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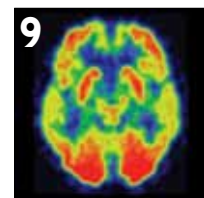


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## R&E FOUNDATION RECEIVES \$1.5 MILLION DONATION

The RSNA Research & Education (R&E) Foundation has received a \$1.5 million donation from the Ralph Schlaeger Charitable Foundation, created by radiologist Ralph Schlaeger, M.D. (1921-2007).

Dr. Schlaeger specialized in gastrointestinal radiology and was a radiologist at Presbyterian Hospital and professor of radiology at Columbia University College of Physicians and Surgeons in New York for 51 years. Dr. Schlaeger was published in *Radiology* and presented at RSNA annual meetings. His obituary noted: "A lifelong bachelor, Dr. Schlaeger devoted his life to the practice and teaching of radiology."

"Ralph was extremely well-respected," said Philip O. Alderson, M.D., former chair of radiology at Columbia University. "He was very accommodating with clinicians and always took the time for courteous consultation, which is too often missing from rushed healthcare practices today."

R&E Foundation Board of Trustees Chair Theresa C. McLoud, M.D., noted: "This truly remarkable gift will be a lasting tribute to Dr. Schlaeger's passion for radiology and service to the profession. What greater gift could a radiologist leave, than to enable future generations to contribute to the research and educational endeavors in this great specialty?"

The endowment will be used to support R&E Research Seed, Fellow and Scholar grants for young researchers beginning their careers in radiology.



Schlaeger

## QIBA Meeting Draws Record Attendance

The fourth annual Quantitative Imaging Biomarkers Alliance (QIBA) meeting drew a record number of stakeholders from the clinical community, imaging equipment manufacturers, the pharmaceutical industry, government agencies and medical informatics companies.

More than 85 participants attended the meeting held in May in Washington, D.C. Highlights included:

- Invited speakers from a number of government agencies including the U.S. Food and Drug Administration (FDA)/Center for Devices and Radiological Health and the FDA/Center for Drug Evaluation and Research updated attendees on mechanisms for biomarker qualification and progress made in the imaging biomarker arena.

- QIBA's five Technical Committees worked in breakout sessions to further develop QIBA Profiles and/or conduct project planning for groundwork studies to provide the data needed to establish or reinforce Profile claims.
- Technical Committee spokespeople provided updates on ongoing projects funded from contract monies awarded to



RSNA by the National Institute of Biomedical Imaging and Bioengineering.

For more information on QIBA and to access the *QIBA Quarterly* newsletter, updates from Technical Committees and presentations from the QIBA Annual Meeting, go to [RSNA.org/Research/QIBA](http://RSNA.org/Research/QIBA).

## RSNA News Reader Satisfaction High, According to Survey

RESPONDENTS TO A RECENT *RSNA News* survey gave the magazine high marks for its appearance, readability and quality of writing. More than three-fourths of *RSNA News* readers responding to a recent survey rate the appearance and readability as "excellent" or "very good" and about 70 percent similarly graded the quality of writing.

Just over 60 percent of respondents rated the usefulness and navigation of *RSNA News* online as "excellent" or "very



good." One respondent noted, "I enjoy the two versions of the news. The electronic form allows me to email other members of our department."

Journal Highlights and Radiology in Public Focus, featuring news from the *RSNA* journals, are the most frequently read sections of the magazine, according to the survey. Other frequently read sections are Announcements, annual meeting news and updates from the *RSNA* website. Fea-

ture articles on new technology, continuing education and new research ranked highest among respondents.

The survey was sent between March and July 2011 to 4,000 randomly selected *RSNA* members. Of the 377 who responded, almost 62 percent work in academic/teaching hospitals. Another 27 percent work in community hospitals and 8 percent in imaging centers. More *RSNA News* survey outcomes, including how 2011 results compare to those from past surveys, will be published in an upcoming issue of the magazine.

## Numbers in the News

# 6.066

Impact factor for *Radiology*, according to the recently released 2010 Journal Citation Reports® from the Thomson/Institute for Scientific Information Annual Citation. [Read the latest statistics for both RSNA journals on Page 21.](#)

# 24

Median survival, in months, of patients with neuroendocrine cancer whose liver metastases were treated with <sup>90</sup>Y radioembolization, according to a recent study. Colorectal cancer patients survived an overall median of 9.4 months. [Learn more about <sup>90</sup>Y radioembolization—which researchers say is well-tolerated as well as effective—on Page 7.](#)

# 49

Age, in millions of years, of a spider trapped inside a fossil, recently imaged with CT. [Turn to Page 11 to read more about how the evolution of technology—primarily in terms of spatial resolution and speed—has established the role of CT in such research as examining priceless antiques and evaluating skeletal remains of prehistoric Australian aborigines.](#)

# 1,487

Number of emergency department patient records analyzed by researchers studying whether CD import of outside examinations into PACS decreased imaging utilization rates in the subsequent 24 hours. Patients with successfully imported CDs had a 17 percent decrease in imaging rates during the subsequent 24 hours and a 16 percent decrease in subsequent CT scans, according to the study. [Read more on Page 5.](#)

## Full-content Apps, Mobile Access Available for *Radiology* and *RadioGraphics*; *RSNA News* tablet app available

Download *Radiology* and *RadioGraphics* from the App Store on iTunes to get full content, experience rich image viewing and move easily within articles and references on your iPhone®, iPod touch® and iPad®. Not an Apple device user? Read the journals on our mobile-optimized sites, [m.radiology.rsna.org](http://m.radiology.rsna.org) and [m.radiographics.rsna.org](http://m.radiographics.rsna.org).

In addition, tablet PC users can now download the *RSNA News* tablet edition on the Android Market or iTunes, or go directly to:

- Android Market: [market.android.com/details?id=air.org.rsna.rsnaews](http://market.android.com/details?id=air.org.rsna.rsnaews)
- iTunes: [itunes.apple.com/us/app/](http://itunes.apple.com/us/app/)



### NIH Honors Zerhouni

The National Institutes of Health (NIH) honored former NIH Director Elias A. Zerhouni, M.D., with an official portrait unveiled at a ceremony held in May in Washington, D.C. *From left, Dr. Zerhouni, 2010 RSNA President Hedvig Hricak, M.D., Ph.D., Dr. h.c., and current NIH Director Francis S. Collins, M.D., Ph.D.* Dr. Zerhouni received the RSNA Gold Medal in 2010.

### ACR Bestows Honors

**Lawrence W. Bassett, M.D., Leonard Berlin, M.D., and Arl Van Moore Jr., M.D.,** were awarded gold medals at the American College of Radiology's (ACR) recent annual meeting in Washington, D.C. **Andreas Adam, M.B.B.S., F.R.C.R.,** was named an honorary fellow.

Dr. Bassett is the Iris Cantor Professor of Breast Imaging, David Geffen School of Medicine at the University of California, Los Angeles. He is a former *RSNA News* Editorial Board member and a current member of RSNA's Public Information Advisors Network (PIAN). Dr. Berlin is a professor of radiology at Rush University's College of Medicine in Chicago and vice-chair of the Department of Radiology at NorthShore University HealthSystem, Skokie Hospital in Illinois. A former chair of RSNA's Professionalism Committee, Dr. Berlin is a current PIAN member. Dr. Moore is president of Charlotte Radiology in Charlotte, N.C., a past ACR president and past member of RSNA's Public Communications Committee.

Dr. Adam is a professor of interventional radiology at the University of London and honorary consultant radiologist at Guy's and St. Thomas' Hospital. Dr. Adam received RSNA honorary membership in 2006.



Bassett

Berlin

Adam

Moore



# RSNA Board of Directors Report

At its June meeting, the RSNA Board of Directors approved the Society's 2011-2012 budget, continued planning for the annual meeting and committed RSNA's expertise and experience to a number of intersociety collaborations.

## Abstract Submission Strong for RSNA 2011

Planning continues for RSNA 2011, with the RSNA Scientific Program Committee and its subcommittees choosing from the more than 12,000 abstracts submitted this year to design the meeting program. Among the new offerings is the Pediatric Campus, a special area of McCormick Place which will house all refresher courses, scientific papers and presentations in the pediatric subspecialty. More details will be available in the *Pocket Guide and Meeting Program*.

With RSNA 2012 already on the horizon, RSNA has announced that the abstract submission deadline will be March 31 again next year.

## Collaborations Strengthen Radiology Education, Policy

RSNA will sponsor a session on pediatric cardiovascular imaging and additional speakers at the 27th International Congress of Radiology (ICR), to be held in conjunction with the 42nd Sao Paulo Radiological Meeting, May 3-6, 2012, in Sao Paulo, Brazil.

RSNA is now a sponsor of the Commission on Accreditation of Medical Physics Educational Programs (CAMPEP). In addition, RSNA has expressed its support to the American Board of Radiology (ABR) for a combined training program leading to a primary interventional radiol-

ogy/diagnostic radiology dual certificate from ABR.

The Society also continues its contributions to the Image Wisely campaign. Task force members from RSNA, the American College of Radiology, the American Association of Physicists in Medicine and the American Society of Radiologic Technologists have developed criteria for an Image Wisely-compliant practice. The criteria—covering such areas as CT dose optimization and reduction methodologies and consultation with referring practitioners—will be published later this year. The Image Wisely campaign, launched in 2010 to increase awareness of radiation issues in adult medical imaging, is now widening its focus to include nuclear medicine procedures.

After this year's successful inaugural "Cancer Imaging and Radiation Therapy" symposium emphasizing the interaction between diagnostic radiology and radiation oncology, RSNA and the American Society for Radiation Oncology have agreed to offer another symposium in 2013.

## Meaningful Use a Hot Topic

RSNA is helping to define radiology's response to federal meaningful use policy, issued by Centers for Medicare & Med-

icaid Services (CMS) as part of the 2009 American Reinvestment and Recovery Act. RSNA will collaborate with the research firm KLAS on a joint survey regarding criteria to be used in developing regulations on meaningful use in radiology practice. A random sample of RSNA members will be included in the survey.



**Sarah S. Donaldson, M.D.**  
Chairman, 2011 RSNA Board of Directors

## RSNA Publications Capitalize on New Media

Look for RSNA on the cutting edge as the Society brings its publications to readers in

ever-expanding formats. *Radiology* and *RadioGraphics* are now available as mobile websites and as full-text apps available on the App Store. A multimedia mobile version of *RSNA News*, known as the *RSNA News* tablet edition, made its debut with the July issue and can be downloaded from the App Store and Android Market.

RSNA journals also continue to reach more readers worldwide. Selected articles from *Radiology* are now available in Chinese and from *RadioGraphics* in German. In addition, *Radiology* will now offer special collections, beginning with a volume on lung nodules in January 2012. The special collections will be available online in print-on-demand and e-book formats.

## R&E Foundation Celebrates

The RSNA R&E Foundation is pleased to report its fifth straight year of \$1 million in individual donations, allowing the Foundation to ever expand its efforts to support the next generation of radiologic science and education.

This is a busy and productive time of year for the RSNA Board of Directors. We are pleased to offer new programs, collaborations and opportunities to Society members.

**SARAH S. DONALDSON, M.D.**  
CHAIRMAN, 2011 RSNA BOARD OF DIRECTORS



RSNA continues its contribution to the Image Wisely campaign launched at RSNA 2010.

## My Turn

### Radiology Residency Training: Crucial Elements to Meet Today's Challenges

To earn and maintain accreditation from the Accreditation Council for Graduate Medical Education (ACGME), residency programs must demonstrate compliance with a broad range of requirements spanning from the institutional level to medical specialties and beyond. Programs are granted leeway in how they may fulfill these requirements and much is not standardized.

Traditionally, core residency training for radiology has focused on clinical content and procedural skills in nine subspecialty areas, but many programs have begun to include nontraditional content in an attempt to fulfill the goal of the ACGME's six core competencies.

A new challenge to radiology education is preparing for the proposed addition to the healthcare delivery system of what Washington policy makers are calling "accountable care organizations" (ACOs). These new groups will be charged with the care of defined populations of patients. The promise is that there will be a return of any shared savings back to

the ACOs from the Centers for Medicare & Medicaid Services for meeting cost and quality targets.

The need for radiologists to assume leadership roles in these new organizations cannot be over-emphasized. Given the central function of imaging services in healthcare, radiologists are the natural choice to manage an ACO's imaging enterprise and the information technology infrastructure that supports it. Promoting safety, quality and best practices also falls within that mission.

In the current fee-for-service environment, these unpaid services are viewed as a distraction from the "real work" of image interpretation. In order to receive a share of an ACO's revenues in compensation for managerial and administrative duties, radiologists will need to be involved in negotiating employment contracts with hospitals, participate in their hospital's medical staff governance and be knowledgeable about business practices.

Success in the new ACO environment will require a huge cultural shift and

future radiologists must be prepared to take active and leading roles. A proper foundation, established during residency training, is crucial to the success of the specialty.

Jannette Collins, M.D., M.Ed., is the Ben Felson Professor and Chair of Radiology and a professor of medicine at the University of Cincinnati College of Medicine. Dr. Collins is a member of the RSNA Education Council and chairs the Grant Program Committee and the Medical Student Grant Review Panel of the RSNA Research & Education Foundation.



**Especially for Residents:** The new Residents and Fellows Symposium at RSNA 2011 will feature such topics as where and when to look for a job and how to analyze different types of job offers. Learn more and register at [RSNA.org/register](http://RSNA.org/register).

For information on RSNA's recent Resident and Fellows Committee meeting, see Residents & Fellows Corner on Page 27.

## IN MEMORIAM:

### Rosalyn S. Yalow, Ph.D.

**Rosalyn S. Yalow, Ph.D.**, a medical physicist who was only the second woman to receive the Nobel Prize in Medicine, died May 30, 2011. She was 89. At her death, she was senior medical investigator emeritus at the James J. Peters VA Medical Center in the Bronx and the Solomon A. Berson Distinguished Professor-at-Large at Mount Sinai School of Medicine in New York.

In the 1950s Dr. Yalow co-discovered the radioimmunoassay, "which brought a revolution in biological and medical research," the Karolinska Institute said in awarding her the Nobel Prize in Physiology or Medicine in 1977. Dr. Yalow was also noted for overcoming numerous rejections to break into the male-dominated medical physics field. Among Dr. Yalow's career accomplishments was using the radioimmunoassay to determine that people with Type 2 diabetes produced more insulin than non-diabetics, providing early evidence that an inability to use insulin caused the disease.

Dr. Yalow was elected to the National Academy of Sciences in 1975 and received the Albert Lasker Medical Research Award in 1976. RSNA awarded her its Gold Medal in 1994.



## IN MEMORIAM:

### Renan P. Uflacker, M.D.

**Renan P. Uflacker, M.D.**, known worldwide for his accomplishments in interventional radiology, died June 12, 2011. He was 62.

Born in Porto Alegre, Brazil, Dr. Uflacker attended medical school and residency in his native country and completed interventional radiology fellowships in Oslo, Norway, and Pittsburgh. After practicing radiology in Brazil, Dr. Uflacker joined the faculty of the Department of Radiology at the Medical University of South Carolina (MUSC) in 1993, where he remained a professor and director of Vascular and Interventional Radiology until his death. Credited with transforming the division of interventional radiology at MUSC into a major national center, Dr. Uflacker conducted pioneering research in the areas of liver disease, portal hypertension, peripheral vascular disease, aneurysms and interventional oncology, and held multiple patents for medical devices.



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## LETTERS TO THE EDITOR

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# CD-based Image Transfer Reduces Utilization, Bolsters Case for Web-based Sharing

*CDs not only offer patients access to prior imaging studies but also may decrease subsequent imaging utilization, according to new research published in Radiology.*

WHILE HEALTHCARE IS moving toward Internet-based solutions for image sharing and universal electronic health records (EHR)—a primary goal of federal meaningful use provisions as well as the RSNA/National Institutes of Health/National Institute of Biomedical Imaging and Bioengineering (NIBIB) Image Sharing Project—the data contained on CDs will provide valuable insight during the lengthy transition process, experts say.

“The reality is that, until we have fairly robust transfer networks or image repositories in place, we’re likely to be dealing with CDs for many more years,” said Aaron Sodickson, M.D., Ph.D., director of emergency radiology at Brigham and Women’s Hospital in Boston and lead author of “Outside Imaging in Emergency Department Transfer Patients: CD Import Reduces Rates of Subsequent Imaging Utilization,” published in the April 2011 issue of *Radiology*.

Dr. Sodickson serves on the Emergency Radiology Subcommittee of the RSNA Scientific Program Committee.

## Data Transfer Reduces Unnecessary Tests

Dr. Sodickson and colleagues reviewed the medical records of 1,487 consecutive emergency department patients to identify whether CD import of outside examinations into PACS decreased imaging utilization rates in the subsequent 24 hours. Data imports were successful for 78 percent of patients. As for cases that could not be imported, “sometimes the CD was just not functional, but more commonly the data were in a non-standard, proprietary format,” Dr. Sodickson said.

Patients with successfully imported CDs had a 17 percent decrease in imaging rates during the subsequent 24 hours (2.7 versus 3.3 exams per patient) and a 16 percent decrease (1.2 versus 1.4 scans per patient) in subsequent CT scans, results showed.

“CDs are the most commonly available tool for image sharing and are one of the most important components of the patient handoff during transfers between hospitals. Access to the contained imaging exams allows us to reduce unnecessary and redundant imaging,” Dr. Sodickson said.

## Universal Standards will Optimize Image Sharing

While those findings are promising, universal adoption of the Digital Imaging and Communications in Medicine (DICOM) standard would improve data transfer rates, Dr. Sodickson said.

## Technology Forum



Sodickson



Mendelson

“There are vendors working on CD import solutions that decode those proprietary formats and convert them to DICOM to be imported into PACS,” he said. “I think our 78 percent success rate could be a lot higher using some of the new software tools out there.”

The 22 percent failed import rate reflected in Dr. Sodickson’s research is testament to the relatively slow pace of standards adoption in medical institutions—a gradually changing scenario that once fully embraced, will change the face of healthcare, said David S. Mendelson, M.D., chief of clinical informatics at Mount Sinai Medical Center in New York.

“While Dr. Sodickson and colleagues dealt with issues specific to the use of CDs as a sharing mechanism, their observations can help us understand how to optimize image sharing and its benefits in the Internet era,” Dr. Mendelson said. In the interim, he said, working toward better interoperability between systems and software will improve communication across healthcare sites, no matter what transfer method is used.

“The reality is, that until we have fairly robust transfer networks or image repositories in place, we’re likely to be dealing with CDs for many more years.”

**Aaron Sodickson, M.D., Ph.D.**



Driving the adoption of standards-based interoperability to improve patient care through innovation, standards profiling, testing, education and collaboration is the mission of the Integrating the Healthcare Enterprise (IHE®), which holds its annual North American connectathon (shown here)—a weeklong interoperability testing event—each year in Chicago.

“This is an important lesson as we design and implement Internet-based solutions intended to provide a seamless workflow,” Dr. Mendelson said. “It is essential that we encourage the adoption of a set of standards not only for image and report content such as DICOM3 and HL7, but also for transmission protocols.”

## RSNA Oversees Image Sharing Network

That is the goal of RSNA’s Image Sharing Project, created in 2009 through a \$4.7 million contract with NIBIB to build a secure, patient-centric medical imaging sharing network based on a common open-standards architecture.

RSNA is overseeing development of a Web-based network for sharing images and reports at five academic institutions. Patients will control access to their information through personal health records (PHRs), said Dr. Mendelson, chief investigator for the project. He also serves on the RSNA Radiology Informatics Committee (RIC), chairs the RIC subcommittee for Integrating the Healthcare Enterprise (IHE®) and serves on the RIC subcommittee for Structured Reporting.

“RSNA Image Sharing will allow patients to take control of their medical imaging information and securely share it via an internet-based network,” Dr. Mendelson said.

Investigators are now recruiting patients to use the network, which employs profiles created by IHE, an initiative among medical leaders, software developers, societies and vendors to improve communication between healthcare equipment, systems and software.

“Use of IHE profiles is essential in defining the standards that make exchange accessible to all in a safe, secure fashion at a reasonable cost,” Dr. Mendelson said.

## CDs a Necessary Conduit

While the RSNA project focuses on patient control of image distribution through PHRs, the underlying technology applies to other forms of data sharing such as health information exchange (HIE) and point-to-point solutions when these methods are appropriate for data exchange, Dr. Mendelson noted.

“Direct Internet sharing negates the need to rely on physical media—the CD,” Dr. Mendelson said. “Thus, problems created by defective CDs and needing to have the media in your possession should disappear, resulting in a more streamlined workflow.”

That said, CDs aren’t disappearing anytime soon, noted Drs. Mendelson and Sodickson.

Observing existing standards like those defined by IHE can improve their usefulness in healthcare facilities in the meantime, they said.

“Ultimately, implementing universal electronic medical records, image repositories or robust image transfer networks would streamline image transfer between various sites, obviating the need to send CDs with transfer patients,” Dr. Sodickson said. “However, CDs will likely remain the prevalent means of image transfer for the foreseeable future.” □

## WEB EXTRAS

For more information on interoperability in health systems—and to discover free software tools and templates to improve care at your institution—visit [RSNA.org/Informatics](http://RSNA.org/Informatics).

To access the *Radiology* study, “Outside Imaging in Emergency Department Transfer Patients: CD Import Reduces Rates of Subsequent Imaging Utilization,” go to [RSNA.org/Radiology](http://RSNA.org/Radiology).

Access the PowerPoint presentations “Outside Imaging in Emergency Department Transfers” presented by Aaron Sodickson, M.D., Ph.D., at RSNA 2010, and “Image Sharing: 2011 Review and Update,” presented by David S. Mendelson, M.D., at the 2011 Integrating the Healthcare Enterprise (IHE) Connectathon, at [rsnanews.RSNA.org](http://rsnanews.RSNA.org).

## LEARN “WHAT THE REFERRING PHYSICIAN NEEDS TO KNOW”

Radiologists looking to strengthen their relationships with referring physicians won’t want to miss RSNA 2011 course RC316, “What the Referring Physician Needs to Know.” This panel discussion will help attendees understand:

- What referring physicians need from radiologists at various stages of patient care
- Referring physicians’ preferences in communication methods
- Referring physicians’ needs regarding structured reporting and appropriateness criteria
- How to improve communications and work more effectively with referring physicians to enhance patient care
- Opportunities to improve/expand interactions with referring physicians

The course is sponsored by the RSNA Public Information Committee (PIC) and the discussion will be moderated by PIC Chair Mary C. Mahoney, M.D. Panelists: are Mary Mulcahy, M.D., oncologist; Jeffrey Graff, M.D., emergency department physician; and Jory Natkin, D.O., family practice physician.

The course is scheduled for Tues., Nov. 29, 8:30–10:00 a.m. Course enrollment for RSNA 2011 is under way at [RSNA.org/register](http://RSNA.org/register).





# <sup>90</sup>Y Radioembolization is Safe, Effective Liver Cancer Treatment

Yttrium 90 radioembolization—infusing yttrium 90 (<sup>90</sup>Y) microspheres through a catheter into the hepatic artery—is safe, well tolerated and may slow disease progression in patients with inoperable liver cancer who are not responding to chemotherapy, according to research presented recently at the Society of Interventional Radiology (SIR) 2011 Annual Scientific Meeting.

<sup>90</sup>Y RADIOEMBOLIZATION takes advantage of the fact that liver tumors get most of their blood supply from the hepatic artery, while the liver draws the majority of its blood from the portal vein, said lead researcher Riad Salem, M.D., M.B.A., a professor of radiology and director of interventional oncology at Northwestern University in Chicago.

“The microspheres blanket the tumors,” said Dr. Salem, who began studying radioembolization with TheraSpheres—glass-coated microbeads loaded with <sup>90</sup>Y—in 1999, after the FDA approved the procedure. “And because they concentrate at the tumors, there is limited damage to surrounding normal tissue.”

## Survival Rates are Promising

Dr. Salem and colleagues studied 151 patients, average age 63 years, with metastatic cancer that had spread to their livers and was resistant to chemotherapy. Between 2006 and 2010, patients underwent two <sup>90</sup>Y radioembolization treatment sessions, five weeks apart. Each patient received approximately 120 Gy and researchers tracked their progress every 90 days for nine months and every six months thereafter.

Ninety-six percent of the adverse events related to the treatment were mild and included fatigue, pain and hyperbilirubinemia. There were no unexpected major adverse events. Survival among patients varied depending on where the cancer originated; colorectal cancer patients survived an overall median of 9.4 months, whereas those with neuroendocrine tumors fared better, with a median survival of 24 months.

“The definition of ‘cure’ varies,” Dr. Salem said. “But we have seen many patients in other studies survive longer than five years and research has also shown lengthy periods of time-to-disease-progression.”

## Treatment Can Stave Off Liver Failure

Detailed treatment planning is important to the success of <sup>90</sup>Y radioembolization, according to Daniel E. Wertman Jr., M.D., co-chief of interventional radiology and an assistant professor of clinical radiology at the Indiana University School of Medicine (IUSM) in Indianapolis. Using CT to determine tumor volume and angiography to assess the blood supply to the tumor is essential, Dr. Wertman said.



Salem

Wertman

“It’s an angiography-intense procedure,” said Dr. Wertman, who has performed more than 100 <sup>90</sup>Y radioembolization procedures since joining IUSM in October 2006. “It’s important to block off any accessory branches arising from the hepatic arteries that could cause non-target injury.”

Most importantly, radioembolization offers new hope for patients facing a bleak prognosis, experts say. Aggressive surgery is often the first treatment option for liver cancer, but only 10 to 20 percent of hepatocellular carcinomas—the most common type of liver cancer—can be removed completely with surgery, according to the National Institutes of Health. If the cancer cannot be completely removed, the disease is usually fatal within three to six months.

“Right now, <sup>90</sup>Y radioembolization is the best method for treating metastatic disease in the liver when chemotherapy has failed.”

**Daniel E. Wertman Jr., M.D.**



### TheraSphere

- Y-90 integral constituent of the insoluble, biocompatible glass microspheres
- Mean sphere diameter : 20-30 µm
- 22,000 to 73,000 spheres / mg
- 6 dose sizes (3, 5, 7, 10, 15, 20 GBq)
- Dose by selected target volume
- Arterial administration preferentially delivers microspheres to tumor; spares normal parenchyma



Yttrium 90 radioembolization—infusing yttrium 90 (<sup>90</sup>Y) microspheres through a catheter into the hepatic artery—is considered one of the best methods for treating metastatic disease in the liver when chemotherapy has failed, according to researcher Riad Salem, M.D., M.B.A., of Northwestern University in Chicago. Above: Dr. Salem’s colleague, Richard Chen, D.O., leads the interventional radiology team during a procedure at Northwestern. Left: A PowerPoint slide by Dr. Salem details TheraSphere therapy, in which millions of microscopic, radioactive glass microspheres are infused into the arteries that feed liver tumors.

At IUSM, Dr. Wertman and colleagues found that <sup>90</sup>Y radioembolization staves off liver failure and improve patients’ quality of life. The technique is also useful in improving the condition of patients waiting for liver transplants and even cures some small tumors, Dr. Wertman said.

“Right now, <sup>90</sup>Y radioembolization is the best method for treating metastatic disease in the liver when chemotherapy has failed,” Dr. Wertman said. “There have been a number of prospective trials with <sup>90</sup>Y radioembolization and we can say that this treatment is safe and effective in a high enough percentage of patients that it is worth performing. Of all the embolization techniques, this appears to be the least toxic with the fewest side effects.”

#### WEB EXTRAS

To view a video of Riad Salem, M.D., M.B.A., presenting the PowerPoint, “Safety, Response and Survival Outcomes of <sup>90</sup>Y Microsphere Radioembolization for Liver Metastases: Results from a 151 Patient Investigational Device Exemption Multi-Institutional Study,” at the recent Society of Interventional Radiology annual meeting, go to [rsnanews.RSNA.org](http://rsnanews.RSNA.org).

#### Further Studies Under Way

“I see a future role for this treatment in combination with systemic agents, such as the oral drug sorafenib used to treat hepatocellular carcinoma,” added Dr. Salem. “When we use them in combination, we may see better response rates, longer times to progression and improved survival.”

Dr. Salem is continuing his research through EPOCH and STOP-HCC, international, multicenter phase III studies that use <sup>90</sup>Y in combination with other standards of care. EPOCH is focused on metastatic colon cancer in the liver, while STOP-HCC is a primary liver cancer trial. □

## RSNA/ESR ONCOLOGY SYMPOSIUM OFFERED AT RSNA 2011

Back to the annual meeting for its second year is Essentials in Oncologic Imaging: What Radiologists Need to Know, presented jointly by RSNA and the European Society of Radiology on Weds., Nov. 30. Sessions are:

- Principles of Oncologic Imaging and Reporting
- Lung Cancers (Primary, Metastases)
- Lymphoma
- Kidney Cancer
- Ovarian Cancer
- Prostate Cancer
- Colon Cancer
- Liver Cancer
- Chemo and Radiation Therapy-induced Toxicity
- MSK
- Pancreatic Cancer

Enrollment for RSNA 2011 courses is under way at [RSNA.org/register](http://RSNA.org/register).





# Neuroimaging Aids in Identifying Early-onset Alzheimer Disease

*New research and recently updated diagnostic guidelines make it clear that neuroimaging will play an increasingly critical role in battling Alzheimer disease (AD), particularly in its early stages.*

"TRADITIONALLY, OUR ROLE as radiologists has been quite limited in evaluating dementia, using MR or CT to rule out uncommon, potentially treatable causes such as mass lesions, subdural hematomas or normal pressure hydrocephalus," said Jeffrey R. Petrella, M.D., an associate professor of radiology and director of the Alzheimer's Disease Imaging Research Laboratory at Duke University School of Medicine in Durham, N.C. "Now, imaging is at the hub of Alzheimer's research."

For the first time in 27 years, clinical diagnostic criteria for AD have been revised and research guidelines for earlier stages of the disease have been characterized to reflect a deeper understanding of the disorder. In April, the National Institute on Aging and the Alzheimer's Association issued new clinical diagnostic criteria and research guidelines that reflect three distinct disease stages: pre-clinical AD, mild-cognitive impairment (MCI) due to AD and dementia due to AD. The guidelines will establish a framework for eventually adding biomarker benchmarks to the diagnosis of AD in all of its stages. (See Web Extras)

"The new guidelines recognize that Alzheimer's has a protracted pathophysiologic course in the brain, following a continuum from a preclinical to prodromal to dementia phase," Dr. Petrella said.

## "Cognitive Reserve" Identified in Early-onset AD

In findings presented at the 2011 American Roentgen Ray Society Annual Meeting, researchers at the Mayo Clinic in Rochester, Minn., used PET/CT to help identify cognitive reserve in early-onset AD patients.

Previous studies have shown that the higher a patient's education level, the longer a patient is able to forestall the symptoms of AD. Mayo Clinic researchers Jacob R. Hodge, M.D., Patrick J. Peller, M.D., and Christopher H. Hunt, M.D., used fluorine 18 fluorodeoxyglucose (FDG)-PET to determine whether patients with early-onset AD, a more aggressive subset of the disease, demonstrate the "cognitive reserve" associated with highly educated AD patients. The study comprised 91 patients under 65 and is the first to use imaging to investigate cognitive reserve in this subset of patients.

PET confirmed that adults with higher education, when matched with a less-educated control group with the same clinical severity of disease, showed



Petrella



Hodge

more severe hypo-metabolism and greater brain pathology.

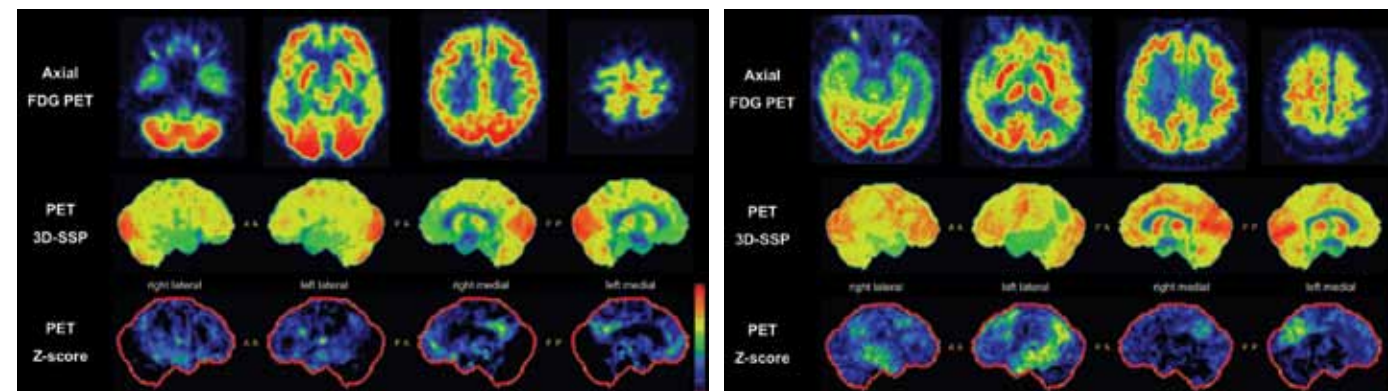
"Our research indicates that higher education decreases the expression of symptoms in early-onset AD adults just as it does in late-onset AD," said Dr. Peller, a consultant in Mayo Clinic's Department of Radiology.

FDG-PET is also leading researchers to new biomarkers for all phases of AD. For example, quantitation of FDG-PET can detect very mild decreases in glucose uptake, Dr. Peller said.

"Quantitation allows us to compare a patient to a normal cohort so that abnormalities are more conspicuous," Dr. Peller said. "It allows the radiologist to report that a patient is, for example, three standard deviations below the mean, which adds to the degree of certainty."

“If we can identify Alzheimer with certainty earlier in the disease process, there is opportunity for disease modification or ameliorating treatment.”

Patrick J. Peller, M.D.



## Early Alzheimer disease (AD).

This image of a 52-year-old male with a tenth-grade education depicts a normal MR of the brain but mild cognitive impairment. PET images demonstrate minor temporoparietal hypometabolism. Quantitative PET images demonstrate mild posterior cingulate gyrus hypometabolism indicative of early AD.

## Mild Alzheimer disease (AD).

This image of a 62-year-old male college professor depicts mild cognitive impairment. MR imaging demonstrates mild generalized atrophy. PET demonstrates a bilateral temporoparietal hypometabolism, worse on the left than on the right. Notably, this patient's symptoms are very similar to those of the 52-year-old patient, but his PET reveals a more severe disease.

## MR May Identify Cognitive Decline

Two recently published studies demonstrated that MR also may aid in identifying biomarkers of cognitive decline.

In the first study, published in the April 2011 issue of *Neurology*, researchers at Massachusetts General Hospital in Boston determined that thinning brain areas associated with AD may serve as a biomarker for cognitive decline. They found the risk of developing AD was three times greater for individuals for whom areas of the cerebral cortex associated with AD in previous studies were thinnest, compared to those with above-average thickness.

Their technique was to use MR to measure cortical thickness in two groups of 32 cognitively normal adults in their late 60s and 70s, scanning 10 brain regions to produce a composite cortical thickness score.

In the first group, eight adults were diagnosed with AD at an average of 11.1 years later; in the second group, seven adults developed AD after an average of 7.1 years. In both groups, the scores of the adults who went on to develop AD were .2 mm lower than the adults who remained cognitively normal. Adults with low cortical thickness parameters characteristic of AD developed the disease at a rate of 55 percent, compared to 0 percent rate among the adults in the study with higher-than-average cortical thickness.

"By focusing on cortical regions known to be affected in AD dementia, subtle but reliable atrophy is identifiable in asymptomatic individuals nearly a decade before dementia, making this measure a potentially important imaging biomarker of early neurodegeneration," researchers concluded.

In the second study, published in the June 2011 issue of *Radiology*, a University of California, San Francisco (UCSF) study of 149 healthy elderly people found that automated brain volume measurements on MR imaging could predict future

memory decline with a high degree of accuracy.

They analyzed volumes across a number of regions in the temporal and parietal lobes. Twenty-five of the 149 subjects (17 percent) experienced significant memory decline. A computer model incorporating eight brain regions enabled researchers to discriminate between cognitively normal people and subjects with memory decline with 81 percent accuracy.

Findings illuminated how interaction between these brain regions may play a key role in memory loss.

"Previous models have included regions of the brain as isolated variables," said lead author Gloria C. Chiang, M.D., a radiology resident at UCSF. "Our study showed that volume loss in multiple regions that may be interconnected had a greater impact on memory decline. We found that automated temporal and parietal volumes identified those at risk for future memory decline with high accuracy."



Chiang

## Neuroimaging Critical in Treating AD

By identifying individuals at risk for cognitive decline, neuroimaging techniques will become integral to the search for effective therapies to stop or slow the progression of AD and other dementias, experts say.

"Radiologists play a huge role in identifying enriched populations for clinical trials," Dr. Petrella said.

"If we can identify Alzheimer's with certainty earlier in the disease process, there is opportunity for disease modification or ameliorating treatment," Dr. Peller added. □

## ALZHEIMER DISEASE IS SUBJECT OF ANNUAL ORATION AT RSNA 2011

Jeffrey R. Petrella, M.D., will present the Annual Oration in Diagnostic Radiology, "Neuroimaging and the Search for a Cure for Alzheimer Disease," on Tuesday, Nov. 29, at RSNA 2011. Two of Dr. Petrella's early studies, "fMRI Assessment of Frontal Lobe Dysfunction in Alzheimer Disease" and "fMRI in Early Alzheimer Disease," were funded by the RSNA Research & Education Foundation.

## WEB EXTRAS

To access the research cited in this article, go to [rsnanews.RSNA.org](http://rsnanews.RSNA.org).

To hear a Podcast discussion of the *Radiology* study, "Identifying Cognitively Healthy Elderly Individuals with Subsequent Memory Decline by Using Automated MR Temporoparietal Volumes," moderated by *Radiology* Editor Herbert Y. Kressel, M.D., and Deputy Editor David F. Kallmes, M.D., go to [RSNA.org/Radiology](http://RSNA.org/Radiology).



# From Antiques to Arachnids, CT Unravels Ancient Secrets

Long before there was Lady Gaga, there lived Lady Gautseshenu—a young woman born to a prominent family of Egyptian priests more than 2,600 years ago.

WHEN SHE DIED as a teenager, her family took great care to bury her remains in a beautifully painted cartonnage—or coffin—housed at the Brooklyn Museum since 1934. Recently, researchers began to unravel details of Lady Gautseshenu's life using a tool that would have astounded even the greatest minds in ancient Egypt: 3DCT.

Rivaling the photo frenzy created by modern-day Lady G., physicians at North Shore University Hospital in Manhasset, N.Y., took more than 10,000 images of Lady Gautseshenu using 64-slice multi-detector CT (MDCT) that afforded an incredible level of detail.

Without disturbing the delicate remains, researchers determined that Lady Gautseshenu was at least 16 years old and stood about 4 feet 6 inches tall. Her body showed signs of osteoarthritis in the pelvis and backbone, her brain and other internal organs were removed and her heart and lungs were in place. Her teeth were in pristine condition.

The level of detail did not surprise researchers, who say CT has yet to scratch the surface in terms of unlocking secrets of ancient relics.

“Evaluation of relics using CT scanning is rapidly becoming the norm, because it allows researchers to analyze the objects without touching or damaging them in any way,” said project researcher Amgad N. Makaryus, M.D., director of echocardiography, cardiac CT and MR imaging at North Shore University Hospital.

## CT Reveals Astonishing Details of Ancient Spider

CT has come a long way since the late Derek Harwood-Nash, M.B., Ch.B., D.Sc., published the first article on his use of CT to study an Egyptian mummy in 1979. Since then, CT has been used for everything from examining priceless antiques to evaluating skeletal remains of prehistoric Australian aborigines to creating a stunning 3D image of a 49-million-year-old spider trapped inside a fossil. The evolution of CT technology—primarily in terms of spatial resolution and speed—has fueled such research.

### ON THE COVER

North Shore University Hospital researcher Amgad Makaryus, M.D., center, and CT staff members Joann Aydin (left) and Karen Lisk examine the 2,600-year-old Lady Gautseshenu mummy from the Brooklyn Museum.



Ghysels



Penney



Withers

“Ten microns was state-of-the-art 10 years ago; now 50 nanometers is possible,” said Philip Withers, Ph.D., who in 2009 established the Henry Moseley X-ray Imaging Facility at Manchester University, U.K. “Each tomograph contains more than a thousand individual projections taken at different observation angles. This takes time in the lab. Using synchrotron X-rays, we can collect thousands of radiographs in a second, creating 3D movies at three images per second.”

“The noninvasive evaluation of these relics will become more common and even the norm as it allows for their evaluation without invading or damaging them.”

Amgad N. Makaryus, M.D.

The spider, housed in the Berlin Natural History museum, was trapped inside fossilized amber resin, barely visible under a microscope. Working with colleagues in Germany, researchers imaged the spider using phase contrast and conventional attenuation contrast to better examine low-contrast features. Results were published in the April 2011 edition of *Naturwissenschaften*.

“Phase contrast is an interference effect based on the shift in phase of the X-rays as they pass through an object,” said Robert Bradley, a research associate at the Henry Moseley Facility, who imaged the fossil along with doctoral student Andrew McNeil. “Phase contrast is an exciting development, making CT suitable for new applications including soft tissue, polymers, insects, wood, graphite as well as fossils in amber.”

Researchers, who determined that the amber fossil is a member of the living genus of Huntsman spiders, were astonished by the level of detail revealed by CT, said David Penney, Ph.D., a visiting scientist with Manchester's Faculty of Life Sciences Laboratory.

“Several people have tried CT scanning of fossils in amber, but none have recovered details like this,” Dr. Penney said. “Until now, I had only seen images of this quality from synchrotron scans.”

Along with documenting the oldest Huntsman spider on record, researchers created a short film revealing all of the astounding details (See Web Extras).

“Personally I find the spider's 5 micron-sized ‘hairs’ striking,” Dr. Withers said.

## Scans See Inside Antiques

A growing fascination with MDCT and 3D imaging led interventional radiologist Marc Ghysels, M.D., to establish a private radiology practice in Brussels where he analyzes antiquities from various cultures. Specialists around the world rely on Dr. Ghysels radiology skills and knowledge to authenticate antiquities.

“CT scanning is an absolutely non-destructive test that has the advantage of describing the inner state of the object, examined this time as a whole,” said Dr. Ghysels, who comes from a family of artists, art historians and collectors.

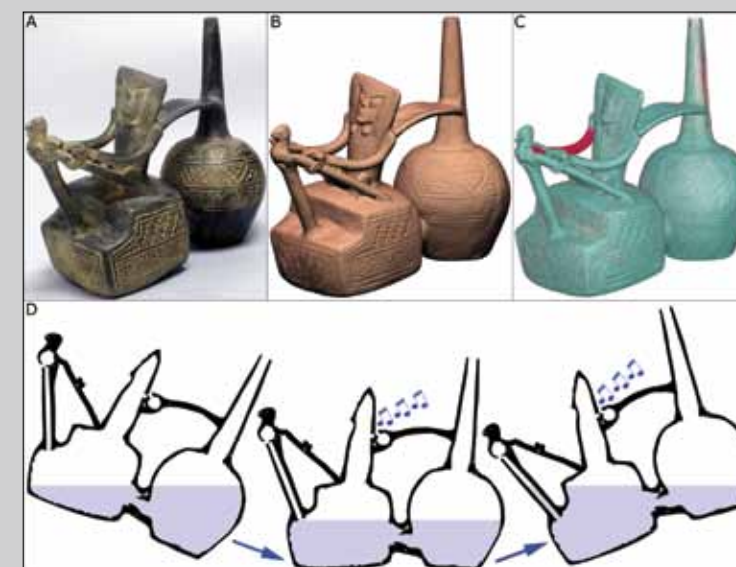
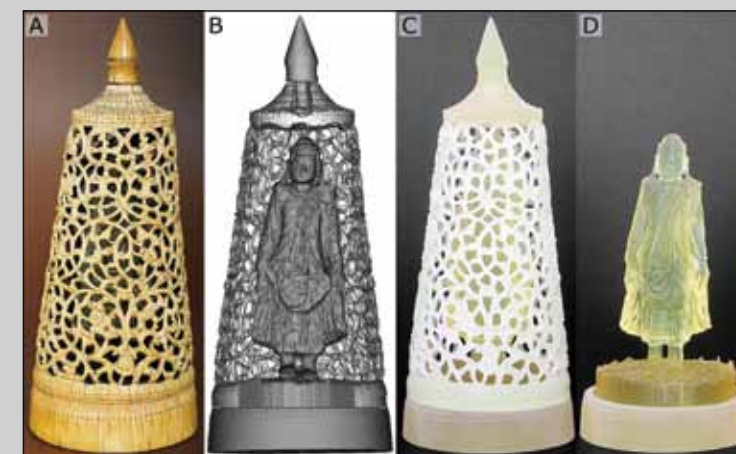
Dr. Ghysels lends his expertise to develop methods to create artwork and expose forgeries designed to deceive collectors. Among its capabilities, CT can reveal an object's contents, determine how the piece was made and expose the nature and extent of restoration work—often revealing forgeries.

Materials that respond well to CT include wood, ivory, bone and terra cotta. In one instance, a CT scan of a terracotta sculpture from China's Tang Dynasty (A.D. 618-907) revealed that metal, glue and resin were used to assemble terracotta pieces of varying density and that the head had been carved from plaster. The sculpture was a modern construction created with old materials, Dr. Ghysels said. (See Web Extras).

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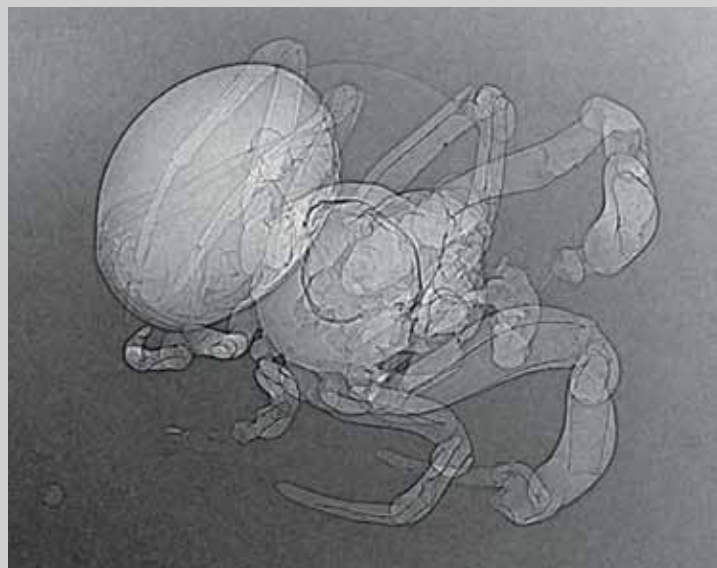


Images courtesy of Marc Ghysels, M.D.



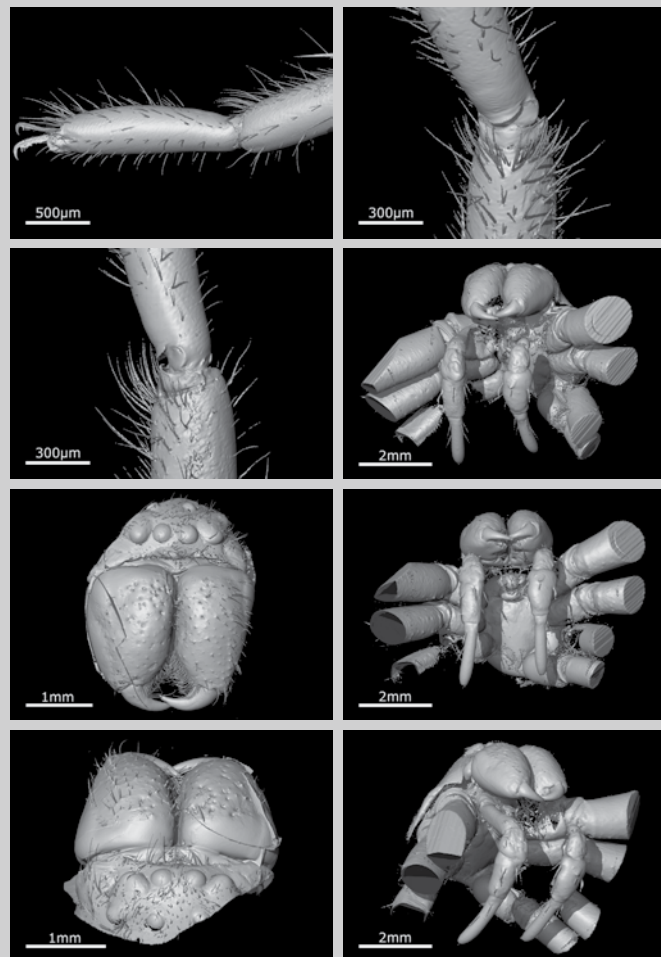
Marc Ghysels, M.D., uses his radiology skills and knowledge to analyze antiquities from various cultures. *Top*: a CT scan of a Yaka figurine collected in the Congo “was not designed to dissipate doubts about its authenticity but to shed light on its very structure and try to pierce the secrets of its inner life when it first came into being,” Dr. Ghysels said. *Middle*: CT slices and 3D reconstruction of a Burmese ivory stupa reveal a standing statue of Buddha; *bottom*: The CT scan of Peruvian whistling bottles highlights one of the many innovations developed by ancient Peruvian potters during a more than 3,000-year period.





A radiograph of a 49-million-year-old spider trapped inside a fossil (above) was among the CT images captured by researchers at the Henry Moseley X-ray Imaging Facility at Manchester University, U.K. Researchers, who used phase contrast and conventional attenuation contrast to better examine low-contrast features, were astonished by the level of detail (right) revealed by CT. "Personally, I find the spider's 5-micron-sized 'hairs' striking," said Philip Withers, Ph.D.

Images courtesy of Andrew McNeil/Henry Moseley X-ray Imaging Facility, Manchester University, U.K.



Continued from previous page

Along with authenticating artwork, Dr. Ghysels, whose awards from RSNA include the 2004 Excellence in Design Award for his exhibit, "CT in Art Work Appraisal," uses CT to shed new light on the work of artists whose secrets were buried with them. "As a radiologist, my goal is to make the piece 'speak' from its internal content and then to interpret these messages/signs/anomalies ... to decide if they are consistent with the original piece and its natural history over the centuries," he said.

**Potential of CT is Boundless**

Where will the ever-expanding capabilities of CT lead? The possibilities are endless, investigators say. "It is opening up a whole new world," Dr. Penney said. "Fossils that would have been considered of no real scientific value—because they are preserved in ways that obscure important features—can now be examined in fine detail." And not just the external appearance. "We can also see internal details of preserved fossils," he added. Researchers at the Moseley X-ray Imaging Facility continue to create 3D images of ancient objects of all sizes. "The biggest fossil was encased in over a ton of rock and was meters in length," Dr. Withers

said. "On a slightly smaller scale, we examined a Tyrannosaurus Rex brain case." CT scanning of ancient relics even offers potential for modern-day medicine. In research presented at the 2010 meeting of the North American Society for Cardiovascular Imaging, Dr. Markaryus and colleagues used 64 MDCT to study atherosclerosis in five mummies. This research disclosed that, despite primarily vegetarian diets, non-sedentary lifestyles and no tobacco use, "Egyptian remains still showed evidence of often significant vessel calcification, indicating that vascular disease is not a modern phenomenon but a product of the interplay between human genetic predisposition and environmental factors." The technology may even help unravel more complex mysteries of the heritage of life on earth, experts say. "Because of CT, we can expect to see a greater incorporation of paleontological data in neontological studies in coming years, which may help refine our understanding of the evolutionary tree of life on earth," Dr. Penney said. □

**WEB EXTRAS**

▶ To view the video, "Huntsman Spider in Baltic Amber Imaged Using Phase Contrast X-Ray Tomography," by Andrew McNeil at the Henry Moseley X-ray Imaging Facility, University of Manchester, go to [rsnanews.RSNA.org](http://rsnanews.RSNA.org).

▶ For more information on the Henry Moseley X-ray Imaging Facility at Manchester University, U.K., go to [xray-imaging.org.uk](http://xray-imaging.org.uk).

▶ To view the six-stage video progression of the CT scanning process of "Woman Playing the Flute," a terracotta sculpture from the Tang Dynasty, China, 618-907 A.D., go to [rsnanews.RSNA.org](http://rsnanews.RSNA.org). Mark Ghysels, M.D., detected some 50 disparate terracotta elements assembled by means of glue, resin and metal pins.

# See Chicago Sizzle During RSNA 2011

Brimming with vitality year-round, Chicago simply sparkles during the holiday season with a full spectrum of festivities sure to please everyone attending RSNA 2011. Below, our annual roster of Chicago events includes our Insider's Guide to Chicago's Best Deals featuring the many free activities available in the Windy City.

## Museums

### Art Institute of Chicago

Renowned for its Impressionist and Post-Impressionist collection **RSNA TOUR** as well as its Depression-era American paintings, the Art Institute boasts a 260,000 piece-collection representing 5,000 years of art from around the globe. Don't miss the recently opened Modern Wing, which exhibits early 20th Century European Art.

The special winter exhibition is *Bertrand Goldberg: Architecture of Invention*.

- 111 S. Michigan Ave.  
1-877-307-4242  
[www.artic.edu](http://www.artic.edu)  
[www.ticketmaster.com](http://www.ticketmaster.com)

### Field Museum of Natural History

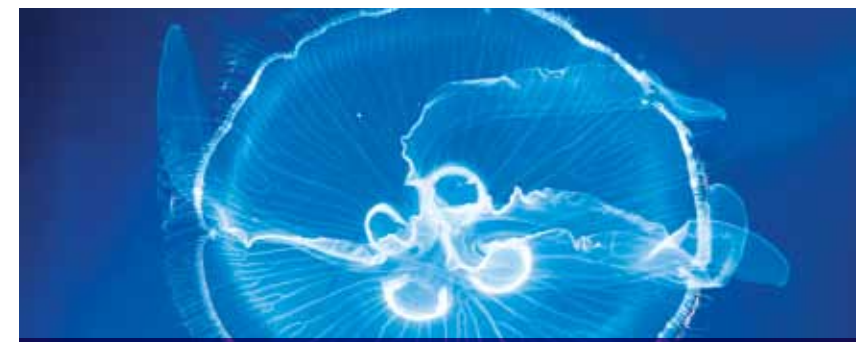
Upon entering, visitors will encounter Sue, the world's largest and most complete Tyrannosaurus Rex fossil. The natural history museum has something for everyone from taxidermy animals and dioramas to Egyptian mummies and a memorable dinosaur exhibit. Stop by this year's special exhibits *Chocolate: Around the World* and *Abbott Hall of Conservation Restoring Earth*.

- 1400 S. Lake Shore Dr.  
1-312-922-9410  
[www.fieldmuseum.org](http://www.fieldmuseum.org)

## RSNA Tours & Events

RSNA is sponsoring a series of tours and events during RSNA 2011. The RSNA Tours & Events brochure is available at [RSNA2011.RSNA.org/attendees/tours\\_and\\_events.cfm](http://RSNA2011.RSNA.org/attendees/tours_and_events.cfm).

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.



Explore the world of sea jellies at the Shedd Aquarium's Jellies exhibit.

### Smith Museum of Stained Glass Windows

When visiting Navy Pier, enjoy the largest collection of Tiffany stained glass windows, which are displayed along the interior public walkway at the east end of the pier building. The collection contains more than 150 stained glass works by artists such as Louis Comfort Tiffany and Frank Lloyd Wright. Admission is free and public tours are offered on most Thursdays at 2 p.m.

- 600 E. Grand Ave. (Navy Pier)  
1-312-595-7437  
[www.navypier.com](http://www.navypier.com)

### Museum of Contemporary Art

The largest museum of contemporary art in the world, the MCA displays a variety of Post-World War II art including paintings, sculptures, photographs and video installations. In its history, the museum has hosted noteworthy and controversial exhibits including Christo's first U.S. building wrap; Andres Serrano's work with statuettes submerged in urine, milk or blood; and Robert Mapplethorpe's *The Perfect Moment*.

This winter, MCA will feature three special exhibits—*Iain Baxter & Works 1959-2009*; *MCA Screen: David Hartt*; and *Ron Terada: Being There*.

- 220 E. Chicago Ave.  
1-312-280-2660  
[www.mcachicago.org](http://www.mcachicago.org)

### Shedd Aquarium

The world's largest indoor marine animal facility offers an array of exhibits from adorable sea otters to vicious piranhas and allows visitors the chance to pet a sea star. The popular dolphin and Beluga whale show takes place in the Oceanarium amphitheater and sharks can be found in the Wild Reef. A temporary exhibit, *Jellies*, demonstrates how sea jellies hunt and grow exponentially.

- 1200 S. Lake Shore Dr.  
1-312-939-2438  
[www.shedd-aquarium.org](http://www.shedd-aquarium.org)

### Adler Planetarium

A National Historic Landmark, the Adler opened in 1930 and is the world's oldest planetarium. A variety of astronomical adventures await visitors, from visiting the restored Gemini 12 spacecraft to landing the Lunar Module simulator on the face of the moon. Planetarium shows play continuously throughout the day in three theaters.

- 1300 S. Lake Shore Dr.  
1-312-922-7827  
[www.adlerplanetarium.org](http://www.adlerplanetarium.org)

### Peggy Notebaert Nature Museum

The Notebaert welcomes children of all ages to explore nature in unusual and innovative ways. Permanent exhibits include *The Birds of Chicago*, *Extreme Green House*, *Istock Family Look-in Animal Lab*, *Judy Istock Butterfly Haven*, *Mysteries of the*

Continued on next page





A U-505 German submarine is among the one-of-a-kind exhibits at the Museum of Science and Industry.

Continued from previous page

Marsh, Nature's LunchBox, RiverWorks, Water Lab and the Wilderness Walk. Visitors seven years of age and younger are invited to enjoy the *Hands-on Habitat*.

- 2430 N. Cannon Dr.  
1-773-755-5100  
[www.chias.org](http://www.chias.org)

### Museum of Science and Industry

The only remaining building from the 1893 World's Columbian Exposition, the museum is packed with one-of-a-kind exhibits: one of two U-505 German submarines captured during World War II; a realistic coal mine; the multilevel *Science of Storms* exhibit, complete with a vapor tornado and tsunami tank; and the Henry Crown Space Center featuring Apollo 8. A temporary exhibit, *Smart Home: Green + Wired*, demonstrates a sustainable "green" home. Annual seasonal exhibits include the *Christmas Around the World* and *Holidays of Light*.

- 57th St. and Lake Shore Dr.  
1-773-684-1414  
[www.msichicago.org](http://www.msichicago.org)  
[U505Submarine]

### Chicago History Museum

This collection dates from 1856, approximately 25 years after the founding of Chicago, and was started with the intent to help to research and interpret the city's history. The museum helps bring to life many aspects of Chicago's past, including the Great Chicago Fire of 1871, the rise of Chicago's Chinatown and the life and times of Abraham Lincoln. Details on neighborhood tours, lectures, performances and events are available on the website.

- 1601 N. Clark St.  
1-312-642-4600  
[www.chicagohs.org](http://www.chicagohs.org)

### DuSable Museum of African American History

A special museum dedicated to collecting and preserving the history of African Americans, this nearly 50-year-old institution is the first of its kind in the U.S. It features exhibits on salient historical topics such as civil rights as well as work by African-American artists.

- 740 East 56th Pl.  
1-773-947-0600  
[www.dusablemuseum.org](http://www.dusablemuseum.org)

### Lincoln Park Conservatory

Built in the late 1800s, the conservatory originally provided visitors a chance to view exotic plants, while growing most of the specialized horticulture for Chicago's parks. Today, visitors can stroll among the four display houses: Fern Room, Orchid House, Palm House and Show House, where the Christmas show is hosted.

- 2391 N. Stockton Dr.  
1-312-742-7736  
[www.chicagoparkdistrict.com](http://www.chicagoparkdistrict.com)

### Garfield Park Conservatory

Enjoy the holiday flower show in one of the world's largest gardens under glass, built at the turn of the last century. The conservatory is famous for its prairie waterfall set among stone and water landscapes.

- 300 N. Central Park Ave.  
1-312-746-5100  
[www.garfield-conservatory.org](http://www.garfield-conservatory.org)

### Millennium Park Ice Rink

The McCormick Tribune Plaza & Ice Rink is located just off Michigan Avenue in the shadow of the *Cloud Gate* sculpture, affectionately called "The Bean." The Park Grill's windows look out on the rink. Skating is free and skate rental is available.

**RSNA TOUR**

- East side of Michigan Avenue between Washington and Madison streets  
1-312-742-1168  
[www.millenniumpark.org](http://www.millenniumpark.org)

### Daley Bicentennial Plaza Ice Rink

Located across Millennium Park's snake-like BP Pedestrian Bridge is a secluded ice rink with far fewer skaters than the well-known Millennium Park rink. The facility offers free skating, skate rental and a warming building.

- South side of East Randolph Street between Columbus Drive and Lake Shore Drive  
1-312-742-7650  
[www.chicagoparkdistrict.com](http://www.chicagoparkdistrict.com)

## Theater

### Ann: An Affectionate Portrait of Ann Richards

Emmy®-award winning actress Holland Taylor brings this Texas icon to life.

- Bank of America Theatre  
24 W. Randolph St.  
1-312-902-1400  
[www.ticketmaster.com](http://www.ticketmaster.com)

### Elizabeth Rex

This tale of love and death centers on Queen Elizabeth's interlude with a Shakespearean actor the night before beheading her assumed lover, the Earl of Essex, for treason.

- Chicago Shakespeare Theater  
800 E. Grand Ave.  
1-312-595-5600  
[www.chicagoshakes.com](http://www.chicagoshakes.com)

### Home

Set during the turbulent '60s and '70s, Home was originally performed by the Negro Ensemble Company.

- Court Theatre  
5535 S. Ellis Ave.  
1-773-753-4472  
[www.courttheatre.org](http://www.courttheatre.org)

### 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.  
1-312-988-9000  
[www.ticketmaster.com](http://www.ticketmaster.com)

### Memphis

A story of forbidden love in the underground clubs of Memphis in the '50s comes alive through song and dance.

**RSNA TOUR**

- Cadillac Palace Theatre  
151 W. Randolph St.  
1-312-902-1400  
[www.ticketmaster.com](http://www.ticketmaster.com)

### Penelope

A modern take on the competition among Penelope's suitors during Odysseus' long absence.

- Steppenwolf Theatre  
1650 N. Halsted Ave.  
1-312-335-1650  
[www.steppenwolf.org](http://www.steppenwolf.org)

### The Pitmen Painters

Lee Hall, the gifted writer who brought us Billy Elliott, is once again working his magic on the story of miners in Northern England.

- TimeLine Theatre  
615 W. Wellington Ave.  
1-773-281-8463  
[www.timelinetheatre.com](http://www.timelinetheatre.com)

### The Second City

Second City is the comedic training ground for many of today's favorite comedians. Shows are scheduled on both the Main Stage and the smaller ETC stage, combining short comedy sketches and improvisation. Cocktails and food are served during performances.

- Main Stage and ETC stage  
1616 N. Wells St.  
1-312-337-3992  
[www.secondcity.com](http://www.secondcity.com)

### Tommy Gun's Garage

This interactive dinner theatre set in the Roaring Twenties features Prohibition-era gangsters and flappers in a musical comedy show.

- Tommy Gun's Garage  
2114 S. Wabash St.  
1-312-225-0273  
[www.tommygunsgarage.com](http://www.tommygunsgarage.com)

## Family Performances

### A Christmas Carol

For more than 30 years, the Goodman Theatre has presented this timeless Dickens classic during the holiday season.

- Goodman Theatre  
170 N. Dearborn St.  
1-312-443-3800  
[www.goodman-theatre.org](http://www.goodman-theatre.org)

### The Blue Man Group

A vibrant event blending flashing lights, comedy, loud music—and yes, blue men—for one unique experience. Shows are unique to each city. Children under five not admitted.

- Briar Street Theatre  
3133 N. Halsted  
1-773-348-4000  
[www.blueman.com](http://www.blueman.com)  
[www.ticketmaster.com](http://www.ticketmaster.com)

### Junie B. Jones in Jingle Bells, Batman Smells!

This Emerald City Theater adaptation is appropriate for children of all ages.

- The Apollo Theater  
2540 N. Lincoln Ave.  
1-773-935-6100  
[www.emeraldcitytheatre.com](http://www.emeraldcitytheatre.com)

## Symphony and Opera

### Lyric Opera of Chicago

The historic and renovated art-deco Civic Opera House is the perfect setting to see the renowned Lyric Opera of Chicago. Free lectures are offered one hour before every performance. Tickets go on sale Aug. 1. Productions include:

#### Ariadne auf Naxos

Nov. 28 and Dec. 2

"Tragedy surrounded by comedy" is one way to describe this clever production starring larger than life characters. *By Richard Strauss; Conductor: Sir Andrew Davis with Anna Christy, Alice Coote, Brandon Jovanovich and Deborah Voigt.*

#### Boris Godunov

Nov. 29

Enjoy the grandiose tale of a tormented Russian Czar who must persevere during the worst of times. *By Modest Mussorgsky; Conductor: Sir Andrew*

**RSNA TOUR**

"Boris Gudunov" will be performed at the Lyric Opera of Chicago.



Davis with Raymond Aceto, Stefan Margita and Andrea Silvestrelli.

- 20 N. Wacker Dr.  
1-312-332-2244 x5600  
[www.lyricopera.org](http://www.lyricopera.org)

### Chicago Symphony Orchestra

Dec. 1, 2 & 3

*Conductor: Jaap van Zweden*  
*Program: Stucky: Rhapsodies for Orchestra; Mozart: Bassoon Concerto; Mahler: Symphony No. 1*

- 220 S. Michigan Ave.  
1-312-294-3000  
[www.cso.org](http://www.cso.org)

Symphony tours also include Vienna Boys Choir and Mahler.

Continued on next page

Enjoy the rich history of the Chicago Symphony Orchestra.





Continued from previous page

## Family Activities

### Chicago Children's Museum

Fifteen permanent hands-on exhibits range from dinosaurs to art, water play to fire safety, climbing to commerce. Daily activities offer even more focused learning opportunities.

- 700 E. Grand Ave. (on Navy Pier)  
1-312-464-7732  
www.chicildrensmuseum.org

### Navy Pier IMAX Theatre

The Navy Pier IMAX theatre will announce its complete holiday film schedule in late autumn.

- 700 E. Grand Ave.  
1-312-595-5MAX  
www.imax.com/chicago

### John Hancock Observatory

This observatory experience on the 94th floor begins with a ride on the fastest elevator in North America and includes an open-air skywalk, free multimedia sky tour and the first interactive telescopes in the U.S.

- 875 N. Michigan Avenue  
1-888-875-VIEW  
jhochicago.com



The Willis Skydeck

### Lincoln Park Zoo

One of the nation's last free zoos, and one of its oldest, the Lincoln Park Zoo is conveniently located in nearby Lincoln Park. Walk through the zoo at night with the holiday-themed ZooLights festival on Friday through Sunday evenings.

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

### Skydeck Chicago at Willis Tower

At 1,353 feet above the ground, Skydeck Chicago (above) in Willis Tower, the tallest building in the Western Hemisphere, offers views up to 60 miles. If you dare, venture out onto a Ledge, four glass-enclosed—and glass-bottomed—boxes outside the building.

- 233 S. Wacker Dr. (Enter Skydeck on Jackson)  
1-312-875-9447  
www.theskydeck.com

## The Insider's Guide to Chicago's Best Deals

Many Chicago museums offer free admission on select days. With some smart scheduling, you can visit many of the city's top attractions for little to no money. Here is a rundown of some of the best deals in town.

### Free as indicated:

- Chicago History Museum (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. (Free tours on Wednesday)
- DuSable Museum of African American History (Sunday)
- Glessner House Museum, 1800 S. Prairie Ave. (Free tours on Wednesday)
- Art Institute of Chicago, 11 S. Michigan Ave. (First and second Wednesday of the month)
- Chicago Children's Museum at Navy Pier, 700 E. Grand Ave. (Thursday, 5–8 p.m. and first Sunday of each month)
- Notebaert Nature Museum, 2430 N. Cannon Dr. (Thursday)

### 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.
- National Museum of Mexican Art, 1852 W. 19th St.
- Navy Pier, 600 E. Grand Ave.
- Smart Museum of Art, 5550 S. Greenwood Ave.

### Macy's Holiday Windows

Walk outside alongside the Macy's store at 111 N. State St. to view animated holiday scenes.

### McDonald's Thanksgiving Parade

Spend Thanksgiving morning with marching bands, enormous inflatables, floats, and Santa Claus and Ronald McDonald. This annual parade travels down State Street from 8 to 11 a.m.

### Christkindlmarket Chicago and the Santa House

One of Chicago's most popular holiday events is Christkindlmarket Chicago, a traditional German open air market offering authentic German food, drink and wares. Christkindlmarket is free and is located on Daley Plaza between Washington and Dearborn Streets from November 23 to December 24.

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Continued on next page



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More than 20 private practices and academic departments across the country are investing in RSNA Research & Education (R&E) Foundation grant programs to fund a critical research and development pipeline for the specialty.

The Visionaries in Practice (VIP) Program recognizes the link between today's research and tomorrow's practice, as well as the importance of strong residency and fellowship training programs to build tomorrow's workforce. By investing in the R&E Foundation, VIP groups fund radiologic research to sustain the advancements that built their practices. In appreciation for funding support, the R&E Foundation provides special recognition and benefits to VIP practices and practice members. RSNA 2011 benefits include:

- Access to the R&E Donor Lounge
- Practice name and logo recognition in the R&E Foundation Booth
- Discounts at the RSNA Education Store
- Priority taxi boarding

For more information to share with your practice, see the VIP video at [RSNA.org/Foundation/VIPgiving.cfm](http://RSNA.org/Foundation/VIPgiving.cfm) or contact Robert Leigh at 1-630-590-7760 or [rleigh@rsna.org](mailto:rleigh@rsna.org).

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## YOUR DONATIONS IN ACTION



**Katelyn Atkins, B.S. (center)** with scientific advisor **Gary Thomas, Ph.D. (left)** and Department Chair **Charles R. Thomas, Jr., M.D.**

With an RSNA R&E Foundation grant, **Katelyn Atkins, B.S.**, is working to understand the molecular basis of how cells respond to acute radiation. Such understanding is critical to the development of targeted adjunct therapies to increase the effectiveness of radiation therapy in cancer treatment.

## 2012 R&E Grant Application Process Opens Soon

Individuals interested in obtaining RSNA Research & Education (R&E) Foundation grants for 2012 can begin submitting their applications starting in October. For more information, go to [RSNA.org/Foundation](http://RSNA.org/Foundation) or contact Scott Walter, M.S., Assistant Director, Grant Administration at 1-630-571-7816 or [swalter@rsna.org](mailto:swalter@rsna.org).

## Journal Highlights

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

### New Techniques in Lumbar Spinal Instrumentation: What the Radiologist Needs to Know

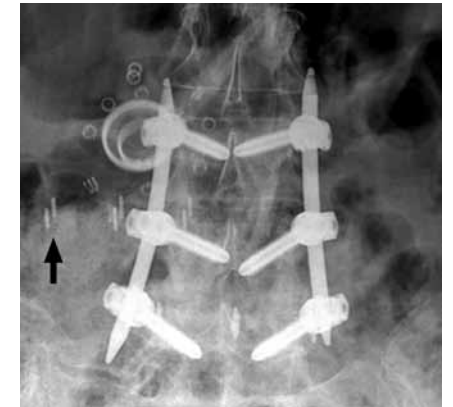
RECENT ADVANCES in spinal surgery seek to minimize morbidity through minimally invasive approaches, the use of osteoinductive materials and methods to reduce adjacent-level disease.

Radiologists should be aware of the imaging features of these methods, the devices utilized and their potential complications, according to a review article by Ryan D. Murtagh, M.D., M.B.A., of the Moffitt Cancer Center in Tampa, Fla., and colleagues in the August issue of *Radiology* ([RSNA.org/Radiology](http://RSNA.org/Radiology)). Specifically, the authors discuss:

- Minimally invasive spine surgery
- Osteoinductive bone graft substitutes
- Motion preservation
- Total disk replacement procedures
- Partial disk replacement
- Interspinous devices
- Posterior pedicle fixation-based dynamic stabilization devices
- Facet replacement devices
- Graft Substitutes

"While it would be difficult to become familiar with the imaging characteristics of each device, it is imperative that the radiologist be aware of the increasing popularity of these devices and have a basic understanding of the rationale and basic function associated with each device category," the authors conclude.

*Radiology*



**Anterior fusion at L4-5 and L5-S1 with transpedicular fusion from L4-S1. Frontal radiograph shows that the XLIF cage has migrated laterally from the disk space (arrow). Note the characteristically long, rectangular shape of the device, which is designed to maximize contact with the epiphyseal rings of both endplates.**

(*Radiology* 2011;260;2:317-330) ©RSNA, 2011. All rights reserved. Printed with permission.

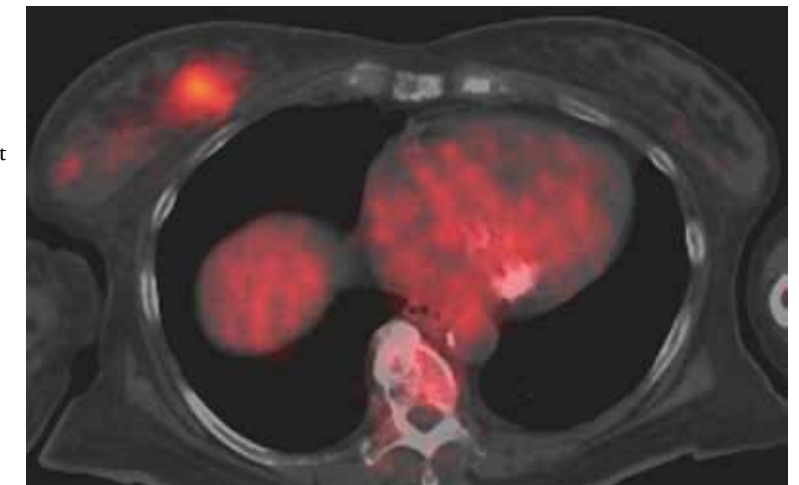
### Mammographic Signs of Systemic Disease

WHILE MAMMOGRAPHY is primarily used for the detection of breast cancer, it occasionally reveals evidence of systemic disease. Diseases affecting the breast can originate from almost any organ system in the **RadioGraphics** body and the corresponding mammographic abnormalities can be vascular, lymphatic, cutaneous or parenchymal in nature.

It is the radiologist's responsibility to determine if mammographic abnormalities are adequately explained by the systemic disease process or if they are suspicious for primary malignancy and therefore warrant tissue diagnosis. In review in the July-August issue of *RadioGraphics* ([RSNA.org/RadioGraphics](http://RSNA.org/RadioGraphics)), Mailan M. Cao, M.D., of the David Geffen School of Medicine at the University of California, Los Angeles, and colleagues:

- Describe the mammographic changes that occur in the breast vasculature, lymphatic vessels, skin and parenchyma in various systemic diseases
- Discuss the systemic diseases that can mimic primary breast malignancy at mammography
- List the systemic diseases that are thought to be associated with an increased risk of breast cancer

"Knowledge of the mammographic findings of various systemic diseases also gives the radiologist a better sense of the overall health status of the patient," the authors conclude. "Some systemic diseases, such as Cowden syndrome, are associated with an increased risk of breast cancer, and awareness of these diseases aids the interpreting physician in making follow-up recommendations."



**Metastatic sarcoma in a 64-year-old woman with a palpable right breast mass. The patient had a history of clear cell sarcoma of the right arm, which had been treated with radiation therapy and axillary lymph node dissection. Fused PET/CT scan shows multiple hypermetabolic foci in the right breast. The results of biopsy confirmed metastatic sarcoma.**

(*RadioGraphics* 2011;30;1085-1100) ©RSNA, 2011. All rights reserved. Printed with permission.



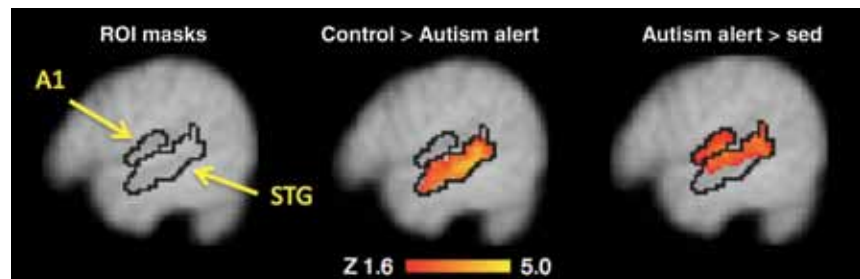
## Radiology in Public Focus

Press releases were sent to the medical news media for the following articles appearing in the latest issue of *Radiology*.

### Speech Stimulation During Functional MR Imaging as a Potential Indicator of Autism

FUNCTIONAL MR IMAGING (fMRI) in response to passive speech stimulation may help differentiate language-impaired autistic from control subjects, demonstrating the potential utility of functional MR imaging as an objective indicator of language impairment in autism.

In a prospective study, Grace Lai, Ph.D., of Columbia University Medical Center, Neurological Institute, New York, and colleagues performed fMRI during passive presentations of pre-recorded speech in 15 control subjects (mean age: 12.1 years) and 12 language-impaired and age-matched autistic children (mean age: 12.4 years). The study also included 27 additional autistic children (mean age, 8.4 years) who underwent sedation during routine MR exams. The spread (quantified as number of voxels) and amplitude of the fMRI activation were then quantified within two anatomically specified regions: the primary auditory cortex (A1) and the superior temporal gyrus (STG).



Above: an MR image (left) illustrates anatomic regions of interest (ROI) for primary auditory cortex (A1) and the superior temporal gyrus (STG). Activation maps (middle and right) demonstrate greater activity within STG, but not A1, in control subjects compared with nonsedated autistic subjects (control > autism alert, middle image) and greater activation within both STG and A1 in nonsedated compared with sedated autistic subjects (autism alert > sed, right image). (*Radiology* 2011;260:2:521-530) ©RSNA, 2011. All rights reserved. Printed with permission.

Although activity in A1 did not differ between autistic and control subjects, mean amplitude and spread of activity in the STG differed between autistic and control subjects, researchers discovered.

“Functional MR imaging activation in response to passive language stimuli can help differentiate language-impaired autistic

subjects from control children with 83 percent (10 of 12 subjects) specificity and 92 percent (14 of 15 subjects) sensitivity,” the authors concluded.

Results suggest that these methods may also apply to sedated patients, the authors added.

### Outside Imaging in Emergency Department Transfer Patients: CD Import Reduces Rates of Subsequent Imaging Utilization

AMONG EMERGENCY DEPARTMENT (ED) transfer patients, CD import of outside imaging from the sending institution into the receiving institution's PACS significantly decreased the rates of subsequent imaging utilization.

In the study, Aaron Sodickson, M.D., Ph.D., of Brigham and Women's Hospital in Boston, reviewed the medical records of 1,487 consecutive patients transferred to the hospital's ED between February and August 2009 with a CD containing medical images acquired elsewhere. CD import to PACS was attempted for all patients and was successful for 1,161, or 78 percent, of the patients. Incompatible image formats or CD malfunction resulted in 326 unsuccessful CD imports.

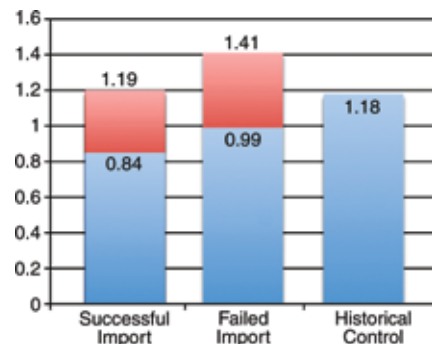
Patients with successfully imported CDs had a 17 percent decrease in imaging rates during the subsequent 24 hours (2.7 versus 3.3 exams per patient) and a 16 percent decrease (1.2 versus 1.4 scans per

patient) in subsequent CT scans.

While implementing universal electronic medical records, image repositories or robust image transfer networks would streamline image transfer between sites and obviate the need to send CDs with transfer patients, CDs will likely remain the prevalent means of image transfer for the foreseeable future, according to the authors.

“Importing these images into the PACS adds value to patient care by reducing costs, streamlining care, and improving resource utilization. Reducing CT utilization has the added safety benefits of decreased exposure to ionizing radiation and to intravenous contrast materials,” the authors concluded.

See more coverage of this study and its clinical implications on Page 5.



Graph shows mean number of CT scans per patient within 24 hours after a CD import attempt. The pre-implementation cohort is the historical control group before implementation of the CD import solution. Blue = examinations performed in the ED, red = examinations performed in the inpatient units.

(*Radiology* 2011;260:2:408-413) ©RSNA, 2011. All rights reserved. Printed with permission.

### Coronary Atherosclerosis in African-American and White Patients with Acute Chest Pain: Characterization with Coronary CT Angiography

AS MEASURED BY using coronary CT angiography, atherosclerotic plaque burden and composition differ between African-American and white patients with relatively more noncalcified disease in African Americans and more calcified disease in white individuals.

In a retrospective study, John W. Nance Jr., M.D., of the Medical University of South Carolina in Charleston, and colleagues analyzed CT angiographic data of 301 patients (150 consecutive African-American patients; 151 white control patients; mean age, 55 years; 33 percent male) with acute chest pain. Researchers evaluated each coronary artery segment for the presence of atherosclerotic plaque, plaque composition (calcified, noncalcified or mixed) and stenosis. The noncalcified plaque volume was quantified using a threshold-based automated algorithm. Researchers compared the presence and extent of atherosclerotic plaque between the groups using univariate and multivariate regression analyses.

Findings indicated a similar overall atherosclerotic burden between symptomatic African-American and white patients, but differences in plaque composition.

“The prevalence of noncalcified plaque, which may be more unstable, was higher among the African Americans after corrections for baseline differences; however, the prevalence of calcified plaque, which may represent more stable disease, was lower in this group,” the researchers concluded.



Characterization of plaque (arrows) on coronary CT angiograms in curved multiplanar reformations. A–C, Nonstenotic and, D–F, stenotic (>50% luminal narrowing) calcified (A and D), mixed (B and E), and noncalcified (C and F) plaques are shown.

(*Radiology* 2011;260:2:373-380) ©RSNA, 2011. All rights reserved. Printed with permission.

## Media Coverage of RSNA

In June 2011, media outlets carried 1,234 RSNA-related news stories. These stories reached an estimated 388 million people.

June print coverage included *Exhibitor*, *Burlington Free Press*, *Detroit Legal News*, *Sentinel-Record* (Little Rock, Ark.), *West Central Tribune* (Minneapolis-Saint Paul), and *Brattleboro Reformer* (Boston).

Broadcast coverage included WCBS-TV (New York), KCAL-TV (Los Angeles), WBBM-TV (Chicago), KCBS-TV (Los Angeles), WMAQ-TV (Chicago), WAGA-TV (Atlanta), KTVT-TV (Dallas), WCAU-TV (Philadelphia), KPRC-TV (Houston), KING-TV (Seattle), WCCO-TV (Minneapolis), WJBK-TV (Detroit) and WSTP-TV (Tampa).

Online coverage included Yahoo! News, WebMD, *NYTimes.com*, *CBSNews.com*, *USNews.com*, *Breitbart.com*, *Philly.com*, *Newsday*, *San Francisco Chronicle*, *Atlanta Journal Constitution*, *Seattle Post-Intelligencer*, *Kansas City Star*, *Salt Lake Tribune*, *St. Louis Post-Dispatch*, *Pittsburgh Post-Gazette*, *San Diego Union-Tribune*, *Pittsburgh Tribune-Review*, *Tampa Tribune* and Health Central.

### August Outreach Activities Focus on Airport Scanners

In August, RSNA distributed the “60-Second Checkup” audio program to nearly 100 radio stations across the U.S. The segments focused on risks and safety related to airport security scanners.

### New on *RadiologyInfo.org*

New content is continually being posted on *RadiologyInfo.org*. Visit the site to see the latest patient-directed content on renal scintigraphy.

## JOURNAL IMPACT FACTORS ANNOUNCED

The impact factor for *Radiology*, RSNA's peer-reviewed science journal, is now 6.066, according to the recently released 2010 Journal Citation Reports® from the Thomson/Institute for Scientific Information Annual Citation.

*Radiology* scored the second highest impact factor in a field of 111 magazines.

Citations from *Radiology* totaled 44,706, more than any other imaging journal.

**Radiology**  
**RadioGraphics**

RSNA's peer-reviewed education journal, *RadioGraphics*, posted a 2010 impact factor of 2.760. Citation Reports covers more than 7,500 of the world's peer-reviewed journals in approximately 200 disciplines.

Complete statistics for *Radiology* from the 2010 Journal Citation Reports is available on the home page under Journal Analysis at *Radiology.rsna.org* and for *RadioGraphics* at *RadioGraphics.rsna.org*.



## Education and Funding Opportunities



# CORE Workshop

**October 28–29, 2011**  
Oak Brook, Ill.  
**Registration Deadline**  
September 23

FORMERLY THE Revitalizing the Radiology Research Enterprise (RRRE) program, the newly named Creating and Optimizing the Research Enterprise (CORE) workshop will be held Friday and Saturday, Oct. 28 and 29 in Oak Brook, Ill. The workshop will focus on strategies for developing and expanding research programs in radiology, radiation oncology and nuclear medicine departments. The CORE program features a combination of presentations, case studies and group discussions. Register now at [RSNA.org/CORE](http://RSNA.org/CORE).

day, Oct. 28 and 29 in Oak Brook, Ill. The workshop will focus on strategies for developing and expanding research programs in radiology, radiation oncology and nuclear medicine departments. The CORE program features a combination of presentations, case studies and group discussions. Register now at [RSNA.org/CORE](http://RSNA.org/CORE).

## Writing a Competitive Grant Proposal

**February 3–4, 2012**  
RSNA Headquarters  
Oak Brook, Ill.  
**Application Deadline**  
December 16

REGISTRATION IS BEING ACCEPTED for the RSNA 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 are 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, 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](http://RSNA.org/CGP). Contact Fiona Miller at 1-630-590-7741 or [fmiller@rsna.org](mailto:fmiller@rsna.org) for further information.

## Medical Meetings

September–October 2011

### SEPTEMBER 7–10

Academy of Molecular Imaging (AMI), 2011 World Molecular Imaging Congress (WMIC), San Diego Convention Center, Calif.  
• [www.wmicmeeting.org](http://www.wmicmeeting.org)

### SEPTEMBER 8–11

Australasian Society for Ultrasound in Medicine (ASUM), 41st Annual Congress in Medical Ultrasound, Crown Conference Centre, Melbourne, Australia  
• [www.asum.com.au](http://www.asum.com.au)

### SEPTEMBER 14–17

American Society of Emergency Radiology (ASER), Annual Scientific Meeting, Ritz Carlton, Key Biscayne, Miami  
• [www.eras.org](http://www.eras.org)

### SEPTEMBER 21–24

International Skeletal Society (ISS), Annual Meeting, Hotel del Coronado, San Diego  
• [www.internationalskeletal-society.com](http://www.internationalskeletal-society.com)

### SEPTEMBER 24–27

North American Society for Cardiac Imaging (NASCI), 39th Annual Meeting, Hilton Baltimore Hotel, Md.  
• [www.nasci.org](http://www.nasci.org)

### OCTOBER 7–8

American Association of Physicists in Medicine (AAPM), CT Dose Summit, Westin Denver  
• [www.aapm.org/meetings/2011CTS](http://www.aapm.org/meetings/2011CTS)

### OCTOBER 13–16

International Urogenital Radiology, joint meeting of European Symposium on Urogenital Radiology (ESUR) and Society of Uroradiology, Hotel Dubrovnik Palace, Croatia  
• [www.esur2011.com.hr](http://www.esur2011.com.hr)

### OCTOBER 16–19

Radiology Business Management Association (RBMA), Fall Educational Conference, Aria Resort & Casino Las Vegas  
• [www.rbma.org](http://www.rbma.org)

### OCTOBER 21–23

Society of Radiologists in Ultrasound (SRU), 21st Annual Meeting, the Westin Hotel, Chicago  
• [www.sru.org](http://www.sru.org)

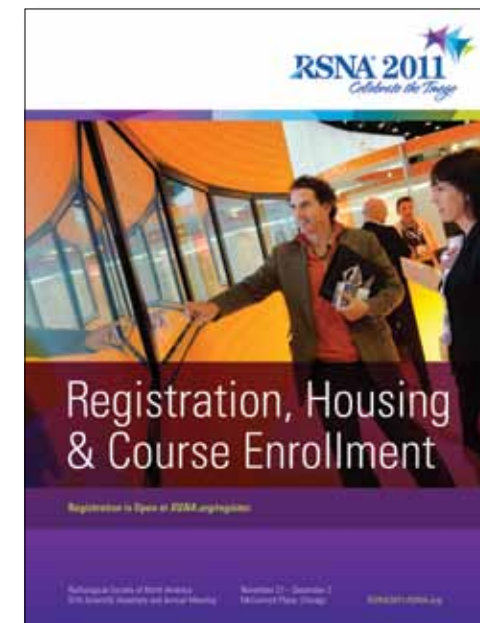
### OCTOBER 21–25

Société Française de Radiologie (SFR), Les Journées Françaises de Radiologie (JFR) 2011, Palais des Congrès de Paris  
• [www.jfrefexpo.com](http://www.jfrefexpo.com)

## Annual Meeting Watch

# Enroll Now for Courses

Course enrollment for RSNA 2011 is under way. Online enrollment occurs instantly, while faxed or mailed registration forms are processed in the order they are received. The RSNA 2011 Advance Registration, Housing and Course Enrollment brochure was mailed in June and is also available at [RSNA.org/register](http://RSNA.org/register). Use this brochure to make the most of your RSNA 2011 experience. RSNA has organized the information in the course brochure to help you complete your enrollment in just a few steps. Find the courses you need, build your schedule and enroll quickly and easily online or via the print form. You must be registered for RSNA 2011 in order to enroll for courses.



### Guarantee Your Seat!

Tickets are required for various meeting components, including refresher and multisession courses, informatics workshops and RSNA tours and events. All ticketed courses must be confirmed prior to November 23 to guarantee a seat. RSNA ticketed courses fill up fast, so ensure you get the selections you need by enrolling at [RSNA.org/register](http://RSNA.org/register). Onsite course ticketing has been eliminated. Registrants without tickets will be allowed entrance into a course after all ticketed registrants have been seated.

### TELL A COLLEAGUE:

**Annual Meeting Admission Free with RSNA Membership.**

Encourage your colleagues to become RSNA members and receive free admission, with advance registration, to RSNA 2011. Membership must be obtained by Sept. 1. Go to [RSNA.org/apply](http://RSNA.org/apply).

### Reserve Your Room Now

RSNA has many hotel rooms available at discounted rates. Register for the meeting today and reserve your hotel room.

### Book with Gant Travel for a Chance to Win

Gant Travel has been RSNA's official domestic travel agency for the past 11 years. Custom travel itineraries may be booked by phone and e-mail Monday–Friday, 7 a.m. to 6 p.m. CT. Additional taxes and booking fees will apply to airline ticket prices and after-hours emergency assistance

RSNA attendees who book air travel through Gant Travel by September 30, 2011, will be entered into a drawing to receive a \$500 (USD) travel credit good toward future travel on United Airlines. Contact Gant at 1-877-613-1192, international +1 011 630-227-3873, or [RSNA@ganttravel.com](mailto:RSNA@ganttravel.com).

## RSNA 2011 Registration

### How to Register

There are four ways to register for RSNA 2011:

#### 1 INTERNET

Go to [RSNA.org/register](http://RSNA.org/register)

#### 2 FAX (24 hours)

1-800-521-6017

1-847-996-5401

#### 3 TELEPHONE

(Mon.–Fri. 8:00 a.m. – 5:00 p.m. CT)

1-800-650-7018

1-847-996-5876

#### 4 MAIL

Experient/RSNA 2011  
568 Atrium Drive  
Vernon Hills, IL 60061 USA

### Registration Fees

BY NOV. 4 AFTER NOV. 4

	BY NOV. 4	AFTER NOV. 4	
\$ 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	
165	265	Non-Member Resident/Trainee	
165	265	Radiology Support Personnel	
750	850	Non-Member Radiologist, Physicist or Physician	
750	850	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	

### Important Dates

<b>October 21</b>	International deadline to have full-conference materials mailed in advance
<b>November 4</b>	Final discounted advance registration, housing and course enrollment deadline to have full-conference materials mailed in advance
<b>Nov. 27 – Dec. 2</b>	RSNA 97th Scientific Assembly & Annual Meeting

For more information about registering for RSNA 2011, visit [RSNA2011.RSNA.org](http://RSNA2011.RSNA.org), e-mail [reginfo@rsna.org](mailto:reginfo@rsna.org) or call 1-800-381-6660 x7862.



## Annual Meeting Watch

### Receive Registration Materials Prior to the Meeting

RSNA will mail registration materials in advance of RSNA 2011 to all North American attendees who register by November 4. RSNA will mail materials in advance to international attendees whose registration was received by October 21.

Registration materials include:

- **Name badge and holder**
- **Course and tour tickets** (as requested)
- **Attendance vouchers for CME credit** (if applicable)
- **Free pass for Chicago Metra Electric Line trains**
- **Airport shuttle discount coupon**
- **ExpoCard**—Use this electronically personalized business at the technical exhibition to request exhibitor information.
- **Pocket Guide**—The RSNA 2011 *Pocket Guide* is an easy-to-use reference guide to everything meeting related.



### International Visitors

If you must apply for a temporary non-immigrant visa to attend RSNA 2011, you are advised to apply as soon as U.S. travel is decided and no later than three to four months in advance of the travel date. The RSNA offers an official letter of invitation for RSNA 2011 attendees. For more information go to [RSNA2011.RSNA.org/attendees/international.cfm](http://RSNA2011.RSNA.org/attendees/international.cfm).

### Arrange Childcare

Children under the age of 16 will be allowed to ride on the RSNA shuttle buses; however, they will not be allowed to attend the meeting. Onsite childcare will be available for children six months to 12 years through ACCENT on Children's Arrangements, Inc. Online registration and application forms are available at [RSNA2011.RSNA.org](http://RSNA2011.RSNA.org). Click childcare.



### ANNUAL MEETING PAGE IS ONE-STOP SHOP

To stay on top of RSNA 2011 information, check out RSNA's ever-expanding Annual Meeting page at [RSNA.2011.RSNA.org](http://RSNA.2011.RSNA.org), offering separate links for attendees, technical exhibits, the meeting program, past and future RSNA meetings, newsroom highlights and more.

### RSNA 2011 Spotlights New Technologies

The Technical Exhibition at the RSNA annual meeting will span three exhibit halls and feature nearly 600 exhibitors representing the best in radiologic technology from around the world.



## “Flight Chicago” Takes off at RSNA 2011

The newest RSNA-sponsored tour & event will help RSNA 2011 attendees take “flight”—without ever leaving Chicago.

“Flight Chicago” offers attendees a three-hour, behind-the-scenes glimpse of Chicago’s world-famous food scene. You will visit three different restaurants for an intimate look at the daily lives of Chicago’s hottest and most talked about chefs on their own turf.

### Eye on Chicago

After touring the kitchen or other notable “back of house” spaces to get a sense of how things work, you can sit down to sample tastes while engaging in a question-and-answer session with the chef.

Along the way you will also meet mixologists, bakers, mongers and other local artisans, and sample excellent wine, beer and spirit pairings. You will also enjoy a nine-course late lunch / early dinner paired with alcoholic beverages unique to each venue’s menu and specialties.

The starting point and restaurant names for the flight will be provided when you pick up your tickets at the Palmer House tour desk. Transportation to the restaurants is not included.

**The Flight Chicago Dining Experience** will be held from 2:30 to 5:30 p.m., Tuesday, November 29. Price is \$125 per person. To register, go to [RSNA2011.RSNA.org/attendees/tours\\_and\\_events.cfm](http://RSNA2011.RSNA.org/attendees/tours_and_events.cfm).

## CITY OF CHICAGO OFFERS “SWEET DEALS”

The City of Chicago offers RSNA 2011 attendees amazing deals on everything from restaurants and shopping to entertainment and attractions. Take advantage of Sweet Deals, Chicago, and enjoy these exclusive offers when you use any American Express® Card at participating merchants. For more information, go to [www.choosechicago.com](http://www.choosechicago.com).



## For Your Benefit

### Retired Members Reap Values of RSNA Membership

Although he officially retired four years ago, 2001 RSNA President Jerry Petasnick, M.D., remains up-to-date on the latest news of his profession through a number of resources offered by RSNA.

### The Value of Membership

Dr. Petasnick, who retired after 41 years of practice—37 at Rush University in Chicago—takes full advantage of the following benefits offered to RSNA members who request retired status.

- No dues and assessments
- Free admission with advance registration to the RSNA Annual Meeting
- Free online access to RSNA peer-reviewed journals, *Radiology* and *RadioGraphics* (printed versions of the journals may be purchased at a reduced rate)

“Since my retirement I have continued to attend RSNA annual meetings and have relied on *RadioGraphics* for Continuing Medical Education as well as *Radiology* to keep current on developments in the field,”

Dr. Petasnick said. “I always look forward to the annual meeting as a time to meet old friends and learn what is new.”

Dr. Petasnick also regularly mentors and interacts with residents at the Residents Reception held at RSNA annual meetings.

Even though he is no longer practicing, it is important to stay connected to the quickly changing specialty for a number of other reasons, said Dr. Petasnick, who received the RSNA Gold Medal in 2006.

“Friends and family frequently seek my advice about medical matters, making it important that I try to stay current on new advances,” Dr. Petasnick said.

Retired status is offered to RSNA members who have retired from medical practice or other active involvement (practicing less than 20 hours per week) in radiology or related fields and have been a member in good standing for at least 10 years. Fill out an application at [RSNA.org](http://RSNA.org) under Membership.





## Residents &amp; Fellows Corner

Residents



### Residents and Fellows Offer Feedback on RSNA Programs

At a meeting at RSNA Headquarters in late June, members of the Resident and Fellow Committee discussed a number of RSNA educational offerings for members in training, including a half-day symposium scheduled for RSNA 2011 and programs in the works for 2012 and 2013. Committee members also made recommendations to improve RSNA offerings such as the Physics Modules and myPortfolio, and guided development of a radiology fellowship database soon to be published on [RSNA.org](http://RSNA.org).



#### RSNA Resident and Fellow Committee

(from left): Stephanie F. Coquia, M.D., Bisher Tarabishy, M.D., Judith Kaplan, M.D., Jeremy B. Duda, M.D., Lucy B. Spalluto, M.D., Joseph Yacoub, M.D., Daniel C. Barr, M.D., Monique A. Meyer, M.D., Christian E. Shield, M.D., Alexander Ding, M.D., David D. Arrington, M.D., RSNA Board Liaison for Science N. Reed Dunnick, M.D., chair, Michael A. Woods, M.D., Jocelyn D. Chertoff, M.D., faculty advisor, Meredith C. Northam, M.D., Jonathan Abelson, M.D., Aparna Annam, D.O., Giustino Albanese, M.D., Richard E. Sharpe Jr., M.D., M.B.A.

Not pictured: Duane G. Mezwa, M.D., faculty advisor, Waseem A. Bhatti, M.D., Christina M. Cinelli, M.D., Sriyesh Krishnan, M.D., Jennifer Yu, M.D., Ph.D.

### For Your Benefit

#### RSNA 2010 Refresher Courses Available For Viewing, Purchase

Refresher Courses recorded at RSNA 2010 are now available for viewing online. Members can view selected courses approved for *AMA PRA Category 1 Credit™* at no charge by logging in at [RSNA.org/Education](http://RSNA.org/Education) and selecting courses from a wide array of subspecialties. Non-members can view the courses but do not have the option of earning CME credit.

Presented in formats to accommodate a variety of practitioners, Essentials, Update and Review courses cover topics for varying levels of expertise and familiarity.

Included among the 20 selections from RSNA 2010 are "Malpractice Issues in Radiology," "Obesity: A Challenge for Imaging" and "What Diagnostic Radiologists Need to Know about Radiation Oncology." Most courses, though, focus on specific imaging challenges and cover a broad range of subspecialty topic areas from emergency neuroimaging and CT colonography to "Mammography Review" and "Pancreatic Imaging."

For a limited time, CD collections of select courses from past RSNA annual

meetings are available at a reduced price. The "Breast Imaging/High-Risk Collection" and the "Dosing Collection" are available at [RSNA.org/Education](http://RSNA.org/Education) at 25 percent off the original price. Collections are produced in a high-quality CD-ROM format and bundled into topical sets.

To order, go to [RSNA.org/Education](http://RSNA.org/Education) and browse RSNA's new Refresher Courses by subspecialty topic area. To learn more, call the RSNA Education Center at 1-800-272-2920.

## RSNA.org

### Tap into RSNA's Informatics Resources

A leader in the informatics revolution, RSNA has always offered a well-stocked library of informatics solutions and user-friendly technology-based tools to its members.

Those continually expanding resources are more important than ever as healthcare moves rapidly toward Internet-based solutions for image sharing and universal electronic health records. (See "CD-based Image Transfer Reduces Utilization, Bolsters Case for Web-based Sharing," on page 5).

Fortunately, RSNA members can take advantage of the one-stop informatics portal housed at [RSNA.org](http://RSNA.org), with links to resources including:

- Integrating the Healthcare Enterprise (IHE)®—a worldwide initiative to achieve standards-based interoperability for health information technology across the spectrum of care.
- The Medical Imaging Resource Center (MIRC)®—a set of free software tools to support radiology teaching files and imaging clinical trials.
- RadLex® comprehensive lexicon—a unified language of radiology terms for standardized indexing and retrieval of radiology information resources.

Adopt these RSNA-developed solutions to keep your workplace at the forefront of technology.



### Web Tip



#### Access RSNA Weekly Archives

You might enjoy receiving *RSNA Weekly* in your e-mail, but you might not want—or have the space—to save every issue. RSNA does it for you. Through myRSNA®, access archives of *RSNA Weekly* dating back to September 2008, when the informational e-newsletter that reviews key issues affecting radiology made its debut. Just like radiology, *RSNA Weekly* has covered a lot of ground in three years.

### COMING NEXT MONTH

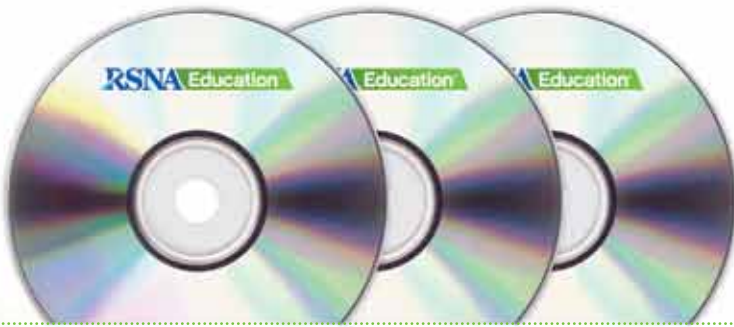
India is the latest country to be spotlighted as part of the "Presents" sessions at the RSNA annual meeting. Next month, *RSNA News* will preview the RSNA 2011 "India Presents" session, offered in conjunction with the Indian Radiological & Imaging Association. The session promises a look at the numerous factors driving significant growth in radiology in India, as well as presentations of some of the latest in radiology research from the region, including intervention in hemoptysis, MR-PET fusion and MR spectroscopy in intracranial cystic masses.



LIMITED TIME OFFER



# Education CD Collections



## Breast Imaging/High Risk Collection **BUN06**

Includes: RSP2307, 2707, 2807

Only

**\$90**

*For RSNA members*

**\$130**

*For non-members*



## Dosing Collection **BUN12**

Includes: RSP1107, 1907

Only

**\$60**

*For RSNA members*

**\$100**

*For non-members*

Buy today to benefit from  
the educational content for  
years to come.\*

**ORDER NOW: [RSNA.org/OrderCDs](http://RSNA.org/OrderCDs)**

*Enter the appropriate BUN number  
in the product code area.*

CME CREDITS AVAILABLE THROUGH NOVEMBER 25, 2011

For more information, visit [RSNA.org/Education/Collections](http://RSNA.org/Education/Collections).  
Questions? Contact [ed-ctr@rsna.org](mailto:ed-ctr@rsna.org) or call 1-800-272-2920.

**RSNA Education™**

*\*While supplies last.*

EDU117-R03/11