September 2006 ▪ Volume 16, Number 9

RSNA News

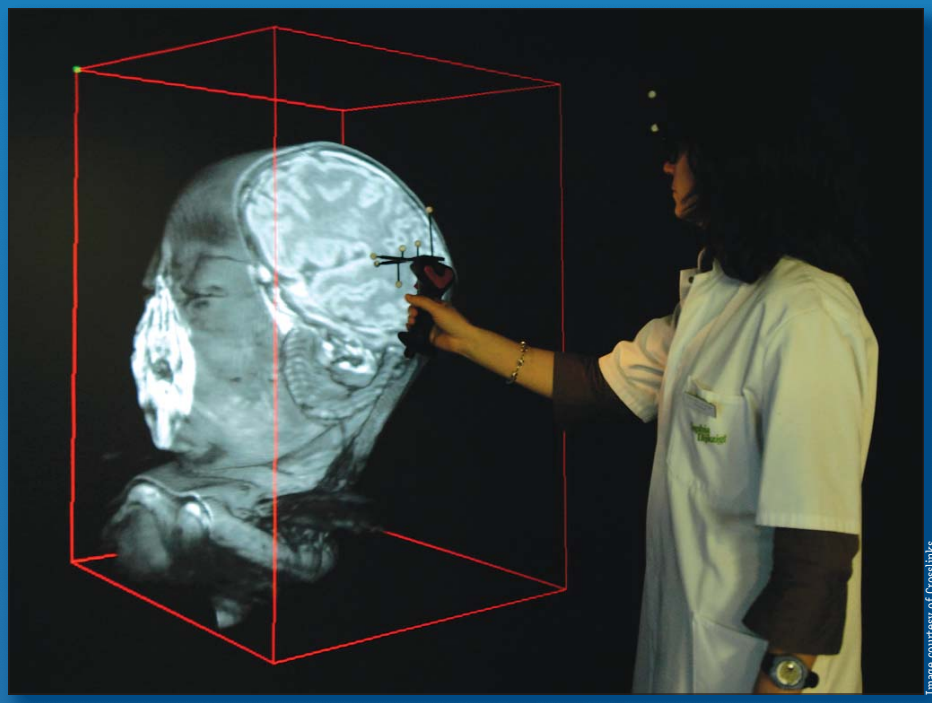

Image courtesy of Crosslinks.

New Software Creates Interactive 3D Medical Imaging

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- Virtual Autopsy Offers Noninvasive Postmortem Exam
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- Podcasts Reinforce Diagnosis and Treatment Information

SEPTEMBER 2006

RSNA News

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RSNA Editorial Fellows Chosen

RSNA has announced **Jacob Sosna, M.D.,** from Hadassah & Hebrew University Hospital in Jerusalem, as its 2006 William R. Eyler Editorial Fellow, and **Anu Bansal, M.D.,** from Mallinckrodt Institute of Radiology in St. Louis, as the 2006 Trainee Editorial Fellow.

The Eyler fellowship lasts for one month and the trainee fellowship lasts one week. Each fellow will work closely with *Radiology* editor Anthony V. Proto, M.D., in Richmond, Va., and *RadioGraphics* editor William W. Olmsted, M.D., in Bethesda, Md., before heading to Oak Brook, Ill., to meet with members of the RSNA publications, advertising and marketing and communications staff. The Eyler Fellow will spend the final week working with RSNA editors at RSNA 2006, November 26–December 1.

Dr. Sosna said he hopes his editorial fellowship will enhance his skills as a researcher by giving him a different perspective on the process of peer review. "I would like to see the workings of an editorial board from the other side," he said. "I think this will make me a better writer and researcher. I also hope it will strengthen my reviewing, writing and editorial abilities. I would like to bring these skills back and show them to radiologists in Israel."

Jacob Sosna, M.D.

Anu Bansal, M.D.

For more information on the RSNA Editorial Fellow program, go to *RSNA.org/publications/editorial_fellowships.html.*

RSNA 2005 Interventional Oncology Symposium Online

THE complete 2005 RSNA/Society of Interventional Radiology Foundation Interventional Oncology Symposium, including audio and video, is now available as part of the Virtual Meeting 2005 at *RSNA.org/virtual2005.cfm.*

Virtual Meeting 2005 also offers handout materials for 75 refresher courses and the opportunity to view more than 100 digital scientific sessions and 450 education exhibits. Lists of award-winning education exhibits and those selected for potential publication in *RadioGraphics* also are available, as is a searchable version of the 2005 *RSNA Meeting Program.*

RADIATION ONCOLOGY BUSINESS NEWS

■ JDA Medical Technologies, Inc., a development-stage medical device company in Clarksville, Md., has merged with BestNet Communications Corporation, of Grand Rapids, Mich. JDA holds an exclusive license from the University of Maryland for a novel microsphere technology, Oncosphere, to be used for treatment of liver and other soft tissue cancers. Oncosphere, still requiring approval by the FDA, is designed to enable physicians to more accurately deliver microsphere treatment to the tumor site and verify the placement post-treatment.

VIEWING TECHNOLOGY

Tip of the Month

The spatial and contrast resolution of computer monitors vary enormously. Use an SMPTE or AAPM-TG18 test pattern to check any monitor (office, home or laptop) that you use for any clinical purpose.

American Association of Physicists in Medicine

2007 International Young Academics Unveiled

The Introduction to Research for International Young Academics, a program by the RSNA Committee on International Relations and Education, encourages young radiologists from countries outside the U.S. and Canada to pursue careers in academic radiology.

These 2007 participants will attend a special seminar during the RSNA annual meeting:

NAME	COUNTRY
Muhammed Bayat, M.B.Ch.B.	South Africa
Carolina Botar-Jid, M.D.	Romania
Luis Ronan Souza, Ph.D.	Brazil
Gowthaman Gunabushanam, M.B.B.S., M.D.	India
Srinivasan Harish, M.B.B.S., F.R.C.S., F.R.C.R.	India/Canada
Anton Krnic, M.D.	Croatia
Menka Lazareska, M.D.	Macedonia
Ferdinando Loiacono, M.D.	Italy
Nicolas Maza Tousaint, M.D.	Venezuela
Benjamin McGuiness, M.D.	New Zealand
Sifrash Meseret Gelaw, M.D.	Ethiopia
Irene Mwangi, M.B.Ch.B	Kenya/Ireland
Ernesto Roldan-Valadez, M.D.	Mexico
Rupan Sanyal, M.B.B.S.	India
Gleidson dos Sentos Viana, M.D.	Brazil
Gregorio Viramontes-Trejo, M.D.	Mexico
Jose Antonio Rodriguez-Pontones, M.D.	Mexico

For more information or nomination forms, go to *RSNA.org/international/CIRE/iyaseminar.cfm* or contact Fiona Miller at 1-630-590-7741 or at *CIRE@rsna.org.* The deadline for nominations each year is April 15.


Louise Samson, M.D.

Samson is President of Canadian Royal College

Louise Samson, M.D., has begun her 2-year term as president of the Royal College of Physicians and Surgeons of Canada (RCPSC). Dr. Samson is a member of the RSNA Education Council and its maintenance of certification subcommittee.

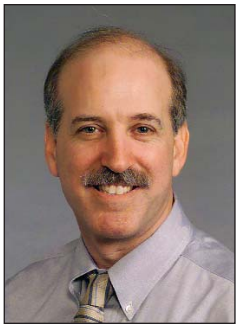
Dr. Samson practices at the University of Montreal Hospital Center and is a professor of radiology at the University of Montreal. She has served as chair of the college's examination board in radiology, has been a member of the RCPSC council since 1998 and vice-president of professional development since 2000.

Téliz is SMRI President


Marco A. Téliz, M.D.

Marco A. Téliz, M.D., has been named president of the Sociedad Mexicana de Radiología e Imagen (SMRI). Since 2004, Dr. Téliz has been a staff physician in the MR ward at the Hospital Angeles Metropolitano and in the radiology and imaging ward at the Instituto Nacional de Ciencias Medicas y Nutrición Salvador Zubirán, both in Mexico City. He is also a medical sciences researcher at National Rehabilitation Center.


Stanford M. Goldman, M.D.


Ronald J. Zagoria, M.D.

ASER Awards Gold Medal to Goldman

Stanford M. Goldman, M.D., will receive the gold medal of the American Society of Emergency Radiology (ASER) at ASER's annual meeting this month.

A professor of radiology and urology at the University of Texas Health Science Center at Houston, Dr. Goldman is also an adjunct radiologist at the M.D. Anderson Cancer Center and uroradiology section chief at Memorial Hermann and Lyndon B. Johnson General hospitals. He was the 2001-2002 ASER president and has served as president of the Texas Radiological Society and Houston Radiological Society.

ASER also appointed **Ronald J. Zagoria, M.D.,** editor-in-chief of its journal, *Emergency Radiology.* Dr. Zagoria is a professor of radiology and head of the abdominal imaging section at Wake Forest University Baptist Medical Center. He is a former RSNA first vice-president and former chair of the RSNA Refresher Course Committee.


Nancy A. Ellerbroek, M.D.

NLM Features Ellerbroek as Local Legend

Nancy A. Ellerbroek, M.D., is among the physicians profiled as part of the National Library of Medicine's (NLM) "Local Legends" program. Dr. Ellerbroek is medical director in the Department of Radiation Oncology at Providence Holy Cross Medical Center in Mission Hills, Calif., and also is in private practice in El Segundo. She is a member of the RSNA *Daily Bulletin* Editorial Board and a former member of the *RSNA News* Editorial Board.

The Local Legends program honors women doctors who are transforming medical practice and improving healthcare across America. Local Legends will be featured in the NLM "Changing the Face of Medicine" exhibition traveling to libraries in 60 cities across America.

SNM Announces Awards

At its annual meeting recently, the Society of Nuclear Medicine (SNM) honored five researchers for their contributions to the field:

- **Satoshi Minoshima, M.D.,** a professor of radiology and bioengineering, research vice-chair in the Department of Radiology and head of the Primate PET Imaging Suite at the University of Washington in Seattle, received the 2006 Kuhl-Lassen Award for Research in Brain Imaging.
- **Michael A. King, Ph.D.,** a professor of radiology at the University of Massachusetts Medical School and director of the nuclear medicine division's medical physics group, received the 2006 Edward Hoffman Memorial Award recognizing outstanding contributions to nuclear medicine computers and instrumentation.
- **Markus Schwaiger, M.D.,** director of the Department of Nuclear Medicine at the Technical University in Munich, Germany, received the Herrmann Blumgart Award in recognition of his pioneering work in cardiovascular radionuclide imaging and services.
- **Gordon L. Brownell, Ph.D.,** a professor emeritus of nuclear engineering at the Massachusetts Institute of Technology and honorary physicist in the Department of Radiology at Massachusetts General Hospital, received the 2006 Loevinger–Berman Award for Excellence in Internal Dosimetry.
- **Peter M. Smith-Jones, M.D., Mohammed Namavari, Ph.D., Athanasios Glekas, Ph.D., Cindy Usher, B.S.,** and **Steven M. Larson, M.D.,** all of the Department of Radiology at Memorial Sloan-Kettering Cancer Center, received the 2006 Berson-Yalow Award honoring investigators who submit the most original scientific abstracts and make the most significant contributions to basic or clinical radioassay.

Making the Impossible, Possible


Robert E. Campbell, M.D.

RECENTLY I agreed to serve as chair of the Individual Giving Subcommittee for the RSNA Research & Education (R&E) Foundation's Silver Anniversary Campaign. As I've prepared for this latest role, I can't help but be amazed at what our research funding has already done.

When I was asked in 1984 to help raise the Foundation's initial $8 million, grants for research in radiology were limited and meager. The RSNA Board of Directors was wise to realize that for radiology to remain competitive, research funding for young radiologists was imperative. Still, if you had told me that in 20 years, radiologists would be working on molecular imaging, I never would have dreamed of it. MR imaging was just a dream at that time, and now we've gone beyond MR into the molecular aspect. That's just incredible.

My Turn
ONE RADIOLOGIST'S VIEW

When I consider those kinds of extraordinary achievements, I'm excited about what awaits us in the next 25 years. I'm also genuinely enthusiastic about helping raise $7 million of the Foundation's proposed $15 million goal for its silver anniversary in 2009.

Campaign co-chair Dr. William G. Bradley Jr. was talking recently about one of his associates at the University of California San Diego, a 2006-07 RSNA Research Scholar who is researching how imaging can help determine which cancer patients will respond to certain treatments. The implications are tremendous—we'll be treating only those patients with a high probability of success.

This pivotal research is just one of 590 projects, totaling $24 million, awarded by the R&E Foundation since 1986. The Foundation has had a profoundly positive effect on grantees—many have not only continued their research with larger grants, but also have become leaders in our field. In addition, for every dollar funded by the Foundation, grantees have obtained an additional $9 from other funding sources.

I have a personal commitment to continue supporting this kind of innovation, and hope with these kinds of stories I can persuade you to do the same. With additional support from our industry colleagues and RSNA members and friends, the Foundation's initial endowment has grown to $38 million. While impressive, there are often many worthwhile grant applications that go unfunded due to financial limitations.

We all can have an impact on radiology's future. Last year only 3,000 of RSNA's 38,000 members supported the Foundation's annual appeal, contributing $695,000. I applaud those devoted contributors, but many more must be recruited to reach our goal. Whether you're new to radiology or retired like me, certainly you've experienced similar moments of awe at how our profession has evolved. Join me in ensuring this progress continues. In another 25 years, who knows what people will be talking about when they say, "If you had told me … I never would have dreamed it. That's just incredible."

Robert E. Campbell, M.D., is a clinical professor of radiology at the University of Pennsylvania School of Medicine. 1989 RSNA president and a contributing editor of RSNA News, *Dr. Campbell is also chair of the Individual Giving Subcommittee for the RSNA R&E Foundation Silver Anniversary Campaign.*

IN MEMORIAM:

Edward C. Nagy


Edward C. Nagy

Edward C. Nagy, executive director of the Academy of Radiology Research since 1995, died July 29 in Clifton, Va., at the age of 56.

Among Nagy's achievements at the Academy was helping enact legislation to create the National Institute of Biomedical Imaging and Bioengineering (NIBIB). To honor Nagy and his commitment to biomedical research, NIBIB announced it will rename its award for new investigators the Edward C. Nagy New Investigator Award.

Starting as an intern in the office of former Senator Sam Nunn (D-Ga.), Nagy went on to become Senator Nunn's legislative assistant, press secretary and speech writer. He then spent a decade as chief of staff for former Congressman Tim Valentine (D-N.C.) before taking the helm at the Academy.

He is survived by his wife, Debbie, and children Edward and Elizabeth.

RSNA News Send news about yourself, a colleague or your department to *rsnanews@rsna.org*, 1-630-571-7837 fax, or *RSNA News*, 820 Jorie Blvd., Oak Brook, IL 60523. Please include your full name and telephone number. You may also include a non-returnable color photo, 3x5 or larger, or electronic photo in high-resolution (300 dpi or higher) TIFF or JPEG format (not embedded in a document). *RSNA News* maintains the right to accept information for print based on membership status, newsworthiness and available print space.

New Software Creates Interactive 3D Medical Imaging

WITH VISUALS that clinicians and researchers can not only view head-on, but actually walk around and through, researchers in The Netherlands say they've realized the dream of truly interactive 3D medical imaging.

"There are so many applications," said Peter van der Spek, Ph.D., who led the development of the I-Space virtual reality theater at Erasmus University Medical Center in Rotterdam. "The first step is just realizing what you can do with it."

Envisioning how the technology can be used not only for research but also in diagnosis and treatment decisions, a company spawned by the project, Crosslinks, is working to develop and market the invention elsewhere in Europe and around the world.

Historically, viewing a 3D image actually meant looking at the image on a two-dimensional screen and then rotating or zooming in on the image to "see" around the scanned object. I-Space, powered by 3D volume rendering software that digests massive amounts of image data, uses eight projectors on four walls and the floor to create a 3D image in a special viewing arena. Users can then interact with the image, seeing its depth by wearing special glasses with polarizing lenses.

The 3D theater already has proven useful for examining cardiovascular and neurological systems and in studying and measuring fetuses.

Gene Mapping Project Was Model

With a background in molecular genetic research and engineering, Dr. van der Spek, professor and head of the Department of Bioinformatics at Erasmus, was uniquely suited to bridge the gulf between 3D-rendering software and its medical and research applications. Returning to Erasmus—where he previously had trained—a few years ago after working with pharmaceutical companies on the human genome mapping project, Dr. van der Spek recognized that the same virtual reality software and technology used to map genes could have broader cross-disciplinary applications. Within 3 years he and his team had made Erasmus the first medical center in the world with its own 3D imaging theater.

I-Space takes data from MR imaging, CT and ultrasonography and renders images for projection in three and four dimensions. The images can also be "played back" with a time component that allows researchers and physicians to see real-time animation, enabling analysis of elements such as irregular heartbeats or muscle movement.

Multidisciplinary Uses Encouraged

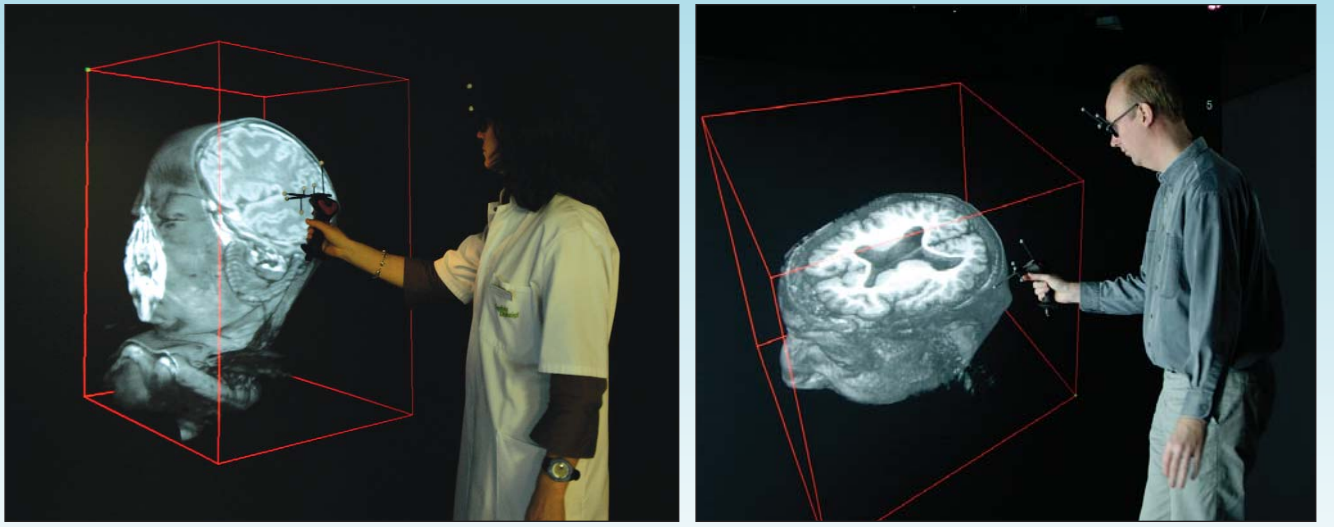
Dr. van der Spek joined Ronald Nanninga, M.Sc., to found Crosslinks, a company that aims to help medical personnel tackle large datasets with I-Space and other advanced visual information software. The pair said they have reason to be excited about I-Space's potential. As Dr. van der Spek was helping develop the system over the past few years, he was also priming other departments and disciplines to take advantage when it was ready to launch. As a result, the theater already has proven useful for examining cardiovascular and neurological systems and in the study and measurement of fetuses.

Ronald Nanninga, M.Sc.
Crosslinks

Child development researchers, in fact, inspired an important addition to the system. Clinicians studying early pregnancy wanted an imaging system that would give them precise 3D measurements of developing embryos. With some software improvements, I-Space can now provide those measurements using ultrasound scans. The system also allows enormous enlargement of images for very detailed measurements, said Dr. van der Spek, and the measurements can be compiled into a "medical-pedia" used to screen for early indicators of abnormal developments.

The 3D imaging in I-Space can also be applied to microscopic images, wherein the rendering of a large stack of cell images can help researchers find biomarkers in cancer, cardiovascular and other disease areas.

While the I-Space system is still too costly to apply to every individual diagnostic case, said Dr. van der Spek, clinicians could use a 3D room to convene a multidisciplinary team and



I-Space uses 3D volume rendering software and eight projectors on four walls and the floor to create a 3D image in a special viewing arena. Users can then interact with the image. *(left)* **Gracia Mancini, M.D., Ph.D., examines the MR image of a newborn with a malformation in cerebral cortex and cerebellum development.** *(right)* **Anton Koning, Ph.D., inspects an MR image dataset showing the abnormally large ventricles of a patient with a migration disorder.**

determine the best interventional approach in complex cases. Moreover, he added, the system can also be used to train clinicians to use both 3D and 2D imagery. Medical professionals who have trouble understanding 3D elements within a 2D image, he said, can use I-Space to work with true 3D images and improve their decision-making skills even when working with 2D scans.

Financial and Logistical Barriers Must Be Overcome

With the ambition of becoming a significant specialized player in the medical imaging market in the next 3 years, and partnerships formed with companies such as Silicon Graphics Inc. and Barco to aid in marketing, delivering, installing and supporting the hardware, Dr. van der Spek, Nanninga and others at Crosslinks acknowledge that I-Space theaters likely won't be popping up around the world right away. Acquiring an I-Space system requires substantial financial, logistical and structural commitments from a site, they said.

"At the moment we are talking with several medical centers in Europe to see how we can help them improve their research, diagnostic and educational capacities," Nanninga said.

What proved critical during the development of I-Space—and may well be important for its proliferation—is a cooperative multidisciplinary environment, said Dr. van der Spek. "Information technology can be very difficult and inaccessible to clinicians because they're not trained in it," he said. Using the complex technology effectively, he said, "depends very much on the culture within the institution and to what extent different groups work together." He said he found that his engineering and medical background helped him cross disciplinary borders.

Among the possibilities Dr. van der Spek visualizes for I-Space is the installation of 3D theaters near, if not actually within, operating rooms. Dynamic 3D scanning and rendering offered by the theater, he said, would help surgeons instantly see and adjust to the needs of their patients. □

■ The full text of an article explaining one application of I-Space, "Dynamic 3D Echocardiography in Virtual Reality" published in *Cardiovascular Ultrasound,* is available at *www.pubmedcentral.gov/articlerender.fcgi?artid=1343588.*

3D Imaging at RSNA 2006

SPECIAL focus sessions and refresher courses at RSNA 2006 will address 3D imaging. Special focus sessions do not require registration. To register for the following refresher courses, or any other courses, go to *rsna2006.rsna.org* and click on Registration, Housing & Courses.

RSNA 2006 Strengthening Professionalism

Special Focus Sessions: Virtual Colonoscopy: 2D, 3D, CAD or Gad—What's Best? and Creating 3D Images: Clinicians or Technologists?

■ RC430

Image Processing and 3D Imaging (Advanced Imaging Informatics)

■ RC 432

Update Course in Diagnostic Radiology Physics: Multidimensional Image Processing, Analysis and Display—Computer-aided Diagnosis in Breast Imaging

- Clinical Applications of Image Analysis and Visualization for 3D Breast Imaging
- Computer-supported Analysis of Breast MR Imaging in 4D: Why, When and How?
- Two-dimensional and 3D Multimodality CAD for Breast Cancer Diagnosis

Virtual Autopsy Offers Noninvasive Postmortem Exam

POWERFUL new technologies are yielding postmortem images that allow medical examiners to comprehensively understand cause of death while avoiding some of the drawbacks of traditional scalpel autopsy.

In the past, determining cause of death meant careful examination of the body by dissection—a time-consuming, expensive procedure some cultures find objectionable.

On the other hand, virtual autopsy, as it is generally known, uses CT and MR imaging to capture detailed images of cadavers. Radiologists can then create 3D visualizations that enable pathologists, coroners and medical examiners to investigate the condition of the body for clues to the cause and manner of death.

Swiss pioneers of the technology have trademarked the name Virtopsy® to describe their unique forensic reconstruction strategy that combines different imaging methods—CT, MR imaging, image guided biopsy and postmortem angiography, among others—with special database and application software. These researchers have drawn the interest of the National Institutes of Health, which most recently included their work in the "Visible Proofs: Forensic Views of the Body" exhibition showing at the National Library of Medicine through February 16, 2008.

Postmortem imaging is not new, but the advent of 3D imaging technology has made it much more applicable to forensic medicine. Examiners now have options traditional scalpel autopsy could not offer.

"Diagnostic imaging is still underused in forensics, mainly due to unawareness of its potential and the lack of teaching and experience," said Richard Dirnhofer, M.D., founder and manager of the Virtopsy Project at the University of Bern in Switzerland. Dr. Dirnhofer is the lead author of "VIRTOPSY: Minimally Invasive, Imaging-guided Virtual Autopsy," appearing in the September-October issue of *RadioGraphics.*

Richard Dirnhofer, M.D.
University of Bern

Anders Persson, M.D., Ph.D.
Linkoping University

Dr. Dirnhofer sees parallels between Virtopsy and the DNA research that began 20 years ago and recently culminated in sequencing the human genome. DNA sequencing was fraught with the same anxiety and hand-wringing over expense, said Dr. Dirnhofer, that he sees some colleagues experiencing about Virtopsy.

> *Once you do a traditional autopsy, it's difficult to look at the wounds—the skull fragments fall apart. On the CT scan, you can visualize the injury pattern or where the injury occurred.*
>
> **Commander Craig Mallak, M.D.**

"We are now in the research phase, which is a difficult time for Virtopsy," he said. The feasibility has been shown, he said, but now the technology must hold up to repeated testing. "As with DNA, it will be a step-by-step process," he said.

Permanence and Ease are Advantages

Given that forensic evidence doesn't last forever, virtual autopsy's most obvious advantage is that it creates a 3D image—a permanent record that can be studied, archived or sent on to others.

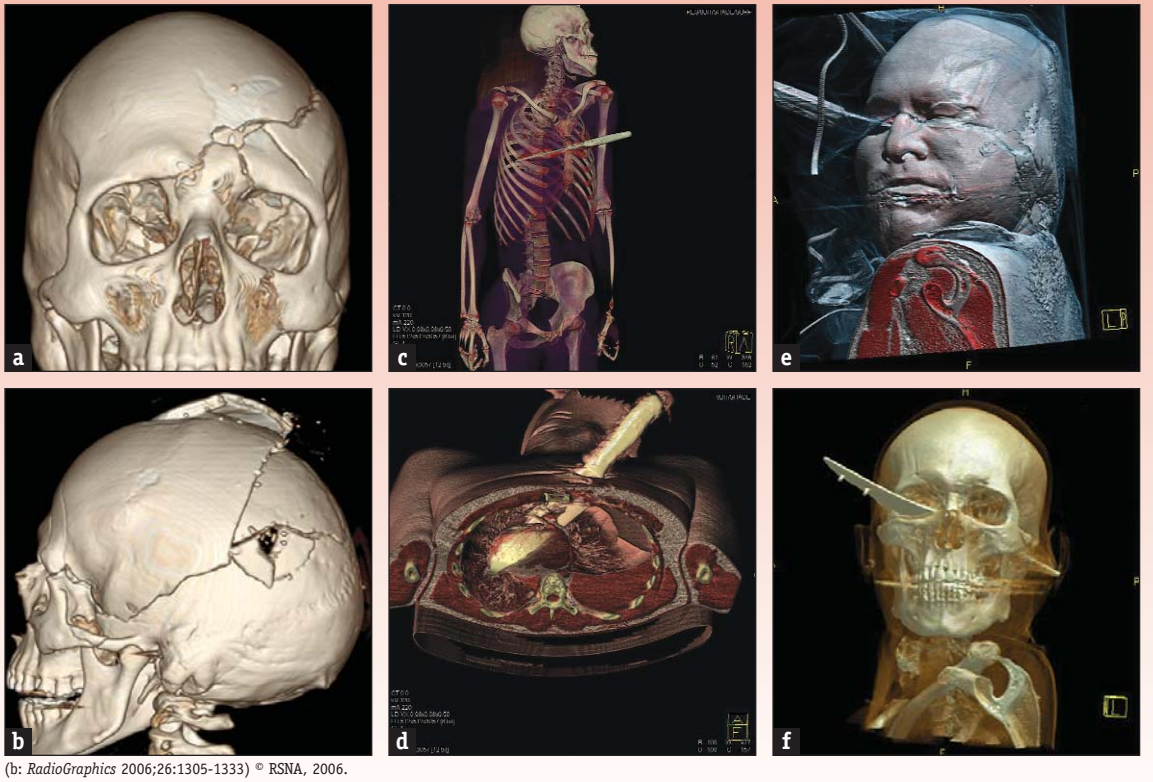
"It is easy to have objective documentation after a virtual autopsy," said Anders Persson, M.D., Ph.D., director of the Center for Medical Image Science and Visualization (CMIV) at Sweden's Linkoping University. "You can reproduce it, give it to a third party or look at it again in 10 years."

Ease of documentation also makes virtual autopsy particularly well-suited for use as courtroom evidence, taking the place of graphic or disturbing photographs.

"You can also see different versions from different angles," said Graham Segal, O.A.M., an Australian barrister-at-law and chair of the first virtual autopsy conference, held late last year in Sydney. "For example, if you're looking at the passage of a bullet, you can manipulate the image to enable a variety of understandings."

Cultural Impact is Significant

Another key benefit of virtual autopsy is that it allows investigation without



(a) **3D reconstruction of a pistol shot-bursting fracture of the skull and** *(b)* **characteristic exit wound of the skull with an outwardly split margin.**

Images courtesy of Richard Dirnhofer, M.D.

(c) **and** *(d)* **In these cases, findings from whole body CT scans pointed to suicide with cuts on the arms and the neck. The angle between the knife and the body also suggested suicide. Findings in both cases were confirmed at autopsy.**

(e) **and** *(f)* **A CT scan helped determine that the knife to the head did not kill this murder victim. The cause of death was 10 stab wounds in the heart. The CT scan saved investigators about 10 hours compared with the traditional autopsy scheme.**

Images courtesy of Anders Persson, M.D., Ph.D.

destroying the body, a procedure many people of different faiths and cultures find invasive or offensive. People of Jewish and Muslim faiths believe most autopsies violate religious laws, said Segal, while others find the idea of autopsy on relatives distasteful or unnecessary. "You have the decorum of a funeral, interrupted by a slight detour to the chopping block—that's the way some people see it," he said.

Segal also points to a variety of injuries and trauma—including facial fractures, drowning, strangulation and gunshot wounds—that are easier to identify through imaging rather than scalpel autopsy.

Added Dr. Persson, "Our software can amplify the very small fragments that you can't see with the naked eye."

Military Examiners Find Use

Virtual autopsy also is helping military examiners find the exact causes of death for soldiers killed in the line of duty. At the forefront is the U.S. Armed Forces Institute of Pathology (AFIP), which performs CT-assisted autopsy.

Commander Craig Mallak, M.D., an AFIP medical examiner, said he believes that CT helps examiners more quickly localize certain abnormalities than was possible using past procedures.

"In the old 2D days, we had no idea what plane a bullet was laying in without taking a series of x-rays," he said. "Now, we run the body through a CT scanner and we know exactly where to look for the projectile." CT-assisted autopsy also picks up a lot of subtle injuries not seen in traditional autopsy, he said. In certain areas that might not traditionally have been examined, the CT scan now guides the hands of the pathologist.

Dr. Mallak said he believes virtual autopsy can sometimes offer better information than traditional autopsy, particularly in trauma cases. For example, imaging enhances the recovery of projectiles, which is often helpful with trauma such as severe head injuries, he said.

"Once you do a traditional autopsy, it's difficult to look at the wounds—the skull fragments fall apart," Dr. Mallack said. "But on the CT scan, you can visualize the injury pattern or where the injury occurred."

Despite its capabilities, few predict that imaging will completely replace the scalpel in the future. Most agree virtual autopsy works best as a supplement to traditional autopsy. Dr. Mallack noted that certain injuries are not well-visualized on CT, adding. "You can't get toxicology samples or recover bullets from a scan."

Virtual Autopsy also a Triage Tool

Some also foresee virtual autopsy as a screening tool for mass casualties from natural disasters or terrorism.

"In a scenario where you have mass casualties and the medical examiner can't possibly autopsy every person, it can help you figure out which body needs an autopsy," said Colonel Angela Levy, M.D., who works with Dr. Mallack at AFIP.

Dr. Mallak said Hurricane Katrina provides a potent example. "You had bodies that had decomposed and you

Continued on page 9

PET Shows Promise in Tracking Diabetes

WITH ANIMAL studies showing how positron emission tomography (PET) can be used to noninvasively track diabetes progression, and human trials set to begin, researchers have highlighted molecular imaging as the newest tool in the battle to control an increasingly prevalent disease in the U.S.

Authors of a study in the June 2006 issue of *The Journal of Clinical Investigation* describe how they used a method, already widely used for brain imaging, to measure the quantity of insulin-producing beta cells in the pancreas.

"We rediscovered the wheel," said Paul E. Harris, Ph.D., of the Department of Medicine at Columbia University Medical Center in New York, principal investigator in the study.

The Centers for Disease Control and Prevention (CDC) estimates that 20.8 million U.S. children and adults, or 7 percent of the population, have diabetes. About 14.6 million of those people have been diagnosed, with 1.5 million new cases of diabetes diagnosed in people 20 years or older in 2005. The CDC estimates that another 41 million people are pre-diabetic. Type 2 diabetes is more common than Type 1.

Current Tracking Delayed and Ambiguous

Increasing, or at least preserving, the number of insulin-producing beta cells within the pancreas is one goal of diabetes treatment. But it is nearly impossible to get a quantitative measure of these cells, as the pancreas is largely inaccessible to biopsy.

"Currently, physicians measure insulin production in the peripheral blood—insulin production stimulated by glucose—as a surrogate measure of how many insulin-producing cells are in the body," Dr. Harris said. "But there are a lot of problems with that measurement, because beta cells don't always behave correctly. They get sick and don't secrete as much insulin as they should."

Another problem, said Dr. Harris, is that not all beta cells are called into action following glucose stimulation or a meal. "Using insulin measurements, you only knew that a patient was in trouble, approaching insulin dependence and diabetes, until it was almost too late," he said.

Using insulin measurements, you only knew that a patient was in trouble, approaching insulin dependence and diabetes, until it was almost too late.

Paul E. Harris, Ph.D.

Neurological Research Led the Way

The Columbia research team received a grant from the National Institute of Digestive Diseases and Kidney Disorders to look for markers to noninvasively measure the amount of beta cells in animal models and humans. As a result of gene expression profiling studies, the researchers discovered that beta cells express a molecule called vesicular monoamine transporter Type 2 (VMAT2).

"We were very lucky because not only is VMAT2 expressed in beta cells of the endocrine pancreas, it's also expressed in neurons, particularly in the central nervous system," Dr. Harris said.

Researchers studying the central nervous system, he said, had already established a way to measure VMAT2 with PET using a radiopharmaceutical called [11C] dihydrotetrabenazine (DTBZ). In central nervous system studies, PET imaging has shown that the amount of VMAT2 is decreased or altered in Parkinson disease and other neurodegenerative disorders.

Paul E. Harris, Ph.D.
Columbia University Medical Center

"Those researchers never really turned the camera down below the neck," said Dr. Harris. "If they had, they would have seen that the pancreas also lights up with the [11C] DTBZ." With this knowledge, he and his colleagues found they were able to easily see and analyze the pancreatic beta cells during PET scans.

"We discovered that as the animals lose their beta cells—either in an experiment where beta cells are chemically ablated or where rats lose their beta cells spontaneously due to an autoimmune disorder—the amount of the VMAT2 decreases," Dr. Harris said.

New Method Less Invasive, More Effective

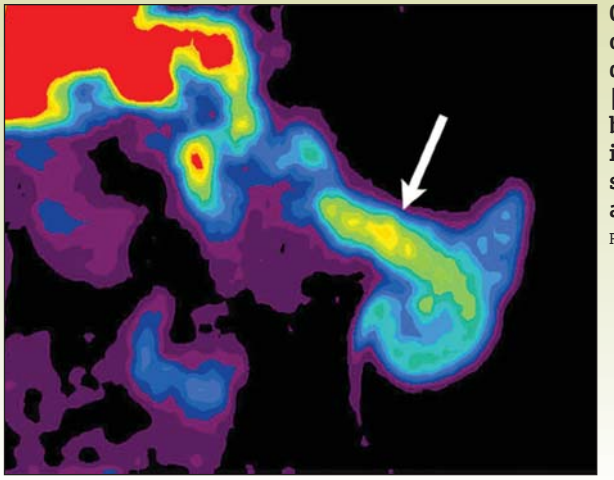
John Votaw, Ph.D., a professor of radiology and physics at Emory University in Atlanta, said the Columbia study is an example of the versatility of PET and its ability to measure biological

processes in the body where they are taking place. "The beauty is that the study would be very easy to perform and pain free for the patient," said Dr. Votaw, who is teaching the PET and PET/CT segment of an RSNA 2006 minicourse on innovations and advances in radionuclide imaging technology.

While cautioning that the study was performed only in genetically altered rats, leaving a considerable amount of work to be done before the techniques are demonstrated effective in humans, Dr. Votaw called the findings important and promising. Researchers may have found a way to measure changes in the body that would lead to diabetes before the patient experiences any symptoms, he said.

"With this information, it may be possible to treat the disease sooner and more effectively," he said. "And the proposed PET assay would be far preferable to a biopsy of the pancreas to obtain the same information."

Dr. Votaw said the results are positive not only from a diagnostic perspective, but also from a basic science point of view. "This work could lead to a better understanding of how cells produce insulin," he said. "A better understanding of the underlying biology in normal tissue is always promising for developing therapies for diseased tissue."



Coronal reconstruction of an abdominal dynamic PET scan with [11C] DTBZ in a male baboon. The pancreas is indicated in these summed frames by the arrow.

Photo courtesy of Paul E. Harris, Ph.D.

Human Studies Set to Begin

Dr. Harris said his team is about to begin human studies on healthy volunteers and people who have had Type 1 diabetes for a long time. "That means they're completely insulin dependent, which suggests they have no beta cells left in their pancreas," he said. "We hope that by studying the differences between them and healthy volunteers, we'll be able to see differences in uptake of the radiopharmaceutical."

If the technique continues to prove successful, PET imaging could eventually find use in diagnosis and treatment of increasingly prevalent Type 2 diabetes, said Dr. Harris.

"While Type 2 diabetes is not identical to Type 1 diabetes, the end result in Type 2 is often still beta cell loss and eventual insulin dependence," he said. "One of the goals in treating Type 2 diabetes is to halt that beta cell loss process. Until now, there has been no reliable endpoint to determine whether a drug is stopping beta cell loss or not."

If PET imaging to measure beta cells works well in humans, Dr. Harris added, the pharmaceutical industry may also be interested in using PET as an endpoint marker for studying drug efficacy. □

■ The full text of the study "Longitudinal Noninvasive PET-Based ß Cell Mass Estimates in a Spontaneous Diabetes Rat Model" is available at *www.jci.org/cgi/content/full/116/6/1506.*

Virtual Autopsy Offers Noninvasive Postmortem Exam

Continued from page 7

couldn't tell whether they had suffered trauma or simply drowned," he said. "Using a CT scan would be a good triage tool."

Many argue imaging, despite employing cutting-edge technology, is less expensive than traditional autopsies. Scanning the dead "is cheaper per case because it's so much quicker," said Segal. "It's less labor intensive, so you need less staff at the morgue."

Reading postmortem scans does present new challenges for radiologists. "It's not the same as looking at the living," said Dr. Persson. "One important issue is postmortem gas. After a day or so, you find gas in the skeleton, in the soft tissue; it's popping up everywhere. It's hard to see if it's gas from bowels or from the wound."

Radiologists can learn only by looking at many cases, said Dr. Persson. "There are no books; it's a completely new area," he said.

With that newness, however, comes continual discovery.

"You never know what you're going to find," said Dr. Mallak. "We've been surprised by what we've seen in the images, but that's good. This isn't fantasy anymore; it's reality." □

■ To read the abstract for the article, "VIRTOPSY: Minimally Invasive, Imaging-guided Virtual Autopsy," go to *radiographics.rsnajnls.org/cgi/content/abstract/26/5/1305.*

■ For more information about the "Visible Proofs: Forensic Views of the Body" exhibition at the National Library of Medicine, go to *www.nlm.nih.gov/visibleproofs/exhibition/.*

Podcasts Reinforce Diagnosis and Treatment Information

While it may seem that mp3 players isolate listeners from their fellow humans, two radiation oncologists have used the ubiquitous machines to open a new channel for doctor-patient communication.

Last fall, Quinten Black, M.D., and John O'Connor, M.D., launched *CancerCast.com*, an online service that provides short audio discussions between the two doctors as they go over some of the most common and basic questions patients and their families have about cancers and their treatment. Using a digital audio player, anyone can download these programs—known as podcasts—for free from *CancerCast.com* or iTunes, an online music store run by Apple Computer.

To the less technologically savvy, a podcast might sound like something from "Invasion of the Body Snatchers." The term actually refers to distributing multimedia files such as audio programs or music videos over the Internet. Played back on mobile devices and personal computers, the programs sound like talk or music radio or books on tape. Typically 10 to 30 minutes long, podcasts are available on any topic imaginable, from underground music samplers and cooking tips to news and political commentary.

Podcasts Meant to Be Informal

More and more medical-themed podcasts are popping up online, with some providing abridged audio versions of journal content to quickly update physicians on new information. Others, such as one recently introduced by ultrasound manufacturer SonoSite, offers refresher courses on various procedures.

Drs. Black and O'Connor, however, had a different purpose and audience in mind when they launched *CancerCast.com*. Their podcasts, or CancerCasts, were created specifically to address—in plain English—the kinds of cancer inquiries they field regularly from patients and their families. The first couple of podcasts have addressed topics such as what colon cancer is and the type of questions patients should ask their doctors.

"This is an informal discussion," said New Orleans-based Dr. O'Connor, in describing the CancerCasts. "We answer very basic questions intended to get the patient up to speed." Both doctors stress that the podcasts are not intended to take the place of physician consultations or to offer opinions or recommendations about treatments. Nor are the hosts making any money off the endeavor, which is a volunteer service effort.

> *Hearing us talking is a more intimate forum for people. We can make a more personal connection with audio than someone might have just reading text.*
>
> John O'Connor, M.D.

"The podcast can get the patient to square one," said Dr. Black, who practices in Asheville, N.C. "Although it's not an opinion on treatment, it can really focus someone's thinking on what treatments are available to them." He added, "I'm interested in providing somebody with a framework so they can better receive the information their physician is giving them."

The tone of the CancerCasts is relatively light, casual and conversational.

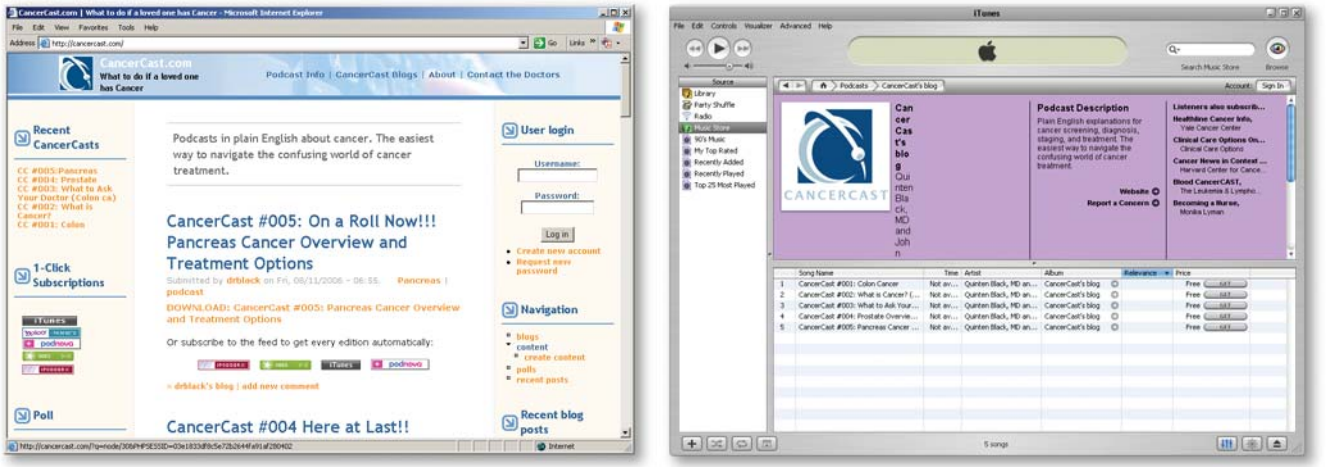
Quinten Black, M.D.
Asheville, N.C.

"It's kind of like a phone call to a doctor," said Dr. O'Connor. "Hearing us talking is a more intimate forum for people. We can make a more personal connection with audio than someone might experience just reading text." The podcast format, he added, also allows users to listen to the information at their own convenience and to replay and repeat sections they do not immediately grasp.

Firsthand Experience Inspired Innovation

The two doctors have been friends since attending medical school together at Tulane University a few years ago. Dr. O'Connor noted that even back in school, "We started talking about different ways to use technology to enhance patient understanding, to find ways to simplify things for patients."

For Dr. Black, the gears started turning in late 2003, when Apple Computer CEO Steve Jobs announced the creation of the iTunes file-sharing site and talk about podcasting began to heat up. Also around that time, one of Dr.



(left) ***CancerCast.com*** **is an online service offering short audio discussions about cancer diagnosis and treatment. The files are available for free download from the site or from the Apple Computer iTunes Store** *(right)*.

Black's relatives was diagnosed with cancer, showing him firsthand how often information needs to be repeated to various family members and how little of that information most people retain.

Asked why they thought a couple of radiation oncologists were among the first to launch this idea, the two doctors had different responses. Dr. Black noted that due to treatment schedules, radiation oncologists often have more weekly face time with cancer patients, allowing them to see how much information is being tossed at patients and how much of it slips by them. Dr. O'Connor also observed that since radiology and radiation oncology are very technical and very computer-oriented, "We're comfortable with new technology such as podcasting."

The actual creation of the podcasts is not all that complicated. From North Carolina, Dr. Black uses simple computer telephone software to set up an evening phone conversation with Dr. O'Connor in New Orleans. Other basic software records their discussion, which Dr. Black quickly edits on his laptop, adding introductory and closing information and background music. The file is then uploaded to *CancerCast.com* and from there picked up by iTunes. "It's really homegrown," said Dr. Black.

Other Applications Still to Be Discovered

CancerCast.com gets about 20 new online subscribers a day, with an additional 75 people downloading podcasts from iTunes daily. Moreover, online users are located all over the world. "The fact that even one or two people are listening is gratifying," said Dr. Black.

Along the way, the doctors have learned a few things about podcasting. "Keep it short, keep it simple," observed Dr. O'Connor. "We could probably talk for hours about these topics, but the average listener's attention span isn't going to be much more than 10 to 20 minutes. You have to try to be really succinct and get to the point." Along those lines, Dr. Black said that he's come to understand the importance of having a rough script to work from when recording the podcasts. "You have to be prepared for what you're going to say," he noted, "Because just idle conversation is relatively useless."

For now, the CancerCast doctors are focusing on getting more podcasts up on their site—due to Dr. O'Connor's New Orleans location, the update schedule was suspended last year in the aftermath of Hurricane Katrina. Future CancerCasts will cover basic information about prostate, lung and breast cancers.

While CancerCast is staying focused on cancer topics, Dr. O'Connor sees potential for other medical fields to employ the podcast medium. He feels the nature of the format would lend itself to conveying information about almost any medical topic, perhaps especially preventive health, physical fitness or even pre-natal and child-health information for new parents. Said Dr. O'Connor, "Podcasting is such a new medium that the potential ultimate application in medicine may not have revealed itself yet." □

■ To learn more about CancerCast and sample available podcasts, go to *CancerCast.com.*

■ Patients seeking information about radiologic procedures for cancer and other diseases can also refer to *RadiologyInfo.org,* the public information Web site developed and funded by RSNA and the American College of Radiology (ACR).

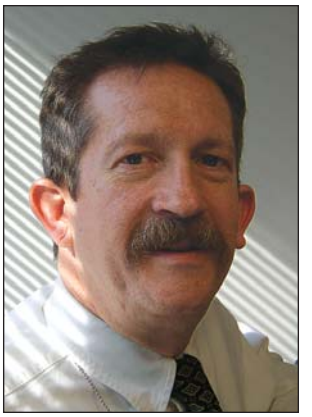
Each section of *RadiologyInfo*™ has been created with the guidance of a physician with expertise in the topic presented. All information contained in the Web site is further reviewed by an RSNA-ACR committee, comprising physicians with expertise in several radiologic areas. This Web site is updated frequently and expanded to include new information.

RADIOLOGYINFO™
The radiology information resource for patients

RSNA 2006 Series Courses Bridge Gaps Between Bench and Clinic, Present and Future

COMBINING state-of-the-art lectures on clinical care and basic science with discussions of emerging therapies and technologies, RSNA 2006 series courses offer a comprehensive look at the hottest issues in emergency radiology, interventional oncology and pediatric radiology, with the promise of information attendees can apply immediately in their practices.

Donald P. Frush, M.D.
Duke University Medical Center



Gary S. Dorfman, M.D.
National Cancer Institute

O. Clark West, M.D.
University of Texas Health Science Center at Houston

"We're all physicians and we're all scientists," said Donald P. Frush, M.D., of Durham, N.C., one of the radiologists presiding over the pediatric radiology series. "Critical thinking doesn't stop when you're practicing radiology. Even when you're in the laboratory, the applications need to be in the forefront of your mind. That's why combining what has traditionally been two separate venues for sharing information is particularly compelling."

Interventional Oncology

The interventional oncology series will offer a complete picture by relying on a faculty roster of world class experts in interventional oncology and medical, radiation and surgical oncology, said Gary S. Dorfman, M.D., series director.

"We don't deliver interventional oncology in a vacuum, so attendees get the opportunity to see how interventional oncology therapies fit into the context of other therapies available to the cancer patient," said Dr. Dorfman, acting chief of the Image Guided Interventions Branch and special assistant to the associate director of the Division of Cancer Treatment & Diagnosis at the National Cancer Institute.

The series will focus on non-small cell lung cancer, hepatic metastases from colorectal cancer, hepatocellular cancer and renal cell cancer as common, rapidly evolving therapeutic targets of opportunity.

"Each clinical focus area will begin with the basic epidemiology of the cancer and the non-interventional oncology therapies offered to patients," Dr. Dorfman said. "That sets the stage and then interventional oncology therapies are presented. The faculty will talk about outcomes—for a given type of state-of-the-art care, how should we expect a patient to do? What types of complications might be encountered and what steps should be taken to avoid adverse outcomes, will also be presented."

The most important thing we can do is open the blood vessels quickly. Every minute is crucial.
Howard A. Rowley, M.D.

Physicians have an incentive to attend the entire series, Dr. Dorfman said. "They will learn things they can implement right away for their patients, as well as get a glimpse of what lies in the future," he said.

Emergency Radiology

The emergency radiology series, which will offer practical and scientific perspectives on carotid and vertebral artery injuries, was designed with this same "take home" strategy, said O. Clark West, M.D., series director. This information is critical for any radiologist working in a trauma center, he said, particularly those already facing pressure to develop a screening program for these injuries.

"If an emergency radiologist isn't already hearing about this cutting-edge topic, they're likely to hear about it very soon," said Dr. West, an associate professor of radiology and radiology section chief at The University of Texas

RSNA 2005 attendees listen to a presentation during the Interventional Oncology Symposium. Interventional oncology and pediatric and emergency radiology are the topics being offered this year as series courses, a new format combining refresher course content with scientific papers and cutting-edge developments.

Health Science Center at Houston Medical School.

Screening for cerebrovascular injuries in major trauma patients has become feasible in the last few years with the advent of multislice CT scanners. As screenings increase, said Dr. West, they're revealing many injuries physicians previously didn't know existed. The goal is to prevent unexpected strokes in trauma patients, he said.

Among the emergency radiology lecturers is Walter L. Biffl, M.D., of Providence, R.I., whose pioneering research showed how common neck vessel injuries are. "They were using conventional angiography at that point, and now it's become more meaningful to the diagnostic radiologist because we can use CT angiography within the first few minutes of the patient's arrival to look for these injuries," said Dr. West. "This changes the way we practice."

Pediatric Radiology

Because pediatric radiology is by nature a generalist field—that is, physicians need to be experts within a number of organ systems—it is ideally suited for the spectrum of organ-specific topics offered in this series format, said Dr. Frush. For example, he said, the course content in the chest segment will offer a broad review, while cutting-edge papers will focus on such innovative topics as using ^{3}H MR to evaluate the lung structure of infants afflicted with bronchopulmonary dysplasia.

"Having a more general series track available is entirely consistent with a pediatric radiologist's practice," said Dr. Frush, a professor of radiology and director of the Division of Pediatric Radiology at Duke University Medical Center.

All the series courses can offer dynamic discussion, said Dr. Frush, by virtue of having refresher course instructors available to comment when new science is presented.

"That's the beauty of this format," he said. "Having heard the refresher course, people may understand better some of the technical discussions during the scientific sessions. They get to hear how something is done, how it's applied from a general standpoint and then some of the new ways that we're using the science."

Dr. Dorfman said the ample time for discussion among faculty and attendees will also stimulate healthy debate. "We're putting the whole story out there, if you will," he said. "There is not just one right way of doing things, and we can have a conversation about the areas not fully agreed upon." □

RSNA 2006 Series Courses

THE series courses for pediatric radiology run Sunday through Tuesday and the interventional oncology series runs Wednesday through Friday. Attendees may register for one, two or all three days in these series.

RSNA 2006 Strengthening Professionalism

The half-day emergency radiology course requires attendance on Tuesday morning. Series courses are indicated by two-letter acronyms in the RSNA 2006 course schedule: VE for emergency radiology, VI for interventional oncology and VP for pediatric radiology. To register for these or any other courses, go to *rsna2006.rsna.org* and click on Registration, Housing & Courses.

RSNA Scholar Challenges Convention in Search of Better Lung Cancer Screening

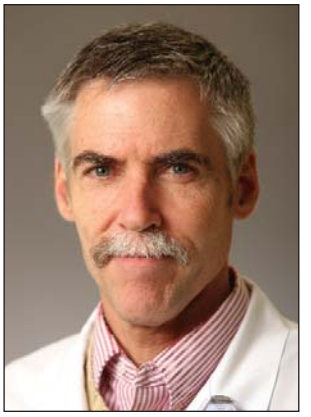
FROM the controversial special article that launched his RSNA project more than a decade ago to his pivotal role today on a groundbreaking lung cancer screening trial, RSNA Research Scholar William C. Black, M.D., has made a career out of flying in the face of tradition.

Specifically, Dr. Black, a professor in the Departments of Radiology and Community and Family Medicine at Dartmouth-Hitchcock Medical Center, wants to remedy the biases he believes exist when imaging tests are assessed for their effect on patient outcomes.

"You don't win a popularity contest when challenging traditional thinking about the value of testing that people are vested in," said Peter Spiegel, M.D., chair of Department of Radiology at Dartmouth-Hitchcock.

Never was that more true than in the early 1990s, when Dr. Black and other members of a National Cancer Institute (NCI) panel reached the stunning conclusion that there was insufficient evidence to prove mammography was effective in women aged 40 to 49. The panel's findings came at a time when the radiologic community—and, consequently, the public—was singing the praises of mammography.

In a 1993 *New England Journal of Medicine* article that served as the basis for his RSNA research project, Dr. Black detailed how sensitive imaging modalities can result in overly aggressive treatment and skewed incidence and survival data.



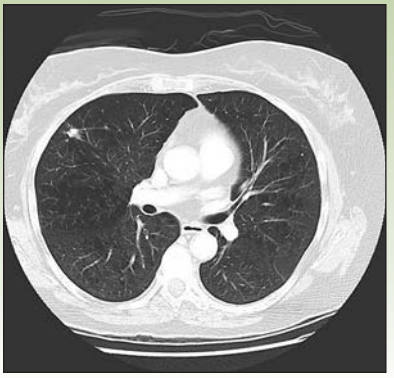
William C. Black, M.D.
Dartmouth-Hitchcock Medical Center

"You can get caught in this vicious cycle," said Dr. Black. "Once you start using these new screening modalities, suddenly there is a dramatic increase in the apparent incidence of the disease. People misinterpret this as the disease becoming more frequent, when in fact we're just seeing it better."

He added that when these patients are treated, they naturally do better than historical controls simply because they were not really as sick to begin with. "Consequently, there is an overestimation of how common the disease is and how effective the treatment is," he said.

Determined to address these problems, Dr. Black used his RSNA project to analyze the effects—both real and perceived—of early diagnosis. First, he and his team at Dartmouth developed a theoretical framework and mathematical models that combined screening data on the prevalence of the disease at different stages with autopsy and mortality data to create a natural disease history. From there, the researchers could determine how the disease was progressing and provide guidance to radiologists on deploying new imaging tests most effectively.

That research now helps Dr. Black in his role on the executive board of the National Lung Screening Trial



11 mm spiculated nodule in right upper lobe of elderly smoker. Nodule was hypermetabolic on PET and highly suspicious for lung cancer, but wedge resection revealed only chronic inflammation and fibrosis.

Image courtesy of William C. Black, M.D.

9 QUESTIONS FOR...

William C. Black, M.D.

What's your fondest childhood memory?
Looking up at Tyrannosaurus rex at the Museum of Natural History in New York City.

Whom do you most admire?
Albert Einstein

What is your favorite way to relax?
Cycling in New England

If you could visit any place in the world, where would it be?
The Serengeti, Africa

What is the most daring thing you've ever done or would like to do?
Swim under a moving barge—never want to do it again!

What's the last book you read?
Guns, Germs and Steel: The Fates of Human Societies, by Jared Diamond

Who are some of your personal heroes?
John Lennon, Isaac Newton, Betrand Russell, Joe Montana, Roger Federer

What was the key moment that made you want to pursue radiologic research?
Reading John Bailar's editorial on the Mayo Lung Project, where he pointed out that all the "promising statistics" on the early results of the Mayo Lung Project could be attributed to bias. He was right; screening did not reduce lung cancer mortality.

What's your favorite travel destination?
Staying at our lake house in the summer!

Research & Education Foundation Donors

The Board of Trustees of the RSNA Research & Education Foundation and its recipients of research and education grant support gratefully acknowledge the contributions made to the Foundation June 24 – July 24, 2006.

The Foundation is now recognizing donors for their cumulative giving. These donors will be recognized for achieving giving milestones through the Foundation's Visionary Donor Program. A complete roster of Visionary Donors will be listed in the 2006 RSNA Annual Report.

For more information on Foundation activities, go to *RSNA.org/foundation.*

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In memory of William T. Meszaros, M.D.
Kevin C. Funk, M.D.
Lawrence H. Licht, M.D.
Hella Dammeier & Joachim Lotz, M.D.
Patricia & William W. Olmsted, M.D.
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Arfa Khan, M.D. & Faroque Khan
Aye Min, M.D.
Marta & Carlos S. Restrepo, M.D.
James H. Short, M.D., Ph.D.
Naree & Richard I. Welshman, M.B.B.S.

CORRECTION

The donation by Ronald J. Dolin, M.D., recognized in the August 2006 *RSNA News,* should have read "Thomas Jefferson University Class of 2006 Residents, In honor of Oksana H. Baltarowich, M.D., Levon N. Nazarian, M.D., and Lisa M. Tartaglino, M.D."

(NLST), an ongoing randomized national trial investigating whether low-dose spiral CT screening can decrease lung cancer mortality.

"Everyone in this project recognizes that we are going to find more lung cancer by screening for it," said Dr. Black. "The question is whether it's going to reduce lung cancer mortality. Insights that I gained from my RSNA research are directly applicable to the design of this trial."

Supported by NCI and the American College of Radiology Imaging Network (ACRIN), NLST has completed its screening phase. Patients will be followed through 2008 with an analysis of related mortality data anticipated by 2010.

Dr. Black is collaborating with the Cancer Intervention and Surveillance Modeling Network (CISNET), the NCI organization in charge of developing the mathematical modeling component of the trial. "This trial may tell us that spiral CT can reduce lung cancer death, but it won't tell us the best way to do the screening," he said. "We'll need a model to optimize how we apply screening technology to the U.S. population." If the trial reveals that screening doesn't work, he said, modeling may help explain why.

As NLST comes to a close, Dr. Black will be intimately involved in analyzing the data and publishing the results.

"Bill is a highly insightful investigator, dedicated to the determination of the best methodology for patient care through careful experimental design," said Dr. Spiegel. "His work is the product of his commitment to evidence-based medicine and excellent scholarship."

Dr. Black also has been recognized with multiple teaching awards for his work with residents and medical students at Dartmouth, said Dr. Spiegel. "He is a superb teacher who clearly recognizes the unique relationship between successful research and dissemination of knowledge." he said. □

■ More information about the RSNA Research & Education Foundation (R&E) Research Resident/Fellow and Research Scholar grants, as well as other R&E grant and award programs, can be accessed at *RSNA.org/Foundation/programs.cfm.*

R&E FOUNDATION GIVING PROGRAMS

Endowed Donor Program

RECOGNIZING major gifts to the R&E Foundation, the Endowed Donor Program offers donors the opportunity to endow and name a grant for a 20-year period. Gifts from Endowed Donors support the work of the Foundation while honoring the profession and donors' patients and families.

Four endowment opportunities are available:

Scholar Grant	$1.5 million
Fellow Grant	$1 million
Research Resident Grant	$600,000
Seed Grant	$600,000

Endowments are also available at other giving levels to support grants of less than 20 years.

Benefits of Endowed Donor Giving

- 20-year endowed, named grant
- Early notice of hotel and meeting registration for the RSNA annual meeting
- Special Recognition in *RSNA News*, R&E Pavilion at annual meeting, RSNA Annual Report, RSNA *Daily Bulletin* or *Meeting Guide* and on the R&E Foundation Web site
- Complimentary ground transportation to and from the airport during the annual meeting
- Complimentary limousine service to and from McCormick Place at annual meeting
- Access to premier services in the Donor Lounge at annual meeting
- Priority taxi/shuttle bus lines at annual meeting
- Invitation to the Visionary and Legacy Donor Reception at annual meeting
- Exclusive thank you gift

Donors funding at the Scholar or Fellow level receive a complimentary hotel suite at the annual meeting. Donors funding Research Resident or Seed Grants receive a complimentary hotel room at the RSNA annual meeting.

For more information about the Endowed Donor Program or other R&E Foundation giving programs, visit *RSNA.org/Foundation* or contact the Foundation at *R&EFoundation@rsna.org* or 1-800-381-6660 x7885.

25 Questions "People's Choice" Voting Continues through September

RSNA members have until September 30 to submit their votes for the most compelling radiology questions still to be answered.

As part of its mission to help chart the course of future radiologic discovery, the R&E Foundation solicited questions earlier this year. Questions are now posted at *RSNA.org/25questions.* Scientific reviewers will choose the official top 25 questions, which will be announced along with the names of the submitters during RSNA 2006 and in RSNA publications.

The results of People's Choice voting also will be announced. Log on to *RSNA.org/25questions* to read the questions that have been submitted and vote.

EDUCATION RESEARCH

Program and Grant Announcements

IHE® Connectathon and Conference 2007

January 15–19, 2007, Hyatt Regency Chicago—Wacker Drive

The two missions of the Integrating the Healthcare Enterprise (IHE®) initiative—systems testing and education—will converge at the first-ever IHE Connectathon and Conference. As with past Connectathons, participating companies will have an opportunity to test their systems with corresponding systems from industry peers.

For the new educational conference portion in 2007, the key players who are implementing regional and national health information networks will provide insight into the connected health system and how IHE is helping make it happen.

Registration opens in October. Check *www.ihe.net/events/connectathon07* for further information.

RSNA 2006 Personal Financial Seminars

Two comprehensive financial seminars—"Protecting Assets from Creditor Claims, Including Malpractice Claims" and "Effective Investment Strategies"—will be held Saturday, November 25, at McCormick Place in Chicago just prior to the RSNA annual meeting.

Attendees receive textbooks written specifically for each course. Register by going to *rsna2006.rsna.org* and clicking on Registration, Housing & Courses. These seminars do not qualify for *AMA PRA Category 1 Credit*™. For more information, contact the RSNA Education Center at 1-800-381-6660 x3747 or *ed-ctr@rsna.org.*

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Journal Highlights

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

CT Imaging of Colitis

WIDELY AVAILABLE and easily performed, CT is the primary screening modality to evaluate patients suspected of having colonic disease. In an article in the Review for Residents section of the September issue of *Radiology (RSNA.org/radiologyjnl)*, authors Ruedi F. Thoeni, M.D., and John P. Cello, M.D., recommend multidetector CT with oral, rectal and intravenous contrast material and thin sections which can accurately demonstrate inflammatory changes in the colonic wall and help assess the extent of disease.

Drs. Thoeni and Cello, of the Departments of Radiology and Medicine, respectively, at the University of California, San Francisco, note that the key ben-

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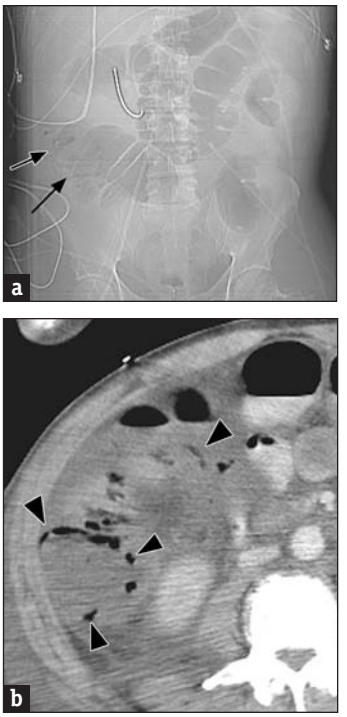

Ischemic colitis in an 81-year-old woman with myocardial infarction. *(a)* **Anteroposterior CT scout view shows air (arrows) in wall of right colon and small- and large-bowel dilatation.** *(b)* **Transverse CT image demonstrates air (arrowheads) in wall of right colon, with lack of wall enhancement and pericolonic stranding indicative of infarction.**

Transverse CT image in a 56-year-old man with pseudomembranous colitis who was undergoing antibiotic treatment for endocarditis. In the sigmoid colon, a shaggy thickened bowel wall with alternating areas of necrosis *(arrows)* **and plaques is visible.**

Peripheral Neuropathies of the Median, Radial, and Ulnar Nerves: MR Imaging Features

FOR PERIPHERAL neuropathies affecting the median, radial and ulnar nerves, a thorough clinical examination combined with electrophysiologic studies remains the cornerstone of the diagnostic work-up. MR imaging, however, can be useful in determining the exact anatomic location of a lesion or narrowing the differential diagnosis.

In an article in the September-October issue of *RadioGraphics (RSNA.org/radiographics)*, Gustav Andreisek, M.D., of the Institute for Diagnostic Radiology in the Department of Medical Radiology at the University Hospital Zurich, and colleagues:

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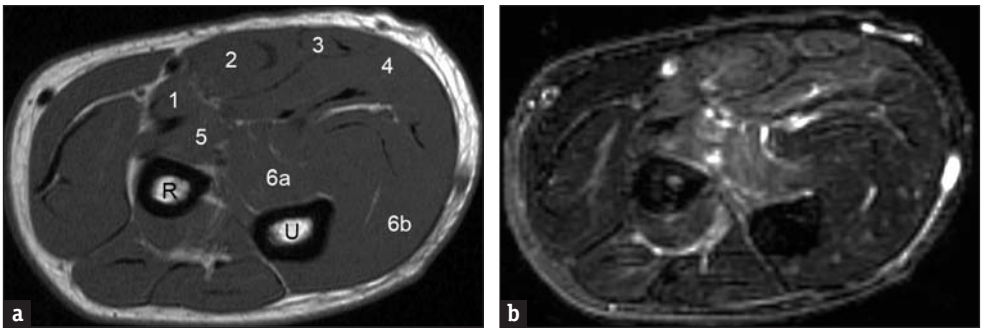


Pronator syndrome in a 58-year-old man after repeated pronation-supination stress from snow shoveling. *(a)* **Axial T1-weighted spin-echo (SE) MR image at a middle level in the forearm shows normal volume and normal signal intensity of the proximal forearm muscles (1 = pronator teres, 2 = flexor carpi radialis, 3 = palmaris longus, 4 = flexor digitorum superficialis, 5 = flexor pollicis longus, 6a = radial part of the flexor digitorum profundus, 6b = ulnar part of the flexor digitorum profundus) and normal signal intensity of the radius (R) and ulna (U).** *(b)* **Corresponding T2-weighted fat-suppressed fast SE MR image demonstrates increased signal intensity indicative of edema in all of the muscles that are innervated by the median nerve. The ulnar part of the flexor digitorum profundus muscle, which is innervated by the ulnar nerve, is unaffected.**

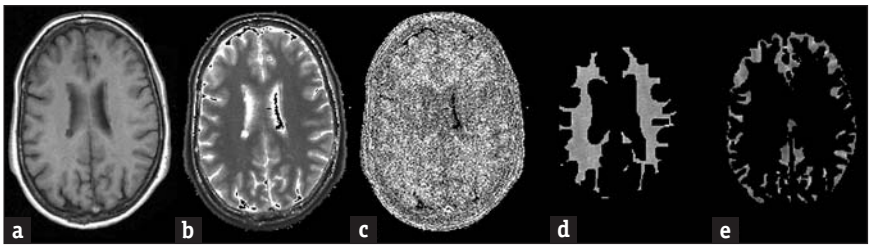
Radiology in Public Focus

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

Whole-Brain T1 Mapping in Multiple Sclerosis: Global Changes of Normal-appearing Gray and White Matter

A global disease process affecting large parts of normal-appearing white matter and gray matter in patients with multiple sclerosis (MS) is worse for patients with secondary progressive MS than those with relapsing-remitting MS and is related to overall brain atrophy, researchers have concluded.

Hugo Vrenken, M.Sc., Ph.D., of the Department of Radiology at VU University Medical Center in Amsterdam, The Netherlands, and colleagues prospectively investigated whether T1 changes in normal-appearing white matter and gray matter in MS are global or regional. They also studied the relationship of the changes to disease type. Researchers obtained whole-brain T1 maps in 67 patients with MS and 24 healthy controls.



Oblique transverse T1-weighted three-dimensional fast low-angle shot MR image with 20° flip angle depicts section in patient with secondary progressive MS. *(b),* **T1 map of same section as in** *(a). (c),* **T1 fit error map of same section as in** *(a). (d, e)* **Corresponding tissue-specific T1 maps of** *(d)* **normal-appearing WM and** *(e)* **normal-appearing GM after conservative segmentation. B shows clear distinction between WM and GM.**

Comparing patients with MS to the control subjects, Dr. Vrenken and colleagues observed a significant reduction in normalized brain volume (NBV) in patients with secondary progressive MS as well as in the total group of patients with MS. Researchers also found that NBV was lower in patients with secondary progressive MS than in those with relapsing-remitting MS. Patients with secondary progressive MS had the largest lesion loads and greatest degree of disability, the researchers found.

"It must be concluded that, in MS, disease processes—whether focal or diffuse—outside MR-visible lesions are not limited to a few sites but act throughout the brain and affect large fractions of both normal-appearing white matter and cortical normal-appearing gray matter," Dr. Vrenken and colleagues conclude.

Preoperative Functional MR Imaging Localization of Language and Motor Areas: Effect on Therapeutic Decision Making in Patients with Potentially Resectable Brain Tumors

For patients with potentially resectable brain tumors, functional MR imaging (fMRI) enables the selection of a more aggressive therapeutic approach than might otherwise be considered because of functional risk, researchers have determined.

Jeffrey R. Petrella, M.D., of the Division of Neuroradiology at Duke University Medical Center, and colleagues performed fMRI on 39 patients referred for possible brain tumor resection, using sentence completion and bilateral hand squeeze tasks to map language and sensory motor areas. Using questionnaires completed by neurosurgeons before fMRI and after surgery, the researchers then looked at how fMRI results affected surgical time, extent of resection and surgical approach.

fMRI resulted in reduced surgical time in 22 patients who underwent surgery, a more aggressive resection in six and a smaller craniotomy in two, the researchers report, adding that additional invasive diagnostic testing that would have been requested for some patients also was avoided after fMRI.

Using traditional hierarchical scientific assessments to establish the benefits of new techniques can take a relatively long time compared with the rapid evolution of new technology, the researchers note. As a result, the team focused on determining if and how fMRI would affect therapeutic planning in the routine clinical environment.

"Because it can be fully implemented in a busy clinical environment, fMRI has a broad role in neurosurgical planning, including patient selection, assessment of the feasibility of surgery, and surgical planning," the researchers write, adding that because fMRI can be performed quickly, it can also be easily added to conventional MR imaging.

(*Radiology* 2006;240:793-802)

CT Imaging of Colitis

Continued from page 17

efits of CT are how it accurately demonstrates the bowel wall while outlining the pericolonic soft tissues and adjacent structures. CT is a highly sensitive method to detect intramural disease and extraluminal extension of colonic disease, the authors note, and can help differentiate gastrointestinal disorders from abdominal diseases not involving the gastrointestinal system.

In their article, the authors:

- Review the CT technique for examining the colon
- Describe normal anatomic features of the colon
- Contrast the clinical and CT appearances of inflammatory conditions of the colon
- Highlight typical imaging features that allow differentiation among the various types of colitis

"CT plays an important role in the diagnosis of inflammatory conditions of the colon and in their differential diagnosis," the authors write. "The final diagnosis is based on radiologic and clinical results. Best results are achieved with careful attention to technique with thin sections and optimal distention of the colon."

Peripheral Neuropathies of the Median, Radial, and Ulnar Nerves: MR Imaging Features

Continued from page 17

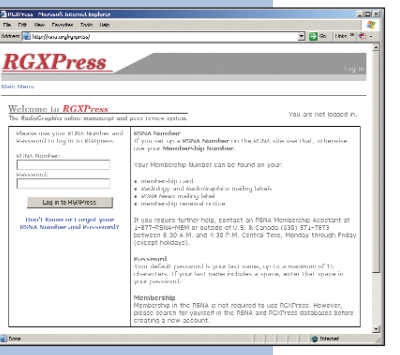
- Describe basic MR imaging protocols for the evaluation of peripheral neuropathies
- Identify and describe the normal anatomy in the region of the median, radial and ulnar nerves
- Detail the MR imaging features of frequently occurring neuropathies of the median, radial and ulnar nerves

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

MR imaging, Dr. Andreisek and colleagues note, provides high-resolution depiction of nerves and allows visualization of primary abnormalities—for example, a mass lesion compressing a nerve—as well as secondary abnormalities such as nerve enlargement and enhancement due to neuritis.

"In patients with a diagnosis of peripheral neuropathy, MR imaging may help establish the cause of the condition and provide information crucial for conservative management or surgical planning," they write. "In addition, knowledge of the normal anatomy and of the possible causes, typical clinical findings and MR imaging features of peripheral neuropathies that affect the median, radial, and ulnar nerves allows greater confidence in the diagnosis."

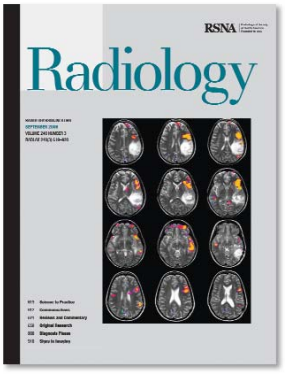
Online Submission to *RadioGraphics* Available Via RGXPress



RadioGraphics authors can now submit manuscripts online using RGXPress *(RSNA.org/rgxpress)*, a Web-based manuscript processing and peer-review system. RGXPress also will allow online peer review starting in early fall 2006, with online submission of revisions available soon after.

RGXPress was developed by RSNA Information Systems and *RadioGraphics* staff with the specific needs of *RadioGraphics,* including its authors and reviewers, in mind. Improvements based on user experiences and comments are already under way. "I know RGXPress will provide great flexibility and convenience for our authors and reviewers in the coming years," said *RadioGraphics* Editor William W. Olmsted, M.D.

Media Coverage of *Radiology*



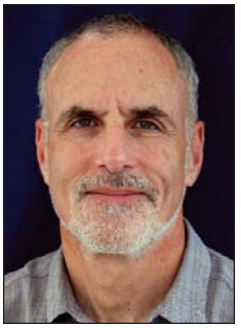
MEDIA coverage of articles appearing in the July issue of *Radiology* reached an international audience of more than 227 million.

The media was alerted to the study of a new, noninvasive MR imaging technique revealing coronary artery blockages (*Radiology* 2006; 240:39-45), as well as a study detailing how memory loss due to early Alzheimer disease alters function of the temporal and frontal lobes of the brain (*Radiology* 2006; 240:177-186). Another press release focused on a study regarding the use of diffusion-tensor MR imaging to detect white matter abnormalities in newborns (*Radiology* 2006; 240:203-214).

Coverage of *Radiology* press releases appeared in *The Times* of London, *The Vancouver Sun, Rocky Mountain News, Milwaukee Journal Sentinel, Indianapolis Star* and *St. Paul Pioneer Press,* as well as on the United Press International wire service. Stories also appeared on the Internet outlets *FOXNews.com, ChicagoTribune.com, Forbes.com, Yahoo! News.com, iVillage .com, HealthCentral.com, MEDLINEPlus.com,* HealthDay and Red Orbit.

Working For You

Paul J. Chang, M.D.



Jeffrey R. Galvin, M.D.

Physicians Join RSNA Team

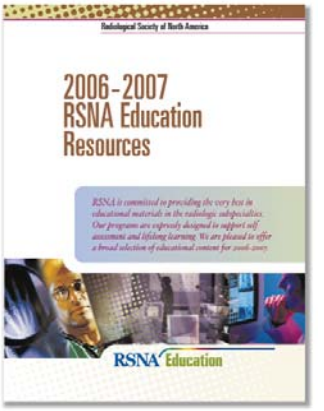
RSNA has hired Paul J. Chang, M.D., and Jeffrey R. Galvin, M.D., as consultants to work on the Radiology Sharable Content Online Presentation and Education (RadSCOPE) project.

Dr. Chang formerly was director of the Division of Radiology Informatics at the University of Pittsburgh Medical Center and a professor of radiology at the University of Pittsburgh School of Medicine. He is currently relocating to a new position at the University of Chicago. Dr. Galvin is a professor of radiology and medicine at the University of Maryland and chief of chest and mediastinal imaging at the Armed Forces Institute of Pathology.

A project of the RSNA Radiology Informatics Committee, RadSCOPE enables efficient and scalable online authoring, storage, distribution and management of scientific information and educational resources in radiology. With a goal of making information and resources universally accessible, comprehensible, searchable and describable, the RadSCOPE infrastructure uses the Ontology Web Language (OWL) and is compliant with the Sharable Content Object Reference Model (SCORM).

Dr. Galvin will focus on the distance learning and content components of RadSCOPE, while Dr. Chang will develop the infrastructure.

Education Brochure Coming with *RadioGraphics*



A brochure highlighting the latest RSNA Education Center products, as well as some popular favorites, will be included in the September-October issue of *RadioGraphics.*

The brochure includes information about 2006 syllabi and CME programs available in print, online or on CD-ROM. Content codes included with product descriptions make it easy to identify subspecialty areas of interest.

RSNA members receive discounts on the Society's educational products. A full list of RSNA educational products is available online at *RSNA.org/education/catalog.*

If you have a colleague who would like to become an RSNA member, you can download an application at *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.*

Program and Grant Announcements

Continued from page 16

NIH Grantsmanship Workshop

November 25, McCormick Place, Chicago

HELD the day before the RSNA annual meeting begins, this 4-hour workshop covers grant writing techniques from concept development to submission and the NIH review process. Attendees will also experience a mock study section. Lee Rosen, Ph.D., from the NIH Center for Scientific Review, will facilitate and speakers will address basic applications, K grants and the NIH grant application experience. Registration is available by visiting *rsna2006.rsna.org* and clicking on Registration, Housing & Courses.

News about RSNA 2006

Registration Materials

NORTH AMERICANS who register for RSNA 2006 by **November 10** will have their registration materials mailed to them in advance of the annual meeting. International attendees will have their materials mailed to them if their registration forms are received by **October 27.** For registrations after October 27, international documents will be available for pick-up onsite at Desk A, Professional Registration, located in the Lakeside Center Ballroom.

Materials enclosed in the registration wallet include:

- Name badge and holder
- Attendance vouchers
- Refresher course and tour tickets (if requested)
- Coupon book
- ExpoCard™
- *Pocket Guide*
- Airport shuttle and limousine discount coupon
- Free pass for the Metra Train System
- What's New at RSNA 2006

Important Dates for RSNA 2006

Oct. 27	International deadline to have full-conference badge and tickets mailed in advance
Nov. 6	Final housing reservation deadline
Nov. 10	Advance registration deadline
Nov. 26–Dec. 1	RSNA 92nd Scientific Assembly and Annual Meeting

How to Register

There are four ways to register for RSNA 2006:

❶ Internet
Go to *RSNA.org/register*. Use your member ID# from the *RSNA News* label or meeting flyer sent to you. If you have questions, send an e-mail to *rsna@itsmeetings.com.*

Fastest way to register!

❷ Fax (24 hours)
1-800-521-6017
1-847-940-2386

❸ Telephone (Mon.–Fri., 8:00 a.m.–5:00 p.m. CT)
1-800-650-7018
1-847-940-2155

❹ Mail
ITS/RSNA 2006
108 Wilmot Rd.,
Suite 400
Deerfield, IL 60015-5124
USA

Registration Fees

BY 11/10	ONSITE	
$0	$100	RSNA Member, AAPM Member
$0	$0	Member Presenter
$0	$0	RSNA Member-in-Training, RSNA Student Member and Technical Student
$0	$0	Non-Member Presenter
$120	$220	Non-Member Resident/Trainee
$120	$220	Radiology Support Personnel
$570	$670	Non-Member Radiologist, Physicist or Physician
$570	$670	Hospital Executive, Research and Development Personnel, Healthcare Consultant, Industry Personnel
$300	$300	One-day registration to view only the Technical Exhibits area

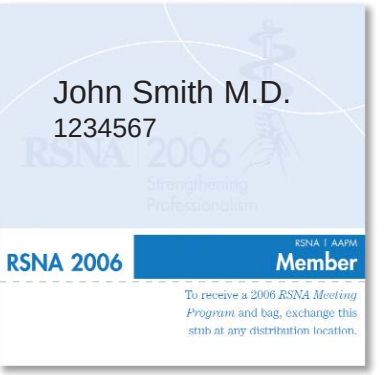
Enroll for Courses

Seats are still available in many of the courses at RSNA 2006. Online registration occurs instantly, while faxed or mailed registration forms are processed in the order of receipt. The Advance Registration, Housing and Course Enrollment brochure and online registration is available at *rsna2006.rsna.org.* You must be registered for RSNA 2006 in order to enroll in courses.

Earn up to 85 *AMA PRA Category 1 Credits™* at RSNA 2006

Name Badge

A name badge is required to attend RSNA courses or events or to enter exhibit halls. A bar code on the name badge may be scanned upon entry and exit of the exhibit halls. Data accumulated from the scanning process will be used only by RSNA to determine exhibit hall activity.



A complimentary copy of the *RSNA Meeting Program* and official meeting bag can be obtained by presenting a blue (shown,bottom), red or green badge ticket stub at the distribution centers located in the Grand Concourse or Lakeside Center, Level 3.

■ For more information about registration at RSNA 2006, visit *RSNA.org,* e-mail *reginfo@rsna.org,* or call 1-800-381-6660 x7862.

World's Largest Medical Exhibition Gets Even Bigger

As of late July, nearly 100 companies have scheduled to make their annual meeting debut at RSNA 2006, as the largest gathering of medical imaging equipment and services in the world grows ever larger. With 670 companies already confirmed to exhibit this year, RSNA is on pace to surpass last year's record setting 718 technical exhibits.

New exhibitors as of July 24, listed below, join veteran companies in showcasing the technologies that help drive radiology innovation. A complete and up-to-date list of exhibitors, including contact information, product categories and booth assignments, can be found at *RSNA.org/showcase*. Floor plans of the exhibition halls also are available.

Annual Meeting Fact

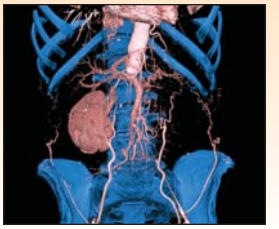
■ Since 1985, RSNA has held its annual meeting at McCormick Place in Chicago. RSNA 1984 was held in Washington.

First-Time Exhibitors at RSNA 2006

ACP Composites
Acronova Technology, Inc.
ADAS
Advent Associates, Inc.
Alan Penn & Assoc, Inc.
Ansul Incorporated
Armor USA Inc.
ART Advanced Research Technologies
Ascension Technology Corporation
ASI
AT&T
Atlantic Scientific Corp.
AtStaff
Aware, Inc.
Axis Group, The
BioSpace med
Blue Ridge Medical Imaging, Inc.
Calgary Scientific Medical Group Inc.
C & G Technologies, Inc.
Carefx Corp.
CHILI GmbH (Digital Radiology)
CHI LIN Technology Co., Ltd.
ChiRhoClin, Inc.
Choongwae Medical Corp.
CIMS - Clinical Image Management Systems, LLC
Clickview Corp.
CMEbank
CMW
Cortechs Labs, Inc.
CPN Power Consulting & Solutions
Dicom Grid
Dicom Solutions, Inc.
Double Black Imaging
Eigen
Epic Teleradiology
Fenics
GJC Associates, Inc.
Grundig Business Systems GmbH
Gtech Information Systems, Inc.
GUDI (Global Ultrasound Devices Inc. Korea)
HBE Medical Buildings
Healthlinx Executive Search, Inc.
Heart Imaging Technologies
IES Patient Comfort Systems, Inc.
Image Capture
InfoLogix Inc.
Intrasense
ISE, Inc.
James L. Davis, Inc.
Koning Corporation
Korean Pavilion
Kyphon Inc.
Laurane Medical
MatrixView Ltd.
Mauna Kea Technologies
MedBuild
MedCaster Inc.
Medical Engineering & Technology
Meditronics Asia Pvt. Ltd.
MedSurge Advances
MedX
MIPM Mammendorfer Institute for Physik und Medizin
Mitaya Manufacturing Co., Ltd.
NCI Cancer Imaging Program
NeoTool
NightForce Radiology
NightRays
Nufinity Solutions
Online Radiology Medical Group
OpSens Fiber Optic Sensors, Inc.
OrthoView
QuadraMed
Radiology OneSource
Regional Consulting
Repligen Corp.
RGB Spectrum
Riteview Corp.
Ryals & Associates
SunGard Availability Services
Surgimed Solutions, LLC
Surpassing Technologies, Inc.
Teleradiology America
UMG Medical Imaging
US Mammography
US Teleradiology
VEEARC
Vocada, Inc.
Wisconsin Radiological Services
X R Medical
Xoran Technologies, Inc.

Register Now for RSNA Highlights

Register for RSNA's new educational conference, RSNA Highlights: Clinical Issues for 2007, by visiting *RSNA.org/highlightsconference*. The conference will be held February 26–28, 2007, at the J.W. Marriott Desert Ridge Resort & Spa in Phoenix. Also available online is course content information and a form to request a conference brochure.

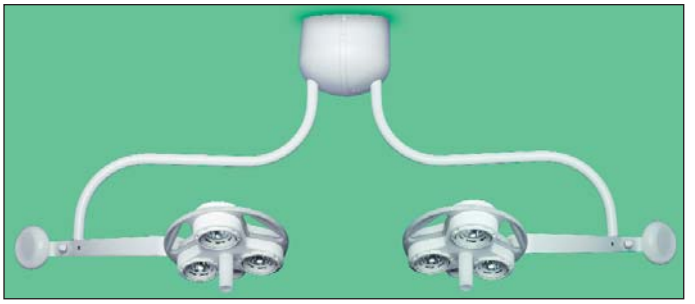


Product News

NEW PRODUCT

Triple-Head Cardiac Camera

DIGIRAD Corporation *(www.digirad.com)* has released the Cardius® 3 XPO, a triple-head cardiac gamma camera designed exclusively for nuclear cardiac imaging. The compact system introduces a new design that allows imaging of patients up to 500 pounds and offers up to 38 percent faster image acquisition times over dual head systems. The system, which studies showed is capable of 7 to 10 minute acquisition, features a cardiocentric technique to keep the heart centered in field of view.



NEW PRODUCT

MRI Surgical Light

Sunnex *(www.sunnexmedical.com)* has introduced the Celestial Star™ MRI Surgical Light. The light features a drift-free balance arm design, unlimited positioning and flexibility around the bore and a 114-inch vertical and horizontal reach for head-to-toe coverage. The lights deliver up to 6,000 footcandles/64,500 lux with three 35W long life halogen bulbs. The Celestial Star is available in a single or dual ceiling lamp configuration or as a mobile unit.

FDA CLEARANCE

Digital Mammography Solution

THE Fuji Computed Radiography for Mammography (FCR*m*) from FUJIFILM Medical Systems USA *(www.fujimed.com)* has received FDA approval. The FCR*m* features compact digital readers that provide 18x24 cm and 24x30 cm fields-of-view and work with a facility's existing mammography equipment. Patented dual-side reading technology is another feature of FCR*m*.

NEW PRODUCT

Dental and Orthopedic Imager

Varian Medical Systems, Inc. *(www.varian.com)* has introduced the PaxScan® 1313 digital x-ray image detector. Optimized for use in dental and orthopedic imaging, the PaxScan 1313 has a 13x13 cm imaging area and produces up to 30 images per second. According to the company, PaxScan has the highest contrast resolution available for a panel of its size, using 14-bit depth analog-to-digital converter to generate images of up to 16,000 shades of gray. The panel also has a cesium iodide (CsI) scintillator, optimized for scanning at 80-90 kilovolts to minimize patient dose.

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

RSNA | 2006
Strengthening Professionalism

See what's new at RSNA 2006

new! Case-based review course in MR

new! 2.5-day Interventional Oncology Series

new! 2.5-day Pediatric Radiology Series

new! Half-day Emergency Radiology Series

new! Radiologist Assistants Program

new! Molecular Imaging Zone

Visit *RSNA2006.rsna.org*

Featuring...

- Digital Mammography Training and Self-Assessment Workshops
- Self-assessment Modules (SAMs) in a variety of subspecialty and general content areas
- Two informative financial seminars on asset protection and effective investment strategies
- Categorical Course in Diagnostic Radiology: Genitourinary Radiology
- Categorical Course in Diagnostic Radiology Physics: From Invisible to the Visible—The Science and Practice of X-Ray Imaging and Radiation Dose Optimization

Radiological Society of North America

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

RSNA.org

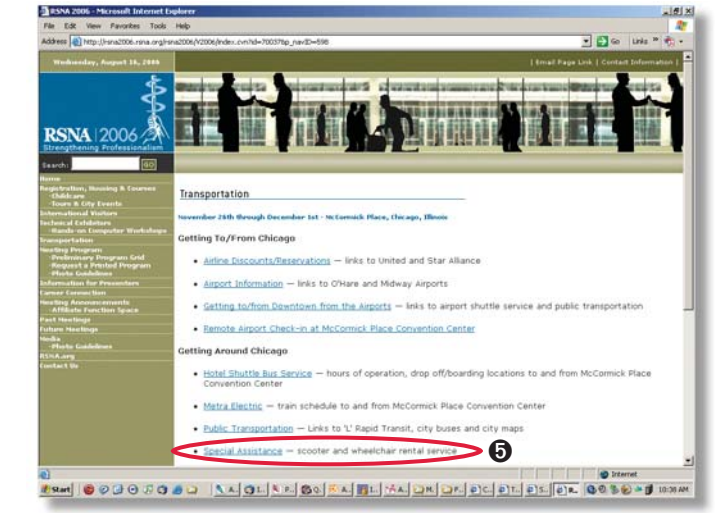
RSNA 2006 Meeting Site

MAKE all your preparations for the annual meeting online by visiting the RSNA 2006 home page at *rsna2006.rsna.org*.

To register for the meeting, make a hotel reservation and enroll in courses, go to the home page and click on Registration, Housing & Courses ❶ then select RSNA Members & Presenters ❷, AAPM Members or non-members. Additional information for attendees from other countries, including how to obtain a visa, is available by clicking on International Visitors ❸ on the home page.

Arrange transportation to and from Chicago, as well as around the city, by selecting Transportation ❹ in the left-hand navigation bar on the home page. Information on scooter and wheelchair rentals is available by clicking Special Assistance ❺.

To schedule childcare services during RSNA 2006, click on Childcare ❻ in the left-hand navigation bar on the home page. For details on RSNA-sponsored Chicago sightseeing packages, including museum tours and theater performances, click on Tours & City Events ❼ in the navigation bar. Clicking on Welcome to Chicago Web site will take you to the Chicago Convention and Tourism Bureau, featuring maps and dining and shopping information.



Connections *Your online links to RSNA*

RSNA.org

***Radiology* Online**
RSNA.org/radiologyjnl

***Radiology* Manuscript Central**
RSNA.org/radiologyjnl/submit

***RadioGraphics* Online**
RSNA.org/radiographics

RSNA News
rsnanews.org

Education Portal
RSNA.org/education

RSNA CME Credit Repository
RSNA.org/cme

CME Gateway
CMEgateway.org

RSNA Medical Imaging Resource Center
RSNA.org/mirc

RSNA Career Connection
RSNA.org/career

***RadiologyInfo*™**
RSNA-ACR patient information Web site
RadiologyInfo.org

RSNA Press Releases
RSNA.org/media

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RSNA.org/memberservices

RSNA Research & Education Foundation
Make a Donation
RSNA.org/donate

R&E 25 Questions Forum
RSNA.org/25questions

Community of Science
RSNA.org/cos

Membership Applications
RSNA.org/mbrapp

RSNA Membership Directory
RSNA.org/directory

Register for RSNA 2006
RSNA.org/register

RSNA 2006
rsna2006.rsna.org

RSNA Highlights: Clinical Issues for 2007
RSNA.org/highlightsconference

CALENDAR

Medical Meetings
October 2006 – January 2007

SEPTEMBER 27–OCTOBER 1
American Society of Head and Neck Radiology (ASHNR), 40th Annual Meeting, Sheraton Wild Horse Pass Resort and Spa, Chandler, Ariz. • *www.ashnr.org*

SEPTEMBER 30–OCTOBER 4
European Association of Nuclear Medicine (EANM), 2006 Annual Congress, Megaron International Conference Center, Athens, Greece • *www.eanm.org*

OCTOBER 8–12
European Society for Therapeutic Radiology and Oncology (ESTRO), ESTRO25, Congress Center Leipzig, Germany • *www.estro.org*

OCTOBER 10–13
World of Health IT 2006 Conference and Exhibition, Geneva Palexpo • *www.worldofhealthit.org*

OCTOBER 12–14
Society of Chairmen of Academic Radiology Departments (SCARD), Fall Meeting, Stoweflake Conference Center and Resort, Stowe, Vermont • *www.scardonline.org*

OCTOBER 13–14
American Healthcare Radiology Administrators (AHRA), Imaging Center Administrators Conference, Wyndham Arlington DFW Airport, Texas • *www.ahraonline.org/ConfEd/ICA*

OCTOBER 20–22
Society of Radiologists in Ultrasound (SRU), Advances in Sonography: Annual Meeting and Postgraduate Course, The Argent Hotel, San Francisco • *www.sru.org*

OCTOBER 21–25
French Society of Radiology, Annual Meeting, CNIT–Paris La Défense • *www.sfrnet.org*

OCTOBER 22–25
Canadian Association of Radiologists (CAR), 69th Annual Scientific Meeting and first joint meeting with the French-Canadian Society of Radiology, Omni Hotel, Montreal • *www.car.ca*

OCTOBER 26–29
Royal Australian and New Zealand College of Radiologists (RANZCR), 57th Annual Scientific Meeting, Christchurch Convention Centre & Town Hall, New Zealand • *www.ranzcr.edu.au*

OCTOBER 29–NOVEMBER 4
Institute of Electrical and Electronics Engineers (IEEE), Nuclear Science Symposium and Medical Imaging Conference, Town and Country Resort & Convention Center, San Diego • *www.nss-mic.org/2006*

NOVEMBER 5–9
American Society for Therapeutic Radiology and Oncology (ASTRO), 48th Annual Meeting, Pennsylvania Convention Center, Philadelphia • *www.astro.org*

NOVEMBER 13–15
The International Atomic Energy Agency, International Conference on Quality Assurance and New Techniques in Radiation Medicine, Vienna, Austria • *www.iaea.org*

NOVEMBER 15–18
RANZCR, Radiation Oncology 2006, Singapore • *www.ranzcr.edu.au*

NOVEMBER 26–DECEMBER 1
RSNA 2006, 92nd Scientific Assembly and Annual Meeting, McCormick Place, Chicago • *rsna2006.rsna.org*

DECEMBER 20–21
Egyptian Society of Women's Imaging & Health Care (ESWIH), Second Annual Meeting, New Kasr el Einy Teaching Hospital and Four Seasons Hotel Garden City, Cairo, Egypt • *www.womensimaging.8m.com*

JANUARY 4–7, 2007
Indian Radiological & Imaging Association (IRIA), 60th Annual Congress, Renaissance Hotel & Convention Center Powai Lake, Mumbai, India • *www.iria2007.com*

JANUARY 16–17, 2007
Integrating the Healthcare Enterprise (IHE®), Connectathon and Conference 2007, Hyatt Regency Chicago—Wacker Drive • *www.ihe.net/events/connectathon07*

FEBRUARY 26–28, 2007
RSNA Highlights: Clinical Issues for 2007, J.W. Marriott Desert Ridge Resort & Spa, Phoenix, Ariz. • *RSNA.org/highlightsconference*

RSNA News

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