

# RSNA *News*

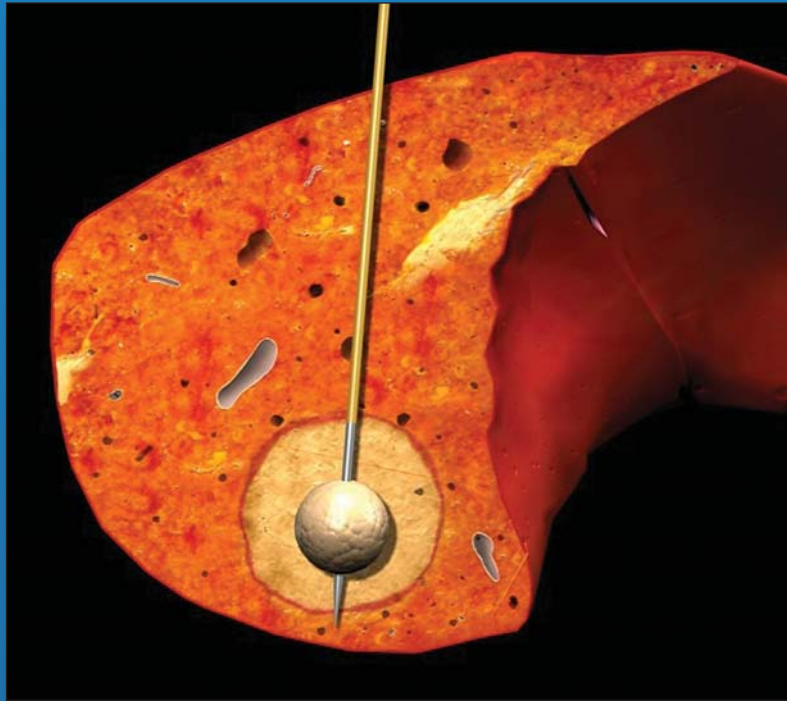


Image courtesy of Gerald D. Dodd III, M.D.

## New Multicenter Trial to Gather Much Needed Data on RFA

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- Ultrasound Outperforms Radiography in Monitoring Rheumatoid Arthritis Progression
- Cognitive Function, Memory Improve After Carotid Artery Stenting
- Most Frequent Radiology Discrepancies in the ER Identified
- New Findings in Occupational Exposure Don't Eliminate Need for Safety

Abstract Deadline for RSNA 2006  
April 15, 2006

# RSNA *News*

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**RSNA News**

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## RSNA Voted Tops

RSNA was voted the #1 Association/Trade Show/CME Event/Imaging-Related Educational Program by readers of *Medical Imaging* magazine.

More than 1,200 readers cast their votes based on the quality of CME, events and members, as

well as the quantity and availability of educational opportunities and the leadership, member benefits and outreach.

Rounding out the top five were the American College of



Radiology, the American Society of Radiologic Technologists, the American Healthcare Radiology Administrators and the Society for Computer Applications in Radiology.



(left) BIBR was released at a media briefing on the future of medical imaging, sponsored by the National Electrical Manufacturers Association, ARR and Research! America. (right) NIBIB Director Roderic I. Pettigrew, Ph.D., M.D., spoke about the role of NIBIB in funding innovation.

## Blueprint for Imaging in Biomedical Research

**A** REPORT ON THE new Blueprint for Imaging in Biomedical Research (BIBR) was released at a January 31 media briefing in Washington, D.C. BIBR was created through a collaboration by RSNA, Academy of Radiology Research (ARR), American College of Radiology and American Roentgen Ray Society. Funding was also provided by the National Institute of Biomedical Imaging and Bioengineering (NIBIB) and the National Cancer Institute. The BIBR executive summary and full report are available online at [www.acadrad.org](http://www.acadrad.org). Additional information about the briefing is available at [www.medicalimaging.org](http://www.medicalimaging.org).

## European Radiology Institutions Merge to Form European Society of Radiology

The European Association of Radiology (EAR) and the European Congress of Radiology (ECR) have founded the joint European Society of Radiology (ESR) in Vienna, Austria. The goal of the merger was to strengthen and unify European radiology and ensure competitiveness with other radiology events and institutions.

ESR's goals are organizing, maintaining and increasing the excellence of the annual European Congress of Radiology and establishing a new research institute to coordinate research activities and to support major research initiatives.

EAR current members are national radiology organizations and subspecialty organizations. ECR includes radiologists, physicists, radiographers and professionals of related disciplines.

## New Code Released for Breast MRI CAD

The American Medical Association (AMA) has released a new Category III Current Procedural Terminology (CPT®) code for breast MR imaging using computer-aided detection (CAD). The new code will be implemented July 1.

According to the AMA Web site, the new code, 0159T, is for CAD, "including computer algorithm analysis of MRI data for lesion detection/characterization, pharmacokinetic analysis, with further physician review for interpretation, breast MRI (list separately in addition to code for primary procedure). Use 0159T in conjunction with 76093, 76094."

The new code has not been assigned relative value units (RVUs). Payment for the use of this code will be based on existing policies of individual payors.

## MEDICAL IMAGING COMPANY NEWS:

### Boston Scientific, Guidant Reach Merger Agreement

■ Boston Scientific Corporation, of Natick, Mass., and Guidant Corporation, of Indianapolis, announced they have entered into a merger agreement. Under the agreement, Boston Scientific will acquire all the outstanding shares of Guidant for a combination of cash and stock worth \$80 per Guidant share, or approximately \$27 billion in aggregate. Prior to entering into this agreement with Boston Scientific, Guidant terminated its merger agreement with Johnson & Johnson, of New Brunswick, N.J.

### Merit Medical Acquires Dutch Corporation

■ Merit Medical Systems, Inc., of South Jordan, Utah, announced that it has acquired the capital stock of MCTec Holding, B.V., a Dutch corporation located in Venlo, The Netherlands, from British Columbia-based Angiotech Pharmaceuticals, Inc. for approximately \$3 million cash. MCTec's revenues for 2005 were approximately \$3.5 million.

Merit manufactures and markets proprietary disposable accessories used in radiology and cardiology procedures. MCTec is primarily involved in the coating of wires and tubings for various medical device companies.

### Applications Sought for Radiology Editor

RSNA will accept applications through May 1 for the position of *Radiology* editor. Anthony V. Proto, M.D., *Radiology* editor since 1998, is retiring from the position.

The *Radiology* editor is responsible for:

- Encouraging submissions of scientific manuscripts to the journal
- Setting high standards for scientific integrity
- Developing guidelines and mechanisms for peer review of submitted manuscripts
- Releasing accepted manuscripts on a timely basis for copyediting
- Reviewing and releasing edited manuscripts on a timely basis for publication
- Formulating and interpreting editorial philosophy and policies
- Cooperating with the RSNA Board of Directors and business manager in the



production of a self-supporting, highest quality publication with a rising impact factor.

It is expected that the editor will commit at least three-quarters of his or her time to *Radiology*.

A search committee chaired by Hedvig Hricak, M.D., Ph.D., Board Liaison for Publications, is assisting the RSNA Board of Directors in finding a new editor.

The new editor will be selected in December 2006. Interested physicians are invited to send their curricula vitae (marked "confidential") to: Hedvig Hricak, M.D., Ph.D. Radiological Society of North America (RSNA) 820 Jorie Blvd. Oak Brook, IL 60523

### RADIATION SAFETY Question of the Month

**Q** A radiologist asks, "There is an annual radiation limit for radiation workers; what is the limit for the patient?"

[Answer on page 20.]

### The RSNA 2005 Annual Report was

mailed to RSNA members with the February 2006 issue of *RSNA News*. The annual report also is available online at [RSNA.org/About/upload/2005annualreport.pdf](http://RSNA.org/About/upload/2005annualreport.pdf).



### PEOPLE IN THE NEWS

## SIR Gold Medals

**T**HE Society of Interventional Radiology (SIR) will present three gold medals during its annual meeting in Toronto this month. They will be awarded to:

**Harold A. Mitty, M.D.**, who is known for his work in adrenal venography, genitourinary interventions and embolization of obstetrical hemorrhages.

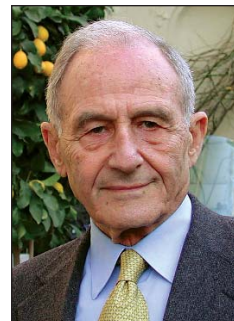
**Plinio Rossi, M.D.**, who is recognized internationally as a founding father of interventional radiology.

**Eric Martin, M.D.**, who helped lead negotiations over the development of the resource-based relative value scale (RBRVS) and the SIR response.

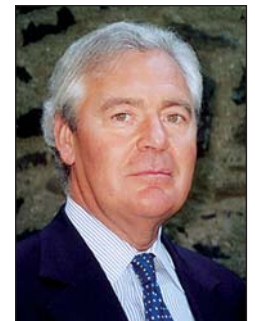
**Josef Rösch, M.D.**, will receive the 2005 Leaders in Innovation Award. The Dr. Charles T. Dotter Lecture will be presented by **Andy Adam, M.D.**, 2006 president of the European Congress of Radiology.



Harold A. Mitty, M.D.



Plinio Rossi, M.D.



Eric Martin, M.D.



Josef Rösch, M.D.



Andy Adam, M.D.



## ECR and EAR Honor Dignitaries

2005 RSNA President **David H. Hussey, M.D.**, was named an honorary member of the European Congress of Radiology (ECR) and European Association of Radiology (EAR) this month at the annual meeting held in Vienna, Austria.

Dr. Hussey is a clinical professor in the Department of Radiation Oncology at the University of Texas Health Science Center in San Antonio and specializes in the research of testicular cancer, prostate cancer, and head and neck cancer.

**Peter R. Mueller, M.D.**, head of the Division for Abdominal Imaging and Interventional Radiology at Massa-



**David H. Hussey, M.D.**



**Peter R. Mueller, M.D.**



**Janet E. Husband, F.Med.Sci., F.R.C.P., F.R.C.R.**



**Holger T.A. Pettersson, M.D.**

achusetts General Hospital and a professor of radiology at Harvard Medical School, also was awarded honorary membership.

Gold medals were awarded to **Janet E. Husband, F.Med.Sci., F.R.C.P., F.R.C.R.**, and **Holger T.A. Pettersson, M.D.** Dr. Husband is a professor of diagnostic radiology at the

University of London Institute of Cancer Research and president of the Royal College of Radiologists.

Dr. Pettersson is a professor of Radiology at the University of Lund and chief medical officer of the Region of Scania in south Sweden.

## AMI Presents Clinical and Basic Science Awards

The Academy of Molecular Imaging (AMI) presented its 2006 Distinguished Clinical Science and Basic Science awards this month at its annual meeting in Orlando, Fla.

**Heinrich R. Schelbert, M.D., Ph.D.**, from the University of California at Los Angeles, received the 2006 Peter Valk Distinguished Clinical Science Award. He discovered the specific pattern of blood flow and metabolism in chronically dysfunctional myocardium that is predictive of its potential reversibility and development and also validated the PET-based technique for measuring regional myocardial blood flow in absolute units using <sup>13</sup>N-ammonia.

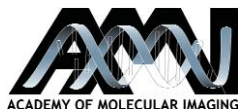


**Ralph Weissleder, M.D., Ph.D.**

**Ralph Weissleder, M.D., Ph.D.**, was the 2006 Distinguished Basic Science Awardee. Dr. Weissleder is a professor at Harvard Medical School, director of the Center for Molecular Imaging Research at Massachusetts General Hospital (MGH) and attending interventional

radiologist at MGH. His research interests include developing novel molecular imaging techniques and tools for early detection of cancer and developing nanomaterials for sensing. Dr. Weissleder also serves

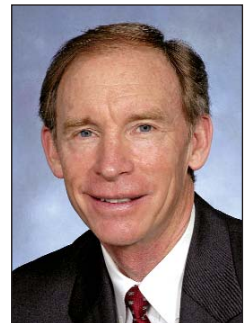
as chair of the RSNA Molecular Imaging Committee.



## Cook Medical has New VP for Physician Relations

**Jerry Williams** has been named senior vice-president, physician and institutional relations for Cook Medical Inc.

Williams has been with the company for 29 years. The world's largest privately held manufacturer of medical devices with international headquarters in Bloomington, Ind., Cook Medical is a designer, manufacturer and global distributor of minimally invasive medical device technology for diagnostic and therapeutic procedures.



**Jerry Williams**

# New Multicenter Trial to Gather Much Needed Data on RFA

**A** LARGE MULTICENTER trial launched last December will gather data on the effectiveness of radiofrequency ablation (RFA) in hepatocellular carcinoma, the most common type of liver cancer.

Organized by the American College of Radiology Imaging Network, the phase II trial, ACRIN 6673, will enroll 120 patients at multiple sites.

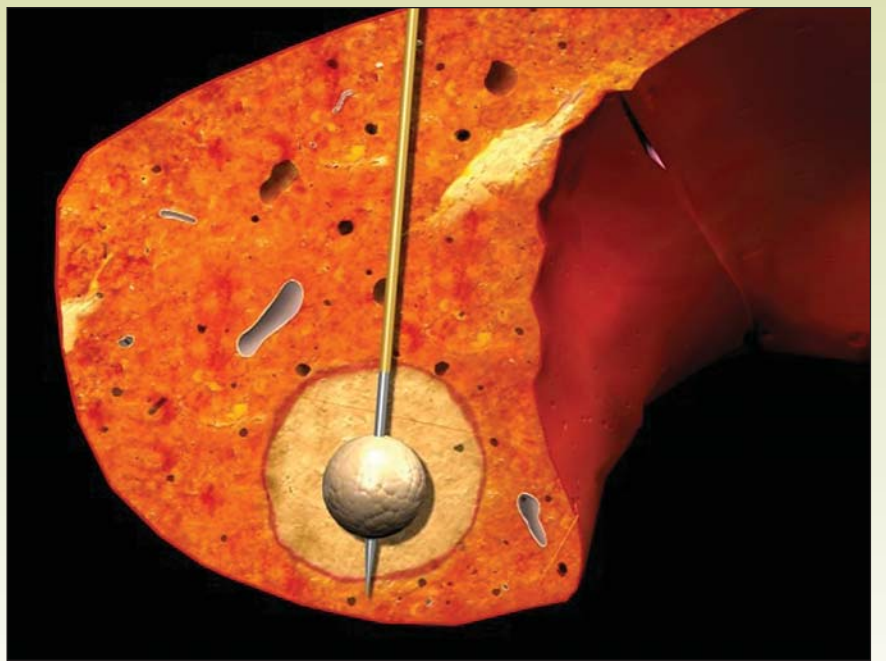
When liver tumors are inoperable or surgery would be risky, patients and their physicians have few good options. That's why RFA, with its ability to destroy tumors with minimal side effects, has attracted so much interest among oncologists.

In fact, RFA appears to now be the de facto standard of care for patients with inoperable, localized hepatocellular carcinoma, said Gerald D. Dodd III, M.D., professor and chair of the Department of Radiology at the University of Texas Health Science Center at San Antonio.

First introduced about 15 years ago, the procedure, which uses percutaneous applicators to heat tumor cells to over 100° C, has spread rapidly. However, hard evidence on the efficacy of RFA so far is limited. Practice has raced ahead of the clinical trials, which up to now have included primarily small, single-institution studies, said Dr. Dodd, also chair of the RSNA Scientific Program Committee.

## Learning How RFA Works

The primary objective of the Multicenter Feasibility Study of Percutaneous Radiofrequency Ablation of Hepatocel-



**Illustration of how radiofrequency ablation (RFA) is administered to a hepatoma. The procedure uses percutaneous applicators to heat tumor cells to over 100°C.**

Images courtesy of Gerald D. Dodd III, M.D.

lular Carcinoma in Cirrhotic Patients is to estimate the proportion of patients receiving RFA treatment in whom all hepatic tumors can be controlled after

*“We’ll get a much better idea of how RFA works as a result of this study. If the results are promising, it will set the stage for future studies.”*

Gerald D. Dodd III, M.D.

18 months. Patients will undergo placement of an ablation electrode into the tumor by CT or ultrasound guidance, then have RFA delivered directly to the tumor or tumors for 12 minutes. A CT scan of the liver follows within one week and then every three months for up to 18 months. If tumor remains or returns after treatment, repeat RFA treatments will be given up to 15 months after the initial treatment.

The trial will collect other much

needed data, Dr. Dodd said, such as the number of RFA treatments associated with 18-month control rates, tumor recurrence rates, the size of tumors associated with the 18-month control rate and the development of tumors outside the liver.

“We’ll get a much better idea of how RFA works as a result of this study,” Dr. Dodd said. “If the results are promising, it will set the stage for future studies.”

## Institutions Still Sought

The trial is expected to take place at multiple sites, including major cancer centers such as those at UCLA, the Mayo Clinic in Rochester, Minn., Brown University and Wake Forest University. Several other sites are pending, according to Donna Hartfeil, R.N., B.S.N., project manager for the trial.



Image of a hepatoma before RFA is administered.



Image of the same hepatoma immediately after RFA treatment.

Dr. Dodd noted that the trial is open to other institutions. An institution is eligible if the radiologist who will be performing the procedure has previously treated at least 15 liver tumors with RFA, including at least five with the Valleylab/Radionics device being used in the trial. Each site must have a helical CT scanner with power injector and must engage a pathologist who will be responsible for sending slides to a central pathologist for review. Sites are expected to enroll, on average, one participant per month.

Patients are eligible for the trial if they have cirrhosis and small tumors confined to the liver—a single tumor larger than 3 cm and up to 5 cm in diameter or up to three tumors that are 3 cm or less in diameter. Among other criteria, patients must have had no prior therapy and cannot be candidates for surgery. Patients will be stratified based on severity of disease into three groups, with 40 in each group.

### RFA the “Frontrunner” in Ablation Treatment

Liver cancer now kills about 15,000 people in the United States annually, according to the American Cancer

Society. About 17,000 Americans are diagnosed with the disease each year, and the incidence is rising, largely because of the increase in chronic hepatitis C infections. The overall five-year relative survival rate is only about 7 percent.

While surgery is the preferred treatment for localized disease, fewer than 30 percent of patients having surgery are able to have their cancer completely removed. Moreover, surgery is not possible for many patients for a variety of reasons, including the location of the tumors in the liver and concomitant medical conditions, such as cirrhosis.

RFA is relatively new, dating back only to about 1990 when the first studies were conducted in animals. Its rapid spread was evident at RSNA 2005, Dr. Dodd noted, with more than 300 abstracts focused on the procedure. A fact sheet for staff physicians at the National Institutes of Health states that RFA is “currently the frontrunner among the many choices for local tissue ablation” and that it “may be better

than other ablative techniques because it is fast, easy, predictable, safe and relatively cheap.”

In addition to RFA, nonsurgical treatments for tumors confined to the liver include cryotherapy, percutaneous ethanol injection, chemoembolization or chemotherapy applied directly to the liver. These treatments, however, also have little hard clinical data on their effectiveness. Systemic chemotherapy has not proved effective in most cases and the usefulness of radiotherapy is limited because of the liver’s susceptibility to damage from radiation and liver motion secondary to respiration.

If ACRIN’s phase II trial results are promising, the next step could be a randomized trial, Dr. Dodd said. While it is much too early to know how that trial would be designed, one possibility would be to compare RFA to one of the other non-surgical treatments, he said. □

■ The ACRIN 6673 Protocol-Specific Application can be found online at [www.acrin.org/6673\\_protocol.html](http://www.acrin.org/6673_protocol.html). For more information on participating in the trial, contact Donna Hartfeil, R.N., B.S.N., at [dhartfeil@phila.acr.org](mailto:dhartfeil@phila.acr.org).

# Ultrasound Outperforms Radiography in Monitoring Rheumatoid Arthritis Progression

**U**LTRASOUND can more effectively detect erosions in patients with rheumatoid arthritis (RA) than radiographic analysis, making it particularly effective in following a patient's progress during drug therapy, researchers have found.

Robert Lopez-Ben, M.D., an associate professor of radiology, and Graciela Alarcon, M.D., a professor of medicine and rheumatology, both from the University of Alabama at Birmingham (UAB), studied 168 joints in the hands and feet of 21 patients with RA. Sonia Bajaj, M.D., now attending staff in rheumatology at El Dorado Hospital in Tucson, Ariz., also was part of the team.

Dr. Lopez-Ben presented the findings at RSNA 2005. He said the research group wanted to follow patients with RA beyond diagnosis into the treatment period.

"Ultrasound has been shown to be sensitive for the early diagnosis of rheumatoid arthritis. We wanted to follow disease progression in these patients over the initial six months of treatment," he explained. "New therapeutics like anti-tumor necrosis factor agents are very effective early in the disease course and hopefully save joint structure and consequently function. But it's very important, after the diagnosis of RA is made, that treatment be properly monitored so that patients are not exposed to potentially toxic agents and not gain any benefit."

*It's very important after you effectively make the diagnosis, that you also monitor treatment because you don't want to expose patients to potentially toxic agents and not gain any benefit.*

**Robert Lopez-Ben, M.D.**



**Robert Lopez-Ben, M.D.**

## Encouraging Results

In 10 RA patients at initial clinical presentation, ultrasound revealed 15 bone changes (erosions). Radiography detected one erosion. On follow-up,

ultrasound revealed 31 erosions in 12 patients, compared with just five erosions in three patients shown by radiography.

Compared to radiography, ultrasound revealed 15 times more erosions at baseline and 6.2 times more erosions on follow-up.

"Our findings were surprising in two ways," said Dr. Lopez-Ben. "In the ultrasound follow-up, we saw more erosions than were apparent with radiography. We thought that radiographic

detection would catch up, but it didn't. So there was still an advantage six months later. Since ultrasound is very dependent on the performance of the examiner, we were concerned that both examiners wouldn't get the same results ... but we got excellent inter-observer reliability, and that was very encouraging."

## MR Still "Gold Standard"

Dr. Lopez-Ben conceded that MR imaging is still the gold standard in RA detection and follow-up. "You're able to see changes like bone marrow edema, which may be precursors of later development of advanced joint damage. And you have a more global picture. In areas with complex anatomy like the wrist it may be harder to fully evaluate with ultrasound as compared to MR. However, what limits the routine clinical use of MR are the cost and

*Continued on page 11*



# Cognitive Function, Memory Improve After Carotid Artery Stenting

**C**AROTID ARTERY STENTING appears to be a powerful tool not only in stroke prevention, but also for helping patients recover precious cognitive and memory function.

Research has identified significant improvements in cognitive speed and signs of enhanced memory function in patients after carotid artery stenting.

“To my knowledge, this is the first study combining neuropsychological testing and perfusion imaging that screens for silent ischemic stroke events that can occur during stenting,” said Iris Grunwald, M.D., a neuroradiologist specializing in interventional radiology at the Saarland University Clinic in Homburg, Germany. Dr. Grunwald presented her findings at RSNA 2005.

Stroke remains the third leading cause of death in the United States, affecting as many as 600,000 people each year. Approximately 25 percent of these cases are caused by arterial occlusive disease, or narrowing of the carotid artery, which restricts blood flow to the brain.

## Stenting is Preferred Procedure

In recent years, surgery has taken a back seat to the minimally invasive carotid artery stenting as the preferred procedure for reducing risk of stroke by restoring blood flow to the brain.

Dr. Grunwald and her colleagues performed carotid artery stenting on 29 patients. She noted that this is also the

first study to use a uniform group of patients. In addition to being screened for depression, dementia and right-handedness, patients were examined with diffusion- and perfusion-weighted MR imaging before and after stenting. This assured that improvements in cognitive and memory function were attributable to the stenting procedure and not

to recovery from a previous stroke experienced unknowingly by patients.

In addition, all patients were given neuropsychological tests 24 hours before and three months after the stenting procedure. The tests assessed cognitive speed as well as memory function.

Results showed that cognitive speed

increased significantly after stenting, regardless of the patient’s age or the severity of the stenosis. In addition, researchers found a clear correlation between the degree of vessel stenosis

*We are already doing studies on Viagra, which also increases blood flow in the brain, and those patients also show an increase in cognitive function afterwards.*

Iris Grunwald, M.D.



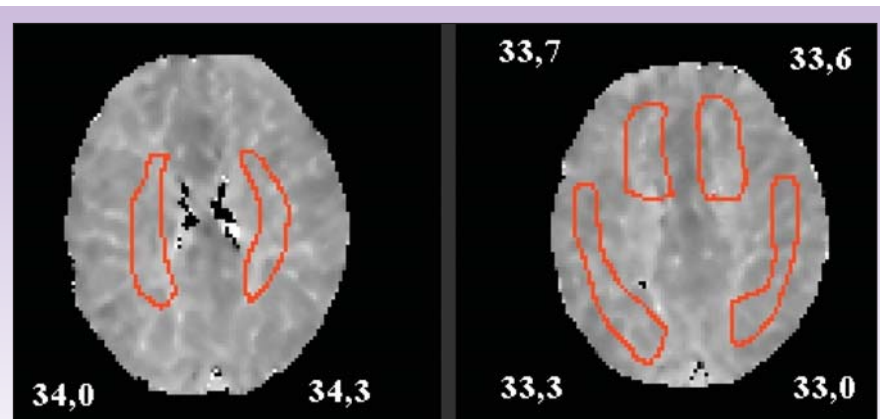
Iris Grunwald, M.D.

and perfusion deficit in the brain on the side of the stenosis. Increasing the blood flow with stenting clearly improved cognitive speed for patients with perfusion deficit.

## Further Study Required

“Carotid artery stenting is done to prevent stroke and, at the moment, it’s just

*Continued on page 11*



Images of brain after stent showing marked improvement in cognitive speed, verbal fluency and delayed recall.

Images courtesy of Iris Grunwald, M.D.

# Most Frequent Radiology Discrepancies in the ER Identified

**A** FIVE-YEAR REVIEW of more than 600,000 emergency department radiology cases at a level 1 major trauma center identified 3,194 significant discrepancies—that is, differences that could immediately change patient management—between the preliminary readings typically submitted by radiology residents and the final interpretations of radiologists.

Joseph Whetstone, a third-year medical student at the University of Pittsburgh School of Medicine, presented the findings at RSNA 2005.

The thought was that by identifying the most frequent discrepancies, radiology trainees can learn from them and avoid doing the same things, Whetstone said.

Residents often provide overnight radiology coverage of the emergency department in academic centers and supply preliminary readings. Final interpretations are rendered the following morning by a radiologist, and any discrepancies between the two readings are noted.

## Findings Categorized

Whetstone and colleagues tracked cases from August 1999 to November 2004. They categorized each of the discrepancies they found according to body part and type of diagnostic discrepancy, such as overcalled, undercalled or missed.

There were 1,232 significant musculoskeletal discrepancies, for a rate of 0.57 percent. Missed or undercalled fractures accounted for 51 percent of musculoskeletal differences, followed by overcalled fractures and missed or undercalled joint and soft tissue

injuries. The most missed fractures occurred in the leg, particularly malleolar and tibial plateau injuries.

Confusion between congestive heart failure and pneumonia predominated in thoracic image interpretation, the study showed. A total of 1,113 significant discrepancies were identified, for a rate of 0.62 percent, with 315 missed cases of pneumonia constituting a little more than a quarter of thoracic differences. Overcalled pneumonia and missed or undercalled congestive heart failure, effusion and lung mass were the other most numerous.

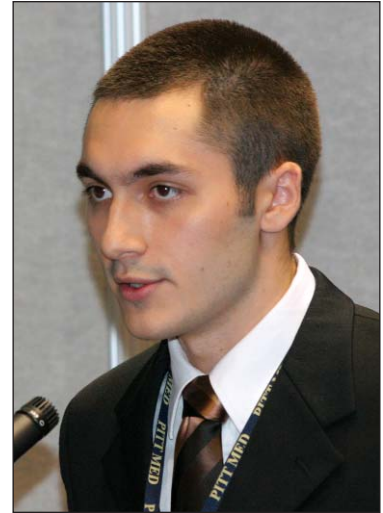
Among abdominal imaging interpretations, which had a rate of 0.43 percent, missed or undercalled bowel leaks or inflammation accounted for 25 percent of discrepancies. Missed or undercalled bowel obstruction, abdominal trauma, solid visceral mass and urinary calculi were the other most common.

Neurologic examinations carried the lowest rate, at 0.35 percent. The study yielded 78 cases of missed or undercalled stroke, followed by hemorrhage, neck and airway lesions and facial fractures as the source of most frequent misreads.

## Study Provides Many Lessons

Whetstone said the study offers numerous lessons for residents. “Residents should be aware of varied presentations of pathology,” he said. “For example, small-bowel obstruction can present in multiple ways.”

He also encouraged residents to be aware of associated findings. Additionally, he said, certain anatomic sites war-



Joseph Whetstone

rant special attention because of the difficulty in analyzing them. The retrocardiac region, for example, is a common site where even very large lesions can be missed.

The study also underscored the need for residents to ask for assistance when appropriate. Residents were also reminded to exclude critical findings first—such as early signs of stroke on every CT study of the head—and evaluate all images in a set.

Whetstone also issued a reminder to scan all regions of an image for abnormalities, to avoid “corner of the film” misses. Ancillary findings should also be sought to support a diagnosis.

In conclusion, Whetstone said, discrepancies that occur seem to fall into reproducible categories. He said trainees should study the work of their predecessors and focus their attention on clinical situations and radiographic findings that are subject to discrepancies. □

■ To view Whetstone's presentation, go to the *RSNA Meeting Program* at [rsna2005.rsna.org](http://rsna2005.rsna.org). The direct link is [rsna2005.rsna.org/rsna2005/v2005/conference/dps.cfm?p\\_navid=272&dm\\_id=1545&ag\\_code=SER&GROUPDISPLAY=999](http://rsna2005.rsna.org/rsna2005/v2005/conference/dps.cfm?p_navid=272&dm_id=1545&ag_code=SER&GROUPDISPLAY=999).

■ This story was adapted from an article that appeared in the *RSNA 2005 Daily Bulletin*.

# New Findings in Occupational Exposure Don't Eliminate Need for Safety

**W**HILE NEW findings in radiobiology are changing the way radiologists think about the risks of occupational radiation exposure, healthcare workers should still do all they can to decrease patient exposure and, as a result, their own exposure, said a panel of experts.

“No increases in cancer rates have been observed in populations exposed to high background radiation or among radiation professionals whose occupational exposures remain within regulatory limits,” said Jadwiga (Jodi) Strzelczyk, Ph.D., an associate professor of radiology at the University of Colorado in Denver.

Keeping within those regulatory limits means minimizing radiation exposure to patients and workers by developing and consistently using very good work habits, said Victoria Marx, M.D., an interventional radiologist at the USC-Keck School of Medicine in Los Angeles. “There’s a steep learning curve to developing those habits, but once you’ve got them, they stay with you forever.”

Drs. Strzelczyk and Marx joined John Damilakis, Ph.D., an assistant professor of medical physics at the Uni-

versity of Crete in Greece, as presenters for a RSNA 2005 refresher course, “Radiation Exposure and Your Professional Life.” The refresher course was presented in conjunction with the American Association for Women Radiologists (AAWR) and was moder-



Jadwiga Strzelczyk, Ph.D.



Victoria Marx, M.D.



John Damilakis, Ph.D.

ated by AAWR President Katarzyna J. Macura, M.D., Ph.D., of Johns Hopkins University.

## Bodily Defense Mechanisms are Complex

Dr. Strzelczyk said recent advances reveal the complexity and efficacy of the body’s defense mechanisms against both physical and chemical genotoxic agents, including radiation. These mechanisms exist at the cell level (DNA repair and apoptosis), tissue level (the role of neighboring cells) and

the total organism level (immunosurveillance), she said.

“New findings in radiobiology really dispel the notion that any amount of radiation is bad for you,” Dr. Strzelczyk said.

She said new data show that cancer risks are not proportional to dose in the low-dose range because different mechanisms—within cells, organs and tissues, in fact within the whole organism—are responsible for the response of biological systems.

“Every day, we are exposed to background radiation that is on the level of typical exposures of a healthcare worker,” she continued. “Radiologists, of course, are getting more exposure because some of them work with fluoroscopy, which delivers much higher doses. People who work in nuclear medicine also receive exposures from radiopharmaceuticals that they handle.

## Decreasing Exposure

Decreasing exposure, said Dr. Marx, means controlling the things that can be controlled:

- Minimizing fluoroscopy time
- Making sure the distance from the source to the patient is as great as possible
- Making sure the distance from the output side of the image intensifier to the patient is as short as possible

Collimators can be used to decrease the patient’s skin exposure, overall tissue exposure and scatter to the operator, Dr. Marx said, adding that workers also need a wrap-around

*New findings in radiobiology really dispel the notion that any amount of radiation is bad for you.*

Jadwiga (Jodi) Strzelczyk, Ph.D.

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## New Findings in Occupational Exposure Don't Eliminate Need for Safety

Continued from previous page

lead apron that fits. Use of ancillary lead shielding, such as a thyroid collar, also is very effective, she said.

Dr. Marx personally considered questions of exposure during two pregnancies. "I made a fundamental decision that I was going to keep doing my job and not completely avoid ionizing radiation," she said.

A study published in the March 2006 issue of *Academic Radiology* showed that most radiology residency

programs don't have written policies addressing policy during training. The article goes on to propose program guidelines for both residents and program directors to use. (See sidebar, below.)

Dr. Marx said she investigated the regulations and performed a study of her own abdominal skin radiation exposure over time. She took extra precautions, including adding extra lead to the thickness of her lead apron over the pelvis. She also decided not to learn

any new procedures while she was pregnant, as it would involve prolonged fluoroscopy time. In addition, she made sure she was using optimal methods of fluoroscopy to decrease her own exposure and that of the patient.

### Pregnant Patients

Dr. Damilakis said that to manage and counsel pregnant patients who are exposed to ionizing radiation, the exposure must be justified and the benefits

Continued on next page

## Guidelines for Pregnant Radiology Residents Proposed

**R**ESearchers at Boston University (BU) Medical Center have proposed guidelines aimed at helping pregnant radiology residents and program directors balance the responsibilities of residency training with concerns for residents' health.

The guidelines "provide a standardized framework for an informed, objective and consistent approach to pregnant radiology residents," the researchers write in the March 2006 issue of *Academic Radiology*. The study was conducted by Meghan E. Blake, M.D., M. Elizabeth Oates, M.D., Kimberly Applegate, M.D., M.S., and Ewa Kuligowska, M.D.

The guidelines are the result of a survey conducted by the BU team. Dr. Blake presented the results at RSNA 2004, noting that only half of the 55 radiology program directors responding to the study said that their department had written policies addressing the unique concerns of pregnant radiology residents. The study also found that a

majority of respondents would support national standardized guidelines.

The team first presented its proposed guidelines at the annual meeting of the Association of University Radiologists in April 2005.

"An explicit written policy can effectively commu-

nicate expectations at all levels, thus allowing residents, who may contemplate pregnancy, colleagues and interviewing candidates the opportunity to anticipate and plan accordingly," the team wrote.

### Proposed Program Guidelines for Pregnant Radiology Residents

#### Program Responsibilities

- Residency programs are expected to create a safe and supportive environment for all residents, providing optimal equipment for radiation safety and monitoring, including image-intensifier lead shielding, maternity lead aprons, dosimetry and monitoring.
- General fluoroscopy need not be restricted unless allowable levels are exceeded. According to the sample calculation cited in the study, between 100 and 1,000 fluoroscopic examinations of 5 minutes would need to be performed in the course of a month to exceed monthly exposure limit during pregnancy.
- Dose rates for fluoroscopic vascular/interventional rotations are highly variable. Therefore,

vascular/interventional rotations, usually comprising 3–4 months of the entire residency, should be postponed or completed beforehand.

- Residents who are pregnant or actively trying to conceive will not be responsible for dosing iodine 131 ( $I^{131}$ ), which is volatile and may lead to significant fetal thyroid dose.

#### Resident Responsibilities

- All residents are expected to use all available protective measures, i.e., lead shielding and dosimetry, and perform duties adhering to "as low as reasonably achievable" (ALARA) principles.
- All residents are expected to participate fully in the residency experience.

■ To read the abstract for the article, "Proposed Program Guidelines for Pregnant Radiology Residents: A Project Supported by the American Association for Woman Radiologists and the Association of Program Directors in Radiology," go to [academicradiology.org](http://academicradiology.org).

- All residents are expected to support coresidents in daily rotations, showing flexibility and covering open rotations/conferences when electing out of fluoroscopic work.
- All residents are expected to support coresidents in the call pool, as required by the particular program.
- All residents are expected to make up any call or rotations missed because of pregnancy or maternity leave, as required by the particular program.

Source: "Proposed Program Guidelines for Pregnant Radiology Residents: A Project Supported by the American Association for Woman Radiologists and the Association of Program Directors in Radiology." *Academic Radiology* 2006;13:391-401.

Continued from previous page

weighed against the risk to the fetus. The results must be reported to the woman's physician, he said, and the exposure must be optimized.

Accidental exposure may happen when a woman is not aware she is pregnant, Dr. Damilakis added. "We have to avoid accidental irradiation," he said. "This is the most important

message with regard to the exposure of pregnant patients to diagnostic x-rays."

The effect of z axis overscanning on the dose of patients undergoing multidetector spiral CT examinations must also be taken into consideration, Dr. Damilakis said.

In multislice CT spiral acquisition, extra x-ray tube rotations are performed above and below the bound-

aries of the planned image volume to acquire information needed for reconstruction algorithms. Consequently, tissue layers beyond the boundaries of the imaged region are exposed to the x-rays, referred to as z axis overscanning. A recent study showed a significant increase in the effective dose to the patients due to z axis overscanning. □

■ To view the abstract for this course, "Radiation Exposure and Your Professional Life: Facts and Controversies (In Conjunction with the American Association for Women Radiologists)," go to the *RSNA Meeting Program* at [rsna2005.rsna.org](http://rsna2005.rsna.org). The direct link is [rsna2005.rsna.org/rsna2005/V2005/conference/event\\_display.cfm?em\\_id=4405207](http://rsna2005.rsna.org/rsna2005/V2005/conference/event_display.cfm?em_id=4405207).

■ Handouts are available at <http://vml.med.uoc.gr/medicalphysics/handouts/>.

■ This story was adapted from an article that appeared in the *RSNA 2005 Daily Bulletin*.

## Cognitive Function, Memory Improve After Carotid Artery Stenting

Continued from page 7

a side effect that your cognitive function improves," said Dr. Grunwald. "This is just the beginning. Further study is required."

She added she is eager to expand on her findings. "We need more patients to have a better statistical reliability," she said. "At the moment we could only say for certain that it improved cognitive speed. And, while there was a tendency shown for

improved memory function, the probability value was not yet significant."

In addition to expanding her findings on memory function, she hopes to use other means to demonstrate that perfusion of the brain improves cognitive function.

"We are already doing studies on Viagra, which also increases blood flow in the brain, and those patients also show an increase in cognitive function afterwards," she said. □

■ To view the abstract of Dr. Grunwald's study, "Cognitive Changes after Carotid Artery Stenting," go to the *RSNA Meeting Program* at [rsna2005.rsna.org](http://rsna2005.rsna.org). The direct link is [rsna2005.rsna.org/rsna2005/V2005/conference/event\\_display.cfm?em\\_id=4417374](http://rsna2005.rsna.org/rsna2005/V2005/conference/event_display.cfm?em_id=4417374).

■ This story was adapted from an article that appeared in the *RSNA 2005 Daily Bulletin*.

## Ultrasound Outperforms Radiography in Monitoring Rheumatoid Arthritis Progression

Continued from page 6

the availability. MR imaging is at least two or three times more expensive than ultrasound."

The data suggest that sequential ultrasound may be a valuable tool in the assessment of disease progression in early RA. Dr. Lopez-Ben noted that in Europe, physicians use ultrasound to follow RA patients more routinely than is the norm in the United States. He said he hopes studies like theirs will influence U.S. physicians to incorporate ultrasound into their monitoring routine.

"Because ultrasound is so easy and quick to perform, one of the things we found is that our physicians and technologists can do this exam in 10 or 15 minutes. Clinically in our practice now, we're still using ultrasound predominantly in helping establish the diagnosis of inflammatory arthritis at presentation, but we are also now following the course of the disease in patients on therapy. Ultrasound may give an earlier determination as to the clinical progression of the disease or if the disease has been arrested," said Dr. Lopez-Ben. □

■ To view the abstract of Dr. Lopez-Ben's study, "Utilizing Ultrasound in Early RA to Establish Progression of Erosive Disease," go to the *RSNA Meeting Program* at [rsna2005.rsna.org](http://rsna2005.rsna.org). The direct link is [rsna2005.rsna.org/rsna2005/V2005/conference/event\\_display.cfm?em\\_id=4414851](http://rsna2005.rsna.org/rsna2005/V2005/conference/event_display.cfm?em_id=4414851).

■ This story was adapted from an article that appeared in the *RSNA 2005 Daily Bulletin*.

# Journal Highlights

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

## Bias in Research Studies

**B**IAS IS A form of systematic error that can affect scientific investigations and distort the measurement process. A biased study loses validity in relation to the degree of the bias.

In an article in the Review section of the March issue of *Radiology* ([RSNA.org/radiologyjnl](http://RSNA.org/radiologyjnl)), Gregory T. Sica, M.D., M.P.H., of the Department of Radiology at Woodhull Medical Center in Brooklyn, N.Y., discusses various types of bias—with emphasis on the radiology literature—and presents common study designs in which bias occurs.

Dr. Sica also enumerates some common methods to reduce bias. He notes that while much of the terminology he

uses is derived from the epidemiology literature and may not be entirely familiar to radiologists, he endeavors to “bridge the gap.” His overall goal, he says, is to assist readers in recognizing and assessing the magnitude and impact of bias on study results.

Among the points Dr. Sica makes:

- Not all bias can be controlled or eliminated; attempting to do so may limit usefulness and generalizability.
- Two broad classes of bias are selection bias, which can arise in the process of

patient or case selection or exclusion, and information bias, which can result from differences in the methods with which information is collected or from study subjects or cases.

### Types of Bias Discussed in This Review

#### SELECTION BIAS

Sample  
Loss to Follow-up  
Disease Spectrum  
Referral  
Participation  
Image-based Selection  
Study Exam  
Self-selection

#### INFORMATION BIAS

Recall  
Interviewer  
Verification or Work-up  
Follow-up or Surveillance  
Response  
Reviewer  
Diagnostic Review  
Test Review  
Incorporation  
Imperfect Standard  
Reader Order  
Measurement  
Clustering or Repeated Measurement  
Context  
Publication

(*Radiology* 2006;238:780-789) © RSNA, 2006. All rights reserved. Printed with permission.

## Imaging Characteristics of Bone Graft Materials

**B**ONE GRAFTS and bone graft substitutes are now used commonly in orthopedic surgery, and interpreting radiologists must be aware of the various types, their functions and their appearances in imaging.

In an article in the March-April issue of *RadioGraphics* ([RSNA.org/radiographics](http://RSNA.org/radiographics)), Francesca D. Beaman, M.D., from the Department of Radiology at the Mayo Clinic in Jacksonville, Fla., and colleagues:

- Identify the different types of autografts (grafts from the patient's own bone stock), allografts (grafts from cadaveric bone stock) and synthetic bone graft materials.
- Describe the imaging appearance of bone graft materials at radiogra-



### Extrusion of a cortical allograft and failure of fusion in a 61-year-old woman.

- (a) Lateral radiograph of the right foot, obtained 9 months after graft placement, shows the bone graft (\*) and a screw bridging the subtalar joint fragments.
- (b) Sagittal reconstruction CT image, obtained 4 days after a, shows extrusion of the bone graft (\*) into the sinus tarsi and persistence of the subtalar joint fracture, with no osseous union.

(*RadioGraphics* 2006;26:373-388) © RSNA, 2006. All rights reserved. Printed with permission.

phy, CT and MR imaging.

- Discuss differentiation between bone grafts and pathologic processes.

Dr. Beaman and colleagues also note

that as new synthetic materials are developed, the recognition of their imaging characteristics will be critical for the avoidance of diagnostic pitfalls.

This article meets the criteria for 1.0 CME credit.

# Radiology in Public Focus

Press releases have been sent to the medical news media for the following articles appearing in the March issue of *Radiology* ([RSNA.org/radiologyjnl](http://RSNA.org/radiologyjnl)):

## Papillary Lesions of the Breast on Percutaneous Core Needle Biopsy

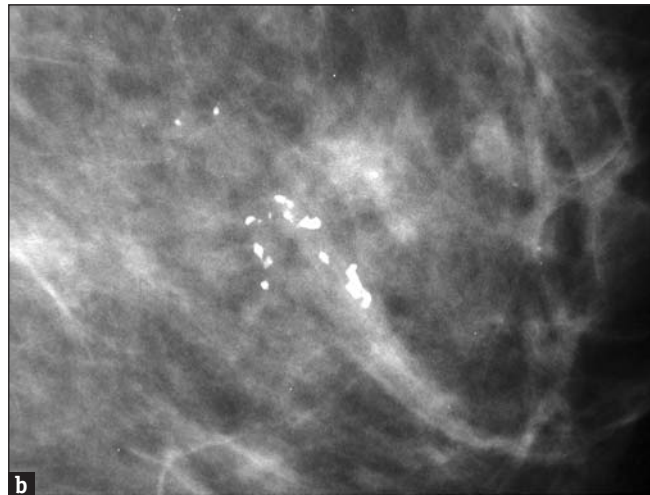
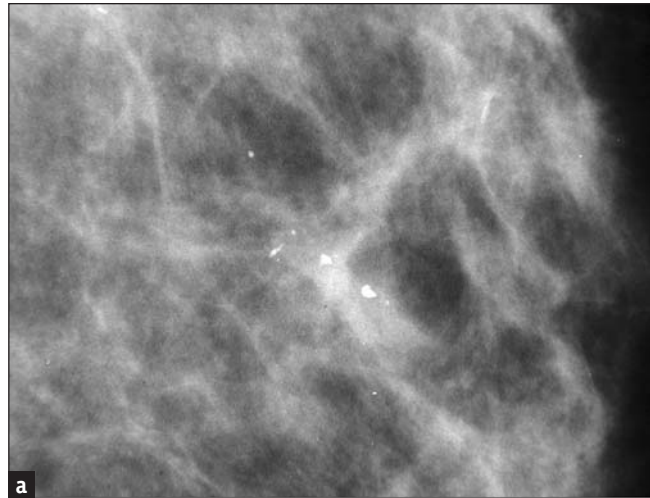
**P**APILLARY LESIONS of the breast diagnosed as benign on core needle biopsy should be surgically excised, a group of New York researchers has concluded.

Cecilia L. Mercado, M.D., of NYU Medical Center, and colleagues conducted a retrospective study of 43 biopsies performed on 42 patients with benign papillary lesions on core needle biopsy. The authors found there was a substantial rate of upgrade to papilloma with adjacent foci of atypical ductal hyperplasia (ADH) or papillary ductal carcinoma in situ (DCIS).

Following the 43 biopsies, 36 lesions were surgically excised and seven were subjected to long-term imaging follow-up. Dr. Mercado and colleagues found that 21 percent of all patients, whether the lesions were excised or followed with imaging, were later upgraded to either ADH or DCIS. Of those patients whose lesions were excised, 25.7 percent were upgraded to ADH or DCIS.

The authors note that while a variety of papillary lesions of the breast are occasionally encountered with the widespread use of core needle biopsy, past studies have shown a lack of agreement on how to manage benign papillomas diagnosed with the procedure. Some lesions are followed by imaging, while others are surgically excised.

“Given the considerable upgrade to either ADH or DCIS (25.7 percent)



### Atypical papilloma with adjacent ADH.

(a) Mediolateral oblique view of right breast in 50-year-old woman shows 1-cm cluster of heterogeneous microcalcifications. Histologic examination of specimens from core-needle biopsy (not shown) revealed intraductal papilloma with branching fronds. No atypia was identified.

(b) Mediolateral oblique view of right breast of same woman obtained 37 months after core-needle biopsy shows interval increase in microcalcifications at biopsy site. Histologic examination of specimens from excisional biopsy (not shown) revealed atypical intraductal papilloma with solid areas of epithelial cells and adjacent ducts that displayed ADH.

(*Radiology* 2006;238:801-808)  
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found for all patients with excised benign papillary lesions in our study, we are recommending excision of all benign papillary lesions of the breast diagnosed by core needle biopsy,” the authors wrote.

Additional long-term studies are needed to assess whether or not radiologic follow-up can be an acceptable alternative to excision,” the authors continued. “However, at this time, we conclude that benign papillary lesions

of the breast are best managed with surgical excision.”

The study is limited as symptomatic patients with nipple discharge or palpable masses were not included, possibly underestimating the risk of upgrades, the authors noted.

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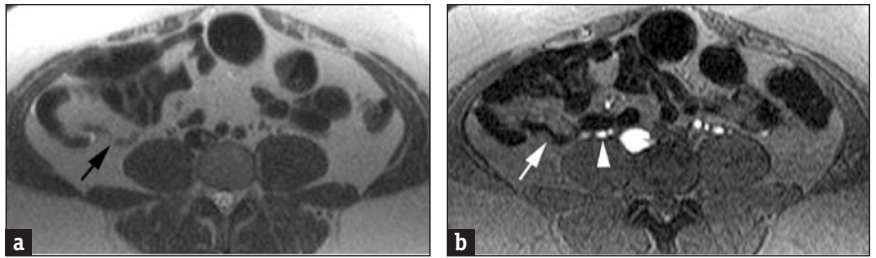
## MR Imaging of Acute Appendicitis in Pregnancy

**MR** IMAGING IS an excellent modality for excluding acute appendicitis in pregnant women who present with acute abdominal pain and in whom the normal appendix is not visualized at ultrasonography.

Ivan Pedrosa, M.D., of the Department of Radiology at Beth Israel Deaconess Medical Center, and colleagues retrospectively reviewed MR images from 51 consecutive pregnant patients clinically suspected of having acute appendicitis. Four patients had appendicitis, including two cases missed by ultrasound.

The team notes that ultrasonography, because of its availability and lack of ionizing radiation, is the imaging modality of choice in pregnant patients who present with right lower quadrant pain. However, it does have limitations. CT is often the modality of choice in the evaluation of acute appendicitis in patients who are not pregnant but, with an estimated radiation dose as high as 30 mGy (3 rad) to the uterus with use of conventional protocols, there is a need for a noninvasive imaging technique that avoids ionizing radiation in pregnant patients.

“Our finding that MR imaging has a negative predictive value of 100 percent supports the idea that it can be safely used to exclude the diagnosis of appendicitis in pregnant patients,” the researchers note. “MR imaging during



### MR images in a 32-year-old woman (gestational age, 8 weeks) with normal appendix.

(a) Transverse T2-weighted half-Fourier single-shot fast SE image shows a thin tubular structure (arrow) in the right lower quadrant. (b) Transverse time-of-flight gradient-echo image shows blooming effect in this tubular structure (arrow) due to the presence of oral contrast material, air, or both in the lumen. This finding helps confirm that this structure represents the appendix. Blood vessels (arrowhead) demonstrate high signal intensity owing to the time-of-flight effect. Blooming effect is also noted in the rest of the bowel, which is opacified with oral contrast material.

(Radiology 2006;238:891-899) © RSNA, 2006. All rights reserved. Printed with permission.

pregnancy has no known deleterious effects to the fetus, and its use in patients who need additional imaging in pregnancy has been advocated by the safety committee of the Society of Magnetic Resonance Imaging.”

The researchers go on to state that, on the basis of the low prevalence of acute appendicitis during pregnancy, MR imaging has the potential to eliminate unnecessary radiation from CT in a large number of patients by providing direct visualization of the normal appendix.

“Furthermore, MR imaging can offer an alternative diagnosis in a substantial number of pregnant women

with right-sided abdominal pain,” Dr. Pedrosa and colleagues add.

Among the limitations of the study, the researchers note, is the small number of patients in the study diagnosed with acute appendicitis. They also note that the initial interpretations of the MR images were performed by the attending radiologist who covered the service and was aware of the ultrasonography results in most cases; therefore, the sensitivity of MR imaging

could be falsely elevated on the basis of the nonblinded nature of those interpretations.



## Media Coverage of RSNA 2005

Preliminary data indicate that news from RSNA 2005 reached an estimated 5.8 billion people worldwide. More than 5,000 print, broadcast and online media carried stories from the event, including

CNN’s Anderson Cooper 360 and Housecall with Dr. Sanjay Gupta, as well as the *Los Angeles Times*, *Chicago Tribune*, *Seattle Post-Intelligencer* and *Boston Herald*. Stories also appeared in *New*

*Scientist* and *Time Magazine*.

In addition, press releases originating from *Radiology* content recently were featured in *Ladies Home Journal* (a 2004 study on full-body CT) and on net-

works such as WNBC-TV and WMAQ-TV (a 2004 alert outlining the dangers of swallowing multiple magnets, especially for children).



# Working For You

## RSNA 2004 Refresher Courses Available on CD-ROM

Refresher courses from RSNA 2004 on CD-ROM are available for online purchase at [RSNA.org/education](http://RSNA.org/education). To purchase a course on CD-ROM, click



on the Education Center Store, search Refresher Courses and choose a course title.

Questions about RSNA

courses or products can be directed to the RSNA Education Center at 1-800-272-2920.

## My CME Action Plan

**D**ON'T FORGET to check out "My CME Action Plan," RSNA's new Web-based document that helps members identify their personal needs for CME in their own particular areas of practice.

To access the document, go to [RSNA.org/education](http://RSNA.org/education) and click on MOC. The plan contains various sections that guide radiologists in listing their CME requirements, prioritizing their educational needs, planning future CME activities and keep-

ing a record of their activities.

The American Board of Radiology's (ABR) maintenance of certification (MOC) program provided the impetus for "My CME Action Plan." The last page constitutes an education plan required for MOC. Members can print out the action plan from the Internet and fill it out on paper for their personal records. Alternatively, a member can fill out the plan electronically and store it on his or her computer.

*Continued on page 20*

## RSNA Information Systems Department

**C**OMPUTERS are the nervous system of most companies, so it's vital that these machines stay online and grow to carry out normal business operations. At RSNA, these responsibilities fall to the Information Systems Department. The department has two main arms—one for support and one for development. The support team oversees day-to-day operations and keeps servers and desktops alive. The main tasks of the support force are PC desktop and help desk support, internal training and network administration.

The development arm is divided into teams to build and maintain the Web applications on which both staff and members rely. The development

force is currently building Web applications using the latest technologies from Macromedia, Microsoft and Open Source.

RSNA also has dedicated professional developers working to enhance the online presentation system for the annual meeting and MIRC (Medical

*Working for you*  
DEPARTMENT PROFILE

Imaging Resource Center).

The support and development teams work together in a relaxed atmosphere of camaraderie to serve RSNA membership.

The Information Systems Department reports to Steven T. Drew, assistant executive director for the scientific assembly and informatics.



(standing, from left) Brian Kalbfleisch, Spencer Moore, Joseph Fry, Gay Wescott, Dave Pede, Director, Robert Boden, David Ritter, Dennis Liby (crouched, from left) Glenn Domingo, Peter Dudycz, Randy Allori

If you have a colleague who would like to become an RSNA member, you can download an application at [RSNA.org/mbrapp](http://RSNA.org/mbrapp) or contact the RSNA Membership and Subscriptions Department at 1-877-RSNA-MEM [776-2636] (U.S. and Canada), 1-630-571-7873 or [membership@rsna.org](mailto:membership@rsna.org).

# Program and Grant Announcements

## RSNA Research & Education Foundation Roentgen Resident/Fellow Research Award

Deadline for nominations – April 15, 2006

THE RSNA Research & Education Foundation is seeking nominations for the Roentgen Resident/Fellow Research award, designed to recognize and encourage outstanding residents and fellows in radiologic research. Each participating North American residency program will receive an award plaque with space to display a brass nameplate for each year's nominee. The Foundation will also provide a personalized crystal award for the department to present to the selected resident or fellow.

The director of the residency program or the department chair should identify one individual annually based on the following:

- Presentations of scientific papers at regional or national meetings
- Publication of scientific papers in peer-reviewed journals
- Receipt of a research grant or contributions to the success of a research program within the department
- Other research activities

Every resident/fellow in an ACGME-approved program of radiology, radiation oncology or nuclear medicine is eligible. Nominations are limited to one resident or fellow per department per year.

Nomination forms are available for download at [RSNA.org/Foundation/upload/RRFR\\_nom.pdf](http://RSNA.org/Foundation/upload/RRFR_nom.pdf).



## RSNA Introduction to Research for International Young Academics

Deadline for nominations – April 15, 2006

THE RSNA Committee on International Relations and Education (CIRE) seeks nominations for this program that encourages young radiologists from countries outside North America to pursue careers in academic radiology by:

- Introducing residents and fellows to research early in their training
- Demonstrating the importance of research to the practice and future of radiology
- Sharing the excitement and satisfaction of research careers in radiology
- Introducing residents to successful radiology researchers, future colleagues and potential mentors

The program consists of a special four-day seminar held during the RSNA Scientific Assembly and Annual Meeting. CIRE recommends 15 international young academics for consideration by the RSNA Board of Directors each year. Complimentary registration, shared hotel accommodation for the duration of the program and a stipend to help defray travel expenses are awarded to successful candidates.

Eligible candidates are residents and fellows currently in radiology training programs or radiologists not more than two years out of training who are beginning or considering an academic career. Nominations must be made by the candidate's department chairperson or training director. Fluency in English is required.

Nomination forms are available at [RSNA.org/IRIYA](http://RSNA.org/IRIYA).

## Transdisciplinary Conference on Distributed Diagnosis and Home Healthcare

April 2-4 • Crystal Gateway Marriott, Arlington, Va.

The Biotechnology Council, of which RSNA is a member, is sponsoring the Transdisciplinary Conference on Distributed Diagnosis and Home Healthcare (D<sub>2</sub>H<sub>2</sub>), April 2-4, in Washington, D.C. The conference will bring together industry, academia and government leaders to discuss many aspects of future distributed home healthcare delivery.

For more information, go to [icsl.ee.washington.edu/d2h2](http://icsl.ee.washington.edu/d2h2).

## 2006 RSNA Editorial Fellowship for Trainees

Application deadline – April 1, 2006

Residents and fellows who have attended the Introduction to Research program at the RSNA annual meeting are eligible to apply for the 2006 RSNA Editorial Fellowship for Trainees.

For more information or for an application, send an e-mail to [editfellowships@rsna.org](mailto:editfellowships@rsna.org).

# RSNA Research Fellow Tests Radiation Resistance Despite Skepticism

**C**ALL IT A CASE of bad timing. Just as Adam Garden, M.D., submitted his research proposal to examine the role of activated oncogene expression in radiation response, skeptics began to question the validity of previous research findings.

"It was like cold fusion at the time," said Dr. Garden of the early research into radiation response. "Initially, everyone thought cold fusion was great until it got off the ground, then people began to think it might not be so legitimate."

Dr. Garden, now a professor of radiation oncology, section chief of head and neck radiation oncology and associate medical director of the Head and Neck Center at the University of Texas M.D. Anderson Cancer Center, began his RSNA Research Fellowship more than 15 years ago while working as an assistant professor and assistant radiotherapist at the highly acclaimed Houston cancer treatment center.

As he launched his project, Dr. Garden said, people were starting to recognize the oncogene and suspicion was surfacing suggesting that the cancer-inducing gene might also influence cellular radiation response.

"The question was whether having an oncogene also meant that you would be resistant to radiation, which would certainly impede the effectiveness of cancer treatment," said Dr. Garden.

Building on previous research demonstrating the suspected radiation

resistance, Dr. Garden and his team first sought to identify a cell line that would show whether or not said resistance was a reality. It was this element that proved to be their biggest struggle—just as their research was getting under way.

Skeptics of radiation resistance, Dr. Garden said, questioned whether the resistance originally discovered might have been a function of mutations within the cell lines developed for the research, rather than from the oncogenes themselves.

While Dr. Garden and his team agreed the original study had some flaws, they felt there was still ample evidence to suggest that oncogene expression does influence radiation response.

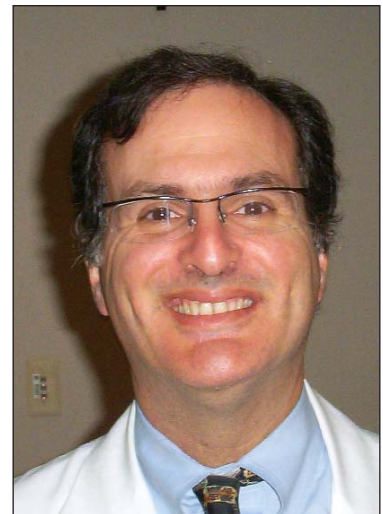
Dr. Garden went on to confirm this hypothesis by developing an "on-off switch" of sorts. He first identified a cell line that allowed him to link an oncogene to zinc, then manipulated the zinc

to turn the oncogene on and off. He was able to demonstrate there was more radiation resistance when the oncogene was "on" than when it was "off."

"Adam did indeed confirm a role for the oncogene, however the effect was small," said Raymond Meyn,

Ph.D., professor and interim chair of the Department of Experimental Radiation Oncology at M.D. Anderson, who oversaw Dr. Garden's research.

"We now understand that the response was not larger because human



**Adam Garden, M.D.**  
1984-1990 RSNA Research Fellow

cancers have defects in multiple genes and the interactions of these defects impact radiation response in a complex manner," Dr. Meyn said. "So now, 15 years later, we are preparing to take advantage of Adam's finding by using molecular targeting agents to inhibit the pathway and thereby enhancing tumor response to radiation."

Dr. Garden takes pride in the fact that his was one of the early works that lent validity to molecular targeted therapy—a concept with a great deal of potential that he feels is still in its infancy.

"Molecular targeting of cancer is a highly promising therapeutic strategy, especially when combined with radiation," said Dr. Meyn. "However, based on Adam's original findings and the work from many other laboratories, it's clear that we may have to target several of the molecular pathways that are defective in a tumor to be successful

*Continued on page 20*

*The question was whether having an oncogene also meant that you would be resistant to radiation, which would certainly impede the effectiveness of cancer treatment.*

**Adam Garden, M.D.**



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## RSNA Research Fellow Tests Radiation Resistance Despite Skepticism

Continued from page 18

with this approach. This will ultimately require detailed knowledge of the molecular defects specific to each individual patient's disease."

Dr. Garden graduated with honors from Johns Hopkins University and received his medical degree from SUNY Health Sciences Center in Brooklyn. He completed his internship

and residency at Staten Island Hospital in New York before joining M.D. Anderson in 1986. He said that his 1989-1990 RSNA Research Fellowship experience strengthened his resolve to pursue research.

"The RSNA program introduced me to a more rigorous academic environment than I had seen previously and validated my desire to stay in a research

setting," said Dr. Garden. "So after my fellowship, I stayed on as clinical faculty at M.D. Anderson and followed an academic clinical track where, in addition to treating patients, I have been involved in multiple research efforts looking at outcomes and ways to improve treatment for patients with head and neck cancer." □

## RSNA Research Scholar Receives ACS Grant

**R**EED OMARY, M.D., a former RSNA Research & Education Foundation Bracco Diagnostics Research Scholar, has received a \$100,000 grant from the American Cancer Society, Illinois Division. Dr. Omary, of Northwestern University School of Medicine in Chicago, received the grant for a study titled "Functional MRI Assessment of Hepatic Artery Embolization."

Andy Larson, M.D., and Riad Salem, M.D., are co-investigators on the study. Using a VX2 rabbit model of hepatocellular carcinoma, the study aims to measure the ability of an improved

MR imaging technique to differentiate necrotic from viable tissue in liver tumors and to compare functional vs. anatomic MR assessment of tumor response following transcatheter arterial embolization.

Dr. Omary said he and his colleagues hope to gather important preliminary data for an upcoming National Institutes of Health R01 grant submission. He added that radiologists should be aware that the American Cancer Society can serve as an important avenue for potential grant funding.



Reed Omary, M.D.

■ For more information on RSNA Research & Education Foundation grants and giving programs, visit [RSNA.org/foundation](http://RSNA.org/foundation).

## RSNA MEMBER BENEFITS

Continued from page 16

### Don't Forget: RSNA 2005 Virtual Meeting

Check out the RSNA 2005 Virtual Meeting, found at [RSNA.org/virtual2005.cfm](http://RSNA.org/virtual2005.cfm). Components available include:

- Meeting Program
- Refresher Course Handout Materials
- Digital Scientific Sessions
- Online Education Exhibits



### RSNA 2005 Syllabi Available

The syllabi are available for purchase in print (with companion CD), CD-ROM only or online.

#### Categorical Course in Diagnostic Radiology: Breast Imaging

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To order, call 1-800-272-2920 or go to [RSNA.org/education](http://RSNA.org/education).

## RADIATION SAFETY

# Answer

[Question on page 2.]

**A** There is no radiation limit for a patient. Physicians should be aware of procedural radiation risks and be able to state the expected benefits. The benefit from the procedure must always be greater than its risk.

Q&A courtesy of AAPM.

# Product News

## NEW PRODUCT

### INRAD® Launches Ultra-Wire™

INRAD® ([www.inrad-inc.com](http://www.inrad-inc.com)) announced the launch of its UltraWire™ One-Handed Breast Localization Device, which facilitates the precise marking of breast lesions under ultrasound guidance. With its preloaded wire design, the UltraWire allows for wire

deployment with one hand while the other hand holds the transducer. Continuous imaging and accurate placement of the wire are possible, as the probe does not have to be set down to deploy the wire, nor does another person have to step in to help in deployment. In

addition, the dual barb on the wire helps minimize movement after the wire is placed. The needle, available in 5, 7 and 9 cm lengths, also retracts into the handle after use to help minimize the chance of accidental needle sticks.



## FDA APPROVAL

### FDA Approves Draxis Sodium Iodide Capsules

**R**ADIOPHARMACEUTICAL developer Draxis Health ([www.draxis.com](http://www.draxis.com)), of Mississauga, Ontario, has received FDA approval for its supplemental new drug application for sodium iodide I<sup>131</sup> oral capsules.

The capsules are intended for use by physicians in performing radioactive iodide (RAI) uptake tests to evaluate thyroid function prior to treatment with stronger therapeutic doses of sodium iodide I<sup>131</sup>. Diagnostic doses of sodium iodide I<sup>131</sup> may also be employed in localizing metastases associated with thyroid malignancies.

The capsules will be introduced in the U.S. market in the first half of 2006.

## NEW PATENTS

### SenoRx Granted New Patents for Partial Breast Radiation Balloon

SenoRx Inc. ([www.senorx.com](http://www.senorx.com)), of Aliso Viejo, Calif., has been granted new partial breast radiation balloon patents by the United States Patent & Trademark office. SenoRx has been granted 37 U.S. patents to date and has 50 U.S. patents pending.

The new partial breast radiation balloon patents cover short-term breast radiation balloon products currently in development at SenoRx. These products are used to irradiate the breast tissue surrounding the cavity created following lumpectomy.

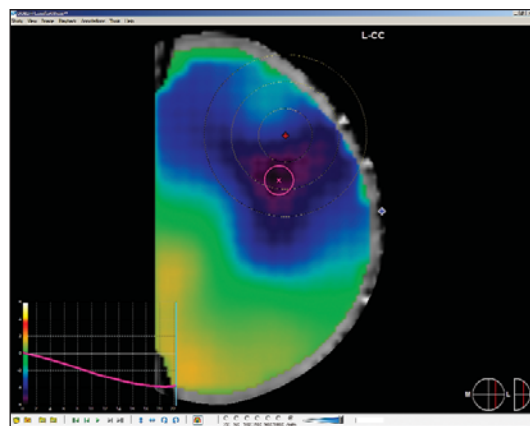
## SOFTWARE UPDATE

### DOBI Releases New Version of Breast Imaging Software

Optical imaging developer DOBI Medical International ([www.dobimedical.com](http://www.dobimedical.com)), of Mahwah, N.J., has released version 2.0 of its Dynamic Optical Breast Imaging (DOBI) software.

The Windows-based software consists of three elements—ComfortScan for patient data acquisition, ComfortNet for image database management and ComfortView for image processing and display.

The new software also allows for quick review of color-mapped images to aid physicians in identifying regions of increased vascularity in the breast. Images can also be printed or digitally archived, and the software is also now DICOM-compliant.



# News about RSNA 2006

## Abstract Deadline April 15

**A**BSTRACT SUBMISSION is under way for RSNA 2006. Abstracts are required for scientific papers, scientific posters, education exhibits, *infoRAD* exhibits and radiology informatics.

**The deadline to submit an abstract for consideration is April 15, 2006.**

To submit an abstract, go to [rsna.org/abstracts](http://rsna.org/abstracts).

For more information about the abstract submission process, contact RSNA at 1-877-776-2227 within the United States or 1-630-590-7774 outside of the United States.



## Important Dates for RSNA 2006

- April 15** Deadline for abstract submission
- April 24** RSNA/AAPM member registration and housing opens
- May 22** Non-member registration and housing opens
- June 19** Refresher course enrollment opens
- Nov. 10** Final advance registration deadline
- Nov. 26–Dec. 1** RSNA 92nd Scientific Assembly and Annual Meeting



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92nd Scientific Assembly and Annual Meeting  
November 26–December 1, 2006  
McCormick Place, Chicago

# News about RSNA Highlights

**T**HE RSNA Highlights: Clinical Issues for 2007 conference will be held February 26–28, 2007, at the J.W. Marriott Desert Ridge Resort & Spa in Phoenix, Ariz. Included will be selected refresher courses and the available electronic education exhibits from RSNA 2006.

Registration will begin after

Labor Day. Up-to-date information is available at [RSNA.org/highlights/conference](http://RSNA.org/highlights/conference).

## Important Dates for RSNA Highlights

- Sept. 5** Registration opens
- Feb. 26–28** RSNA Highlights: Clinical Issues for 2007



# RSNA 2006 Exhibitor News

## Advertising at RSNA 2006

RSNA offers exhibitors many opportunities to promote their offerings at RSNA 2006. For more information, go to [RSNA.org/Advertising/upload/meeting-3.pdf](http://RSNA.org/Advertising/upload/meeting-3.pdf) or contact:

- **Jim Drew**

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[jdrew@rsna.org](mailto:jdrew@rsna.org)

- **Judy Kapicak**

Senior Advertising Manager  
1-630-571-7818  
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## Important Exhibitor Dates for RSNA 2006

- March 29** Exhibitor Prospectus mails
- April 10** Exhibit Space Assignment Point System initiated
- May 8** First-round space assignment deadline
- June 27** Exhibitor Planning/Booth Assignment Meeting
- July 5** Technical Exhibitor Service Kit available online
- Nov. 26–Dec. 1** RSNA 92nd Scientific Assembly and Annual Meeting



RSNA 2005 attendees tour the booths of more than 700 exhibitors at the event.

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## Exhibitor Prospectus

The RSNA 2006 Exhibitor Prospectus will be mailed at the end of this month. To achieve the maximum available space and assignment points, your completed application must be received at RSNA Headquarters by April 10, 2006. The first-round space assignment deadline is May 8.

## Exhibitor Planning Meeting

On February 28, RSNA hosted more than 50 exhibiting companies at the RSNA Exhibitor Planning Meeting in Rosemont, Ill. On the agenda were a recap of RSNA 2005, updated information about exhibitor housing and registration, a review of RSNA Rules and Regulations, high-

lights from the exhibitor prospectus and the space assignments process. The RSNA 2006 floor plan and upcoming important dates for technical exhibitors also were discussed. For handouts from this meeting, please contact RSNA Technical Exhibit Services at 1-630-571-7851.

■ For more information, contact RSNA Technical Exhibits at 1-800-381-6660 x7851 or [exhibits@rsna.org](mailto:exhibits@rsna.org).



# RSNA.org

## Top RSNA News Stories Accessed Online in 2005

RSNA News is available online two weeks prior to the mailing of the print version. A review of the feature articles accessed online in 2005 shows the following 10 as being the most popular:

ARTICLE TITLE	ISSUE	PAGE VIEWS IN 2005*
iPod Helps Radiologists Manage Medical Images An additional 40,936 hits were received in 2004	December 2004	28,860
Diagnostic Radiology Earns Highest Four-Year Pay Increase An additional 4,517 hits were received in 2004	October 2004	8,182
RSNA 2005 Features Latest Research in fMRI, MDCT, PET/CT and Other Modalities	October 2005	5,303
<i>Radiology</i> , <i>RadioGraphics</i> Top Choices for Manuscript Submissions, Authors Say	February 2005	4,153
Radiologists Revise Breast Screening Strategies Following DMIST	November 2005	3,782
Negative CT Results Can Safely Rule Out Pulmonary Embolism	July 2005	3,696
Salaries Flat for Interventional Diagnostic Radiologists	October 2005	3,392
Multidetector CT Angiography Shows Promise in Detection of Coronary Artery Disease	August 2005	3,367
Innovation, Practice Patterns Change Refresher Courses for RSNA 2005	June 2005	3,041
Groundbreaking Alzheimer Disease Neuroimaging Trial Begins	April 2005	2,874

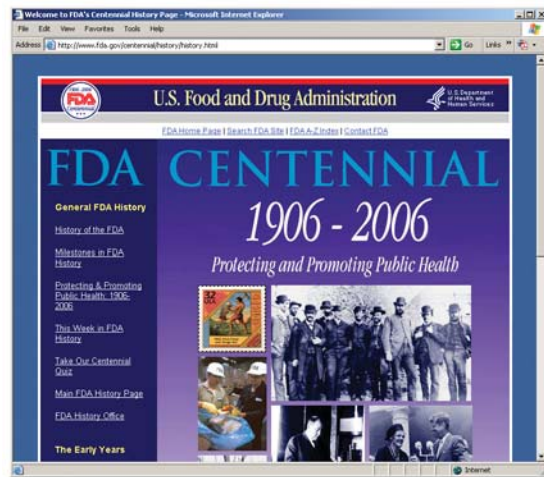
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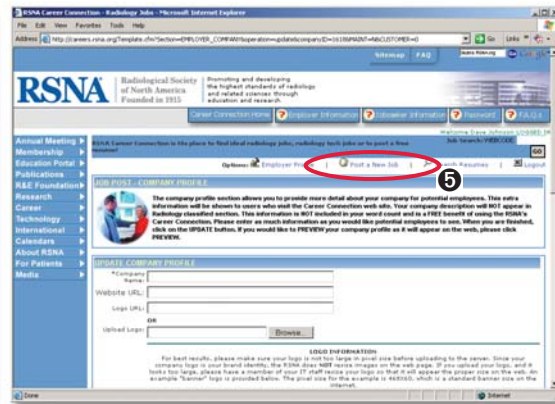
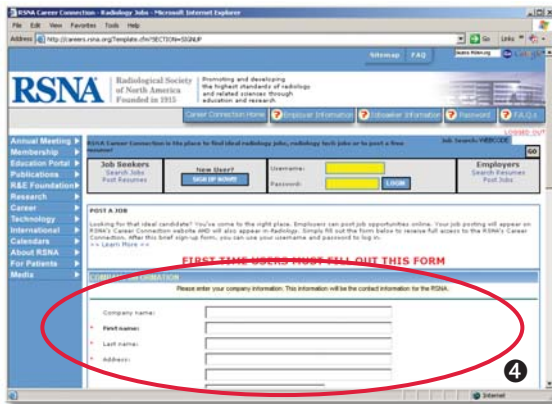
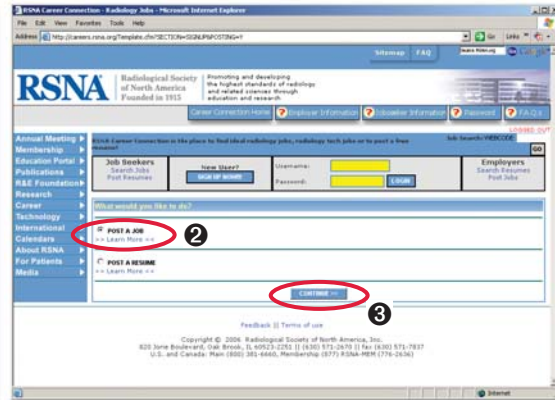
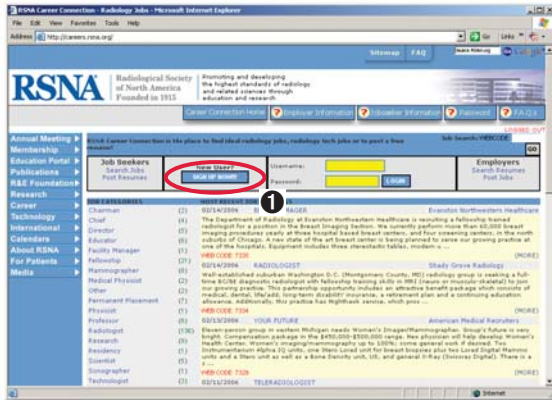


### OTHER WEB NEWS:

## New Web Site Launched to Commemorate FDA Centennial

IN HONOR of the 100th year of the U.S. Food and Drug Administration (FDA), the agency has created a Web site that gives a quick study on FDA history and offers some fun features. Read all about the agency's humble beginnings in 1906 as the Bureau of Chemistry helmed by crusading public health proponent Harvey Wiley. Check out the many milestones FDA has placed in the history books over the last century. And if you're up to the challenge, take a quiz to check your FDA IQ. The Web site can be accessed at [www.fda.gov/centennial/history/history.html](http://www.fda.gov/centennial/history/history.html).





## Posting a Job on RSNA Career Connection

LOOKING FOR TALENT? RSNA Career Connection is a quick, easy and effective way to solicit resumes from qualified candidates for job openings. Post jobs, search resumes posted by job seekers, even receive a notification every time someone applies for a job you've posted.

Job postings appear on Career Connection and in *Radiology*. Postings are \$2 per word or a minimum of \$175 per month, with employers charged only for the word count of the print version. The Web posting can con-

tain more verbiage, as well as a company logo, at no additional cost. Ads post online on the 15th of the month prior to the corresponding issue of *Radiology*—for instance, for the May issue of *Radiology*, ads post online April 15–May 15. Early postings (in the example, before April 15) are 50 percent of the cost of the ad.

If you've never used Career Connection and would like to post a job opening, go to [RSNA.org/career](http://RSNA.org/career) and click on Sign Up Now!!! ❶.

Click on Post a Job ❷ and

then on Continue ❸. After entering your contact information and creating a user name and password ❹ (it doesn't have to match your RSNA user name and password), click on Post a Job ❺.

RSNA Career Connection accepts job openings for a wide range of radiology-related positions, including radiologists, locum tenens, administrators and billing managers.

Your online links to RSNA

### RSNA.org

**Radiology Online**  
[RSNA.org/radiologyjnl](http://RSNA.org/radiologyjnl)

**Radiology Manuscript Central**  
[RSNA.org/radiologyjnl/submit](http://RSNA.org/radiologyjnl/submit)

**Radiographics Online**  
[RSNA.org/radiographics](http://RSNA.org/radiographics)

**RSNA News**  
[rsnanews.org](http://rsnanews.org)

**Education Portal**  
[RSNA.org/education](http://RSNA.org/education)

**CME Credit Repository**  
[RSNA.org/cme](http://RSNA.org/cme)

**CME Gateway**  
[CMEgateway.org](http://CMEgateway.org)

**RSNA Medical Imaging Resource Center**  
[RSNA.org/mirc](http://RSNA.org/mirc)

**RSNA Career Connection**  
[RSNA.org/career](http://RSNA.org/career)

**RadiologyInfo™**  
RSNA-ACR patient information Web site  
[radiologyinfo.org](http://radiologyinfo.org)

**RSNA Press Releases**  
[RSNA.org/media](http://RSNA.org/media)

**RSNA Online Products and Services**  
[RSNA.org/memberservices](http://RSNA.org/memberservices)

**RSNA Research & Education Foundation**

Make a Donation  
[RSNA.org/donate](http://RSNA.org/donate)

**R&E 25 Questions Forum**  
[RSNA.org/25questions](http://RSNA.org/25questions)

**Community of Science**  
[RSNA.org/cos](http://RSNA.org/cos)

**Membership Applications**  
[RSNA.org/mbrapp](http://RSNA.org/mbrapp)

**RSNA Membership Directory**  
[RSNA.org/directory](http://RSNA.org/directory)

**Abstract Submission for RSNA 2006**  
[RSNA.org/abstracts](http://RSNA.org/abstracts)

**RSNA 2006**  
[rsna2006.rsna.org](http://rsna2006.rsna.org)

**RSNA Highlights: Clinical Issues for 2007**  
[RSNA.org/highlightsconference](http://RSNA.org/highlightsconference)

# Medical Meetings

## April – May 2006

### MARCH 30–APRIL 4

Society of Interventional Radiology (SIR), 31st Annual Scientific Meeting, Metro Toronto Convention Center • [www.sirweb.com](http://www.sirweb.com)

### APRIL 2–4

Transdisciplinary Conference on Distributed Diagnosis and Home Healthcare, Biotechnology Council, Crystal Gateway Marriott, Arlington, Va. • [icsl.ee.washington.edu/d2h2](http://icsl.ee.washington.edu/d2h2)

### APRIL 3–7

Society of Computed Body Tomography and Magnetic Resonance (SCBT/MR), 29th Annual Course, JW Marriott Desert Ridge Resort & Spa, Phoenix • [www.scbtmr.org](http://www.scbtmr.org)

### APRIL 4

Molecular Biology for Imagers, National Institutes of Health (NIH)/Association of University Radiologists (AUR), Hilton Austin, Texas • [www.aur.org](http://www.aur.org)

### APRIL 5–8

AUR 54th Annual Meeting, Hilton Austin, Texas • [www.aur.org](http://www.aur.org)

### APRIL 7–9

Japan Radiological Society (JRS), 65th Annual Meeting, Yokohama, Japan • [www.radiology.or.jp/english/index.html](http://www.radiology.or.jp/english/index.html)

### APRIL 10–12

International Electronic Portal Imaging Workshop, EPI2K6, Carlton Crest Hotel and Conference Centre, Melbourne, Australia • [www.epi2k6.org.au](http://www.epi2k6.org.au)

### APRIL 20–23

São Paulo Radiological Meeting, ITM Expo Convention Center, São Paulo, Brazil • [www.spr.org.br](http://www.spr.org.br)

### APRIL 21–22

American Society for Therapeutic Radiology and Oncology (ASTRO), Image-Guided Radiotherapy/ Stereotactic Radiotherapy Symposium, Scottsdale Resort and Conference Center, Arizona • [www.astro.org](http://www.astro.org)

### APRIL 27–30

Society for Computer Applications in Radiology (SCAR), Annual Meeting, Hilton Austin Hotel & Austin Convention Center, Texas • [www.scar.net.org](http://www.scar.net.org)

### APRIL 28–30

American College of Radiology (ACR), National Conference on Breast Cancer, Manchester Grand Hyatt, San Diego • [www.acr.org](http://www.acr.org)

### APRIL 29–MAY 5

American Society of Neuroradiology (ASNR), 44th Annual Meeting, San Diego Convention Center • [www.asnr.org](http://www.asnr.org)

### APRIL 30–MAY 5

American Roentgen Ray Society (ARRS), 106th Annual Meeting, Vancouver Convention and Exhibition Centre, British Columbia • [www.rrs.org](http://www.rrs.org)

### MAY 5–6

American Society of Interventional and Therapeutic Neuroradiology (ASITN), 4th Annual Practicum, Omni San Diego Hotel • [www.asitn.org](http://www.asitn.org)

### MAY 6–12

International Society for Magnetic Resonance in Medicine (ISMRM), 14th Scientific Meeting & Exhibition, Washington State Convention & Trade Center, Seattle • [www.ismrm.org](http://www.ismrm.org)

### MAY 6–9

Magnetic Resonance Managers Society (MRMS), 15th Annual Educational Conference, South Seas Island Resort, Captiva, Fla. • [www.mrms.org](http://www.mrms.org)

### MAY 15–17

UK Radiological Congress (UKRC), UKRC 2006, National Indoor Arena, International Conference Centre and Austin Court, Birmingham, United Kingdom • [www.ukrc.org.uk](http://www.ukrc.org.uk)

### MAY 16–20

International Pediatric Radiology 5th Conjoint Meeting, Society for Pediatric Radiology (SPR) and European Society of Paediatric Radiology (ESPR), Fairmont Queen Elizabeth Hotel, Montreal • [www.pedrad.org](http://www.pedrad.org)

### MAY 24–27

German Radiology Society, 87th German Radiology Congress, Messe Berlin, Berlin • [www.roentgenkongress.de](http://www.roentgenkongress.de)

### NOVEMBER 26–DECEMBER 1

RSNA 2006, 92nd Scientific Assembly and Annual Meeting, McCormick Place, Chicago • [rsna2006.rsna.org](http://rsna2006.rsna.org)

### FEBRUARY 26–28, 2007

RSNA Highlights: Clinical Issues for 2007, J.W. Marriott Desert Ridge Resort & Spa, Phoenix, Ariz. • [RSNA.org/highlightsconference](http://RSNA.org/highlightsconference)

**RSNA**News

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