Association (RBMA), Fall Educational Conference, Sheraton Wild Horse Pass, Chandler, Ariz. • *www.rbma.org*

OCTOBER 15–17
Society of Chairs of Academic Radiology Departments (SCARD), Annual Meeting, Fairmont Orchid Hawaii, Kohala Coast • *www.scardweb.org*

OCTOBER 15-19
Chinese Society of Radiology (CSR), 16th Chinese Congress of Radiology Annual Meeting, Hangzhou, Zhejiang, China • *ww.chinaradiology.org/csr/en/*

OCTOBER 16–20 **VISIT THE RSNA BOOTH**
Société Française de Radiologie (SFR), Les Journées Françaises de Radiologie (JFR) 2009, Palais des Congrès de Paris • *www.jfrexpo.com*

NOVEMBER 29–DECEMBER 4
RSNA 2009, 95th Scientific Assembly and Annual Meeting, McCormick Place, Chicago • *RSNA2009.RSNA.org*