

# RSNA *News*



Image courtesy of Stephen Han, M.D.

## RSNA Scholar Wants to Change Prognosis for Aggressive Cancer

### Also Inside:

- Color Could Expand Radiography's Usefulness
- Radioimmunotherapy Faces Obstacles as Lymphoma Treatment
- Long-Term Efficacy of Uterine Fibroid Embolization Confirmed
- RSNA Goes Green
- Competitors Become Colleagues at Connectathon

Advance Registration for RSNA 2008  
Begins April 21

# RSNA *News*

**1 Announcements**

**2 People in the News**

**4 My Turn**

## Feature Articles

**5 Competitors Become Colleagues at Connectathon**

**6 Color Could Expand Radiography's Usefulness**

**8 Radioimmunotherapy Faces Obstacles as Lymphoma Treatment**

**10 Long-Term Efficacy of Uterine Fibroid Embolization Confirmed**

**12 RSNA Goes Green**

## Funding Radiology's Future<sup>®</sup>

**14 RSNA Scholar Wants to Change Prognosis for Aggressive Cancer**

**15 R&E Foundation Donors**

**17 Radiology in Public Focus**

**18 Journal Highlights**

**20 RSNA: Working for You**

**21 Program and Grant Announcements**

**22 Meeting Watch**

**23 Exhibitor News**

**24 Product News**

**25 RSNA.org**

## EDITOR

Bruce L. McClellan, M.D.

## DEPUTY EDITOR

David M. Hovsepian, M.D.

## CONTRIBUTING EDITOR

Robert E. Campbell, M.D.

## EXECUTIVE EDITOR

Natalie Olinger Boden

## MANAGING EDITOR

Lynn Tefft Hoff

## EDITORIAL ADVISORS

Dave Fellers, C.A.E.

*Executive Director*

Roberta E. Arnold, M.A., M.H.P.E.

*Assistant Executive Director*

*Publications and Communications*

## EDITORIAL BOARD

Bruce L. McClellan, M.D.

*Chair*

David M. Hovsepian, M.D.

*Vice-Chair*

Silvia D. Chang, M.D.

Colin P. Derdeyn, M.D.

Richard T. Hoppe, M.D.

Valerie P. Jackson, M.D.

Jonathan B. Kruskal, M.D., Ph.D.

Steven M. Larson, M.D.

Kerry M. Link, M.D.

Sarah S. Donaldson, M.D.

*Board Liaison*

## GRAPHIC DESIGNER

Adam Indyk

## COPYWRITER

Evonne Acevedo Johnson, M.F.A.

## CONTRIBUTING WRITERS

Arnold Q. Collins, M.A.

Locke Peterseim

Marilyn Idelman Soglin

Lydia Steck, M.S.

## 2008 RSNA BOARD OF DIRECTORS

Hedvig Hricak, M.D., Ph.D., Dr. h.c.

*Chairman*

Burton P. Drayer, M.D.

*Liaison for Annual Meeting and Technology*

George S. Bisset III, M.D.

*Liaison for Education*

Sarah S. Donaldson, M.D.

*Liaison for Publications and Communications*

N. Reed Dunnick, M.D.

*Liaison for Science*

Ronald L. Arenson, M.D.

*Liaison-designate for Annual Meeting and Technology*

Theresa C. McCloud, M.D.

*President*

Gary J. Becker, M.D.

*President-elect*

## RSNA News

April 2008 • Volume 18, Number 4

Published monthly by the Radiological Society of North America, Inc., 820 Jorie Blvd., Oak Brook, IL 60523-2251. Printed in the USA.

POSTMASTER: Send address correction "changes" to: *RSNA News*, 820 Jorie Blvd., Oak Brook, IL 60523-2251.

Nonmember subscription rate is \$20 per year; \$10 of active members' dues is allocated to a subscription of *RSNA News*.

Contents of *RSNA News* copyrighted ©2008 by the Radiological Society of North America, Inc.



## Letters to the Editor

E-mail: [rsnanews@rsna.org](mailto:rsnanews@rsna.org)

Fax: 1-630-571-7837

*RSNA News*

820 Jorie Blvd.

Oak Brook, IL 60523

## Subscriptions

Phone: 1-888-600-0064

1-630-590-7770

E-mail: [subscribe@rsna.org](mailto:subscribe@rsna.org)

## Reprints and Permissions

Phone: 1-630-571-7831

Fax: 1-630-590-7724

E-mail: [permissions@rsna.org](mailto:permissions@rsna.org)

## RSNA Membership

1-877-RSNA-MEM

## \$1.5 Million R&E Gift Honors Derek Harwood-Nash

A \$1.5 MILLION donation to the RSNA Research & Education (R&E) Foundation will endow a new Scholar Grant in memory of Derek Harwood-Nash, M.B., Ch.B., D.Sc. Paul E. Berger, M.D., said he made the donation to honor his cherished mentor and friend and to recognize the lasting contributions Dr. Harwood-Nash made to the study and practice of radiology.

Dr. Harwood-Nash founded pediatric neuroradiology and spent his life sharing his passion and expertise with radiologists around the world. In honor of his influence on the international radiologic community, the Derek Harwood-Nash Scholar Grant will focus on opportunities for international educators and investigators. "This will be the first Scholar Grant open to young academic radiologists outside North America," said Anne G. Osborn, M.D., chair of the RSNA R&E Foundation Board of Trustees. "Derek Harwood-

Nash's passion for his African homeland and his numerous friends and colleagues all over the world made him a roving ambassador for RSNA."

Dr. Berger, one of Dr. Harwood-Nash's training fellows at the Hospital for Sick Children in Toronto, said he is indebted to Dr. Harwood-Nash for guiding his way as a young radiologist. Now, Dr. Berger said he hopes that young radiologists throughout the world will have the opportunity to learn and make discoveries that will keep radiology at the forefront of medicine.

"Many radiologists talk about looking forward and giving back, but Dr. Berger has truly walked the walk," said Dr. Osborn. "Honoring those who have trained us, mentored us and helped us along the way—there couldn't be a



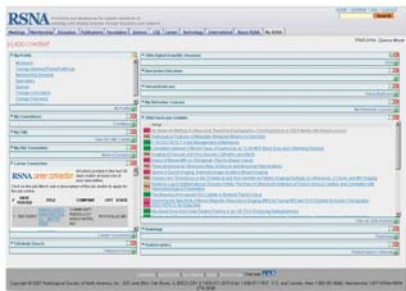
Paul E. Berger, M.D.

better way to give something back."

The donation is the largest individual gift and first individual grant endowment in the Foundation's 24-year history. Dr. Berger, CEO and chairman of the board of NightHawk Radiology Services, said he is pleased to be able to pay tribute to Dr. Harwood-Nash and

considers himself lucky to have prospered from radiology and knows that continued investment in the profession is critical for radiology's future.

With Dr. Berger's gift, the R&E Foundation's Silver Anniversary Campaign has reached \$11 million in contributions toward its goal of \$15 million to fund R&D for the future of radiology. For more information about Dr. Berger's gift and to follow the progress of the new grant, go to [RSNA.org/campaign](http://RSNA.org/campaign).



### My RSNA® Moves Out of Beta Stage

Developers of My RSNA®, the new customizable Web page offered to RSNA members on [RSNA.org](http://RSNA.org), have completed their work on the initial version and will upgrade the page this month. My RSNA is a collection of mini-applications, or applets, allowing users to personalize the page with the CME subjects, news, annual meeting information and other content most important to them. A feature on the upgraded My RSNA will appear in the May 2008 issue of *RSNA News*.

### Joint Commission Issues Alert on MR Accidents and Injuries

In a recent edition of its *Sentinel Event Alert*, The Joint Commission urged hospitals and ambulatory care centers to pay special attention to preventing accidents and injuries that can occur during MR imaging.

While most of the more than 10 million MR studies performed each year in the U.S. cause no harm, the U.S. Food and Drug Administration has received nearly 400 reports of MR-related accidents over the past decade. More than 70 percent of accidents were burns, while 10 percent of injuries occurred when metal objects such as ink pens, cleaning equipment and oxygen canisters were pulled into the mag-

netic field of the scanner.

Among the recommendations made by The Joint Commission to reduce risk of MR-related injuries are using trained screeners to double check patients for items such as metal objects, implanted or other devices, drug delivery patches and tattoos and using only fire extinguishers, oxygen tanks and other equipment that have been tested and approved for use during MR imaging. Physicians are also reminded to never run a cardio-pulmonary arrest code or resuscitate a patient in the MR room.

Past issues of *Sentinel Event Alert* can be found at [www.jointcommission.org](http://www.jointcommission.org).

#### MEDICAL IMAGING COMPANY NEWS

##### MEDRAD to Acquire Possis Medical

■ MEDRAD, of Warrendale, Pa., has announced it will acquire Possis Medical, of Minneapolis, for approximately \$361 million. MEDRAD is a provider of contrast injection systems used to diagnose cardiovascular and other diseases. Possis Medical is a provider of mechanical thrombectomy devices.

## AAPM Recommends CT Radiation Dose Reporting, Reduction

**T**HE American Association of Physicians in Medicine (AAPM) has issued a CT radiation dose management report outlining the latest in standardized dose reporting and the newest dose reduction technology, including features that automatically adjust radiation exposure according to each patient's size.



The report details the best ways to measure, manage and prescribe radiation doses and also provides an overview on optimizing modern CT scanners.

"Essentially, all modern CT systems can be equipped with automatic exposure control systems," said Cynthia McCollough, Ph.D., an associate professor of radiological physics at Mayo Clinic in Rochester, Minn.,

who chaired the AAPM Task Group that authored the report. "These tools help to ensure that no patient receives more radiation dose than they need. We believe that this report equips users to properly describe and manage CT dose levels."

The report can be downloaded at [www.aapm.org/pubs/reports/RPT\\_96.pdf](http://www.aapm.org/pubs/reports/RPT_96.pdf).

## Donations of Transducers Needed for Developing Countries

The Global Ultrasound Equipment Donation Foundation has received 50 Philips HDI5000 and 50 Siemens Acuson 128XP machines and needs donations of compatible transducers so that the machines may be sent to centers in developing countries.

Physicians who have excess transducers that fit the HDI5000 or 128XP are asked to donate them to the foundation. Donations are tax deductible and the foundation will assume shipping costs. To donate, contact Barry B. Goldberg, M.D., at [barry.goldberg@jefferson.edu](mailto:barry.goldberg@jefferson.edu) or 1-215-990-9003.

## Proposals Sought for Radiation Research Center

The National Space Biomedical Research Institute (NSBRI) is soliciting proposals for an NSBRI Center of Acute Radiation Research (CARR) as part of the NSBRI Radiation Effects Team and in support of NASA's Human Research Program and the Space Radiation Program Element.

The CARR will address acute radiation effects associated with solar particle

events, utilizing beams of protons and high-energy heavy ions delivered at the NASA Space Radiation Laboratory at Brookhaven National Laboratory in Upton, N.Y., and at Loma Linda University Medical Center Proton Treatment Center in Loma Linda, Calif.

The request for applications is available at [www.nsbri.org/Announcements/rfa08-02.html](http://www.nsbri.org/Announcements/rfa08-02.html). Proposals are due May 8.

## NPI Deadline is May 23

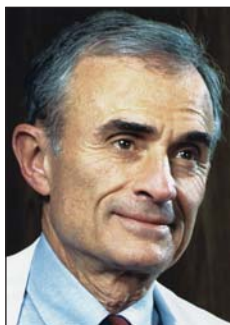
Starting May 23, Medicare and all other healthcare payers will require that physicians—including radiologists—use only a national provider identifier (NPI) on claims submitted electronically. The deadline doesn't apply to physicians who file only paper claims; however, physicians who send claims to a clearinghouse that files electronically on their behalf must comply. More information about the NPI is available at [www.cms.hhs.gov/NationalProviderStand/](http://www.cms.hhs.gov/NationalProviderStand/).

## PEOPLE IN THE NEWS

### AUR, APDR Announce Awards

**David C. Levin, M.D.**, and **Laurie Fajardo, M.D.**, received the gold medal of the Association of University Radiologists (AUR) during the AUR annual meeting last month. From 1986 to 2002, Dr. Levin served as chair of the Department of Radiology at Thomas Jefferson University in Philadelphia, where he continues to serve as a professor of radiology. Dr. Fajardo has been a professor and chair of the Department of Radiology at the University of Iowa in Iowa City since 2002.

**Philip O. Alderson, M.D.**, received the Association of Program Directors in Radiology (APDR) Achievement Award during the APDR annual meeting, held in conjunction with the AUR meeting. Dr. Alderson recently became dean of the Saint Louis University School of Medicine after serving as chair of the Department of Radiology at Columbia University since 1988. Dr. Alderson is also president of the American Board of Radiology and chair of the RSNA Public Information Committee.



David C. Levin, M.D.



Laurie Fajardo, M.D.



Philip O. Alderson, M.D.

## Jost is ESR Honorary Member

2007 RSNA President **R. Gilbert Jost, M.D.**, was awarded honorary membership in the European Society of Radiology (ESR) during the European Congress of Radiology (ECR) last month. Recognized globally for using information technology to improve diagnostic radiology practice, Dr. Jost is the Elizabeth Mallinckrodt Professor of Radiology, chair of the Department of Radiology and director of the Mallinckrodt Institute of Radiology at Washington University in St. Louis. He is also radiologist-in-chief at Barnes-Jewish Hospital in St. Louis.

Also awarded honorary membership in ESR were **Frederick S. Keller, M.D.**, of Portland, Ore., and **Lizbeth M. Kenny, M.D.**, of Brisbane, Australia. Dr. Keller is director of the Dotter Interventional Institute of the Oregon Health and Science University (OHSU) as well as the Cook Professor of Interventional Therapy, medical director of the Department of Interventional Radiology, a professor of surgery and chair of the Department of Diagnostic Radiology at OHSU. Dr. Kenny is director of cancer services for the Central Area Health Service in Queensland, Australia, and served as president of the Royal Australian and New Zealand College of Radiologists from 2005 to 2007. She is a member of the RSNA International Advisory Committee.

**Nicholas Gourtsoyiannis, M.D.**, of Iraklion, Greece, received the ECR gold medal. A professor and chair in the Department of Radiology at the University of Crete, Dr. Gourtsoyiannis was the first president of the ESR.

ECR bestowed its Lifetime Achievement Award on **Albert L. Baert, M.D., Ph.D.**, of Leuven, Belgium. Dr. Baert is a professor emeritus with special assignment at Leuven University and served as editor-in-chief of *European Radiology* from 1995 to 2007.



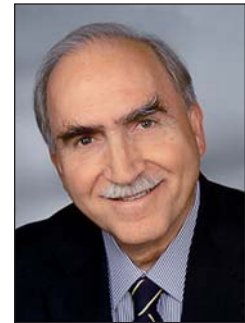
R. Gilbert Jost, M.D., (center) accepted ECR honorary membership from ECR 2008 President Maximilian F. Reiser, M.D. (left), and European Society of Radiology President Andy Adam, M.D.



Frederick S. Keller, M.D.



Lizbeth M. Kenny, M.D.



Nicholas Gourtsoyiannis, M.D.

## AIUM Bestows Honors

**Beryl R. Benacerraf, M.D.**, known for conducting the original research linking nuchal thickening to an increased risk for Down syndrome and developing the genetic sonogram, has received the Joseph H. Holmes Clinical Pioneer award of the American Institute of Ultrasound in Medicine (AIUM).

Dr. Benacerraf received the award during the AIUM annual meeting last month in San Diego. She is a clinical professor of obstetrics, gynecology, reproductive biology and radiology at Harvard Medical School and medical director and president of Diagnostic Ultrasound Associates, both in Boston. She is also editor-in-chief of the *Journal of Ultrasound in Medicine*.

**Albert Goldstein, Ph.D.**, an associate professor of radiology at Wayne State University in Detroit, received the 2008 Holmes Basic Science Pioneer Award. The William J. Fry Memorial Lecture Award went to **Peter Burns, Ph.D.**, professor and chair of medical physics and professor of radiology at the University



Beryl R. Benacerraf, M.D.



Albert Goldstein, Ph.D.



Peter Burns, Ph.D.

of Toronto and senior scientist at Sunnybrook Health Sciences Centre in Toronto.

**Karen Ophir, B.S., R.D.M.S.**, of M.D. Anderson Cancer Center in Houston, received the 2008 Distinguished Sonographer Award.

IN MEMORIAM:

**Samuel J. Dwyer III, Ph.D.**

Samuel J. Dwyer III, Ph.D., of Charlottesville, Va., known to many as the father of picture archiving and communication systems (PACS), died Feb. 5 at the age of 75.

Most recently serving as a professor of radiology at the University of Virginia Health Sciences System, Dr. Dwyer was previously chief of the Division of Medical Imaging in the School of Medicine at the University of California, Los Angeles and also served as director of diagnostic imaging and radiological sciences at the University of Kansas College of Health Sciences and Hospital. He received his doctorate in

electrical engineering, specializing in systems and signal processing, from the University of Texas at Austin.

Dr. Dwyer's research was funded by the National Cancer Institute, Public Health Service, NASA and the National Science Foundation. He was an associate editor of the *Journal of Digital Imaging*. He is remembered by the Society for Imaging Informatics in Medicine: "Dr. Dwyer identified, measured and quantified issues that no one else thought about. His early contributions to digital medical imaging are still a part of the curriculum for new students in the field."



Samuel J. Dwyer III, Ph.D.



Send news about yourself, a colleague or your department to [rsnanews@rsna.org](mailto: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.

MY TURN

**When Quality and Safety are the "Why," Informatics is the "How"**

IT HAS BEEN SAID that quality is the next disruptive technology in radiology. Actually, it is the triad of quality, safety and informatics that has already begun to transform our specialty. At RSNA 2007, radiologists from around the world—academicians and private practitioners—shared how interactions among radiology staff, physicians, patients and payers are improving, facilitated by robust informatics systems.

Old workflow and process paradigms become obsolete when new technologies and functionalities are introduced, outdating us as quickly as Alexander Graham Bell would be if handed an iPhone™. The positive side of this upheaval is the tremendous opportunity to add greater value to the services we deliver, foremost to ensure safe, high-quality patient care, but also to keep radiology from becoming a commodity outsourced to competing

*My Turn*  
**ONE RADIOLOGIST'S VIEW**

fields and distant countries.

The radiology departments that are leading the way are filmless, paperless and committed to the notion that quality and safety make good business sense. They have earmarked significant resources for radiology informatics to improve order entry, record-keeping and online access to information; facilitate gathering and collating myriad data points and analyze and respond to emerging patterns and trends. These farsighted departments are better able to face the burdensome regulatory environment and will be more adaptable to future challenges.

Research activities, from the abstract and computational to the translation of theory into clinical practice, are enriched by informatics. An informatics infrastructure also bolsters



David M. Hovsepian, M.D.

a robust quality and safety program, which in turn can provide material for vitally needed clinical research in this area.

Imaging holds the keys to diagnosis of disease, which puts radiology squarely in the spotlight of translational research for years to come. I am among those who predict the

future of medicine will be personalized and molecular, with radiologists leading the advance. The healthiest radiology departments will be those that recognize the powerful link between quality, safety and informatics.

*David M. Hovsepian, M.D., is a professor of radiology and chief quality and safety officer for the Department of Radiology at Stanford University in California. Dr. Hovsepian serves as deputy editor of RSNA News and vice-chair of the RSNA News Editorial Board. Among the many other RSNA committees on which Dr. Hovsepian serves is the Continuous Quality Improvement Initiative (CQI).*

# Competitors Become Colleagues at Connectathon

**M**ORE THAN 350 product developers from approximately 70 healthcare information technology companies gathered for this year's Integrating the Healthcare Enterprise (IHE®) North American Connectathon, held Jan. 28–Feb. 1 at the Hyatt Regency Chicago.

The event gives companies a unique opportunity to test their software and other tools and make adjustments to products—often on the spot—to ensure compliance with IHE-endorsed standards. Nearly 140 systems were tested at this year's event.

“These folks compete voraciously out in the marketplace, but in here, they work together under the context of interoperability,” said Michael Nusbaum, M.H.S.A., a healthcare IT consultant who led tours of the Connectathon.

IHE aims to standardize and optimize the way various healthcare information systems share information, enabling the goal of a comprehensive electronic health record (EHR). David S. Mendelson, M.D., chair of the IHE subcommittee of the RSNA Informatics Committee, likens the desired outcome to the current state of personal electronic banking. “We want to be able to walk up to any PC in the world with an identifier and a password and access our medical account and information contained within,” he said.

A daylong educational conference, offering an overview of the initiative from IHE leaders and stakeholders as well as guided tours, drew an additional 150 attendees from provider organizations, regulatory agencies and medical IT vendors. Presenters detailed successful IHE implementation and offered perspectives on acquiring and marketing IHE-compliant products.



Nearly 140 healthcare information systems from about 70 companies were tested at this year's Integrating the Healthcare Enterprise (IHE®) Connectathon, held Jan. 28–Feb. 1 in Chicago. In its 11th year, the Connectathon gives companies a unique opportunity to test their software and other tools and make adjustments to products—often on the spot—to ensure compliance with IHE-endorsed standards.

IHE has grown continuously since it was established in 1998 by RSNA and the Healthcare Information and Management Systems Society (HIMSS). Professional societies, IT vendors, provider organizations, universities, standards groups, government agencies and other stakeholders are invited to join IHE and influence its progress in North America and across the world. This year IHE International has received and approved membership applications from more than 100 interested organizations.

Recognizing that the healthcare industry is moving toward universal electronic health records through initiatives like IHE, some payors are offering financial incentives like medical liability discounts to encourage providers to adopt integrated systems. This year, the Centers for Medicare and Medicaid Services (CMS) will begin recruiting 1,200 small- to mid-sized physician practices for a five-year program that awards bonuses for using an approved electronic medical record



system and for performing well using designated clinical quality measures.

Keith Bailey, a software developer for Carestream Health who participated in this year's Connectathon, said the event “combines the best of cooperation and competitive free enterprise.”

Working through bugs is much faster and easier at the Connectathon than in an independent setting, added Kevin O'Donnell of Toshiba Medical Systems. “I've seen situations where, in the space of 30 minutes, a developer has found a bug and recompiled and rewritten the code,” he said.

IHE is recognized by organizations such as the Health Information Technology Standards Panel (HITSP) as a critical enabler of EHR compatibility. Vendors who successfully implement and test IHE integration profiles can indicate their compliance in a product description called an integration statement.

For more information about IHE, visit [www.ihe.net](http://www.ihe.net). □

# “Color” Could Expand Radiography’s Usefulness

**R**ESearchers in the U.K. report that they are on their way to creating an X-ray scanner that gives a chemical analysis of its target.

Bob Cernik, Ph.D., a professor of synchrotron radiation and materials science at the University of Manchester, U.K., has worked with colleagues Kern Hauw Khor, Ph.D., and Conny Hansson, B.Sc., to develop a prototype “color” X-ray scanner that uses additional wavelengths of light to detect the object’s chemical structure. The technique is called tomographic energy dispersive diffraction imaging (TEDDI).

X-ray beams produce wavelengths along the whole electromagnetic spectrum of frequencies but most detectors are unable to read differences between the wavelengths. “In conventional black and white X-ray scanning, that extra information is thrown away because you don’t have an energy-sensitive detector that’s able to distinguish those different colors,” said Dr. Cernik.

Using advanced detectors and collimators created at the University of Cambridge, Rutherford Appleton Laboratory and Daresbury Laboratory, the Manchester team has built a 16 x 16 pixel array of collimating tubes and a pixelated, energy-sensitive detector with a tungsten filter. The TEDDI method then records the X-ray diffraction pattern as wavelengths and collects fluorescence information from the scattered spectra—information that all goes into identifying the scanned material.

“When the X-ray beam with all those different wavelengths hits the



**Bob Cernik, Ph.D.**  
University of Manchester

object, you can look at the scattered light, which contains characteristic fingerprints of the material that gave rise to the scattering,” said Dr. Cernik. “Not only can you see the outline of a bone or something suspicious in a suitcase,

*Not only can you see the outline of a bone ... you can actually tell, from the scattering pattern on the color X-rays, what exactly gave rise to the scattering.*

**Bob Cernik, Ph.D.**

you can actually tell, from the scattering pattern on the color X-rays, what exactly gave rise to the scattering. If you’re looking at normal tissue or cancer tissue, they have different types of scattering patterns—they each have a very characteristic fingerprint.”

The idea of bringing color to radiology is not new, as scientists have long acknowledged that the human eye is capable of distinguishing many more shades of color than shades of grey.

## Building Detectors a Major Challenge

Dr. Cernik has worked intermittently on the color X-ray scanner for about



**Christopher Hall, D.Phil., D.Sc.**  
University of Edinburgh

five years, beginning with just a single beam, one detector and one collimator. The scanning process “took forever,” lasting 16 to 20 hours, said Dr. Cernik. “We had to find a way to bring this into a useable timescale,” he said. “The only way was to have thousands of detectors, which were bulky, expensive and had to be liquid-nitrogen cooled. Building the detectors was one of the major challenges.”

The solution involved using a silicon surface that counts the photons, but building such parallel energy-sensitive, pixelated detectors meant shrinking conventional electronics down to one pixel of an integrated circuit.

At the same time, Dr. Cernik attempted to build a multiple collimator array. Again, the trick was the size of the collimator holes. “They have to be 6,000 times deeper than wide, so it was a major engineering challenge,” said Dr. Cernik. After two and a half years of trial and error, using laser drilling techniques pioneered at Cambridge, the Manchester team had their 16 x 16 col-



limator and detector system.

The team demonstrated the prototype's effectiveness by imaging aluminum samples and testing welds for the aerospace industry. The team has also shown that diffraction patterns can be obtained from polymer materials and has worked with biological samples such as deer antlers.

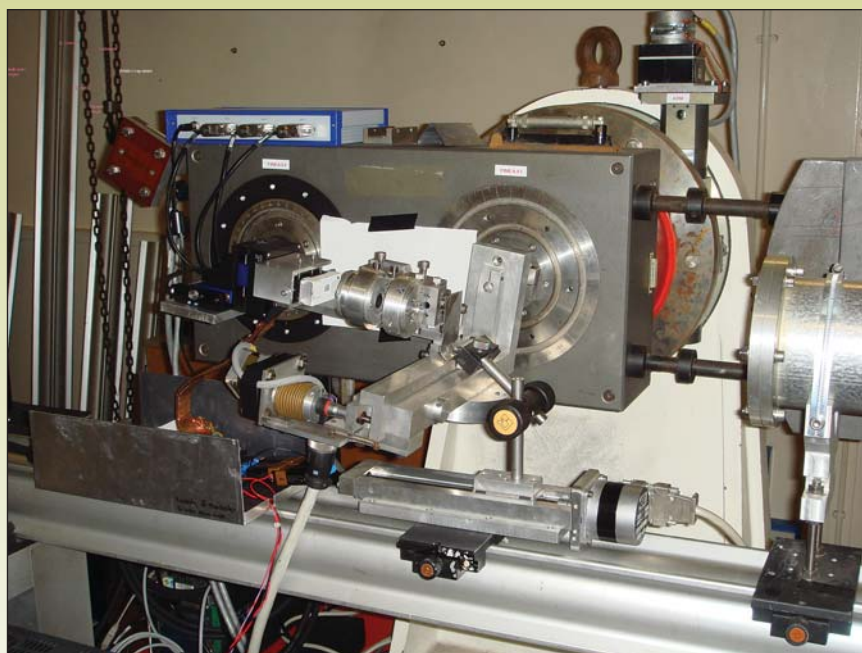
"The problem with all of those things is that silicon is quite a light atom—it doesn't have that many electrons and is therefore not very good at capturing high-energy X-rays," said Dr. Cernik. Since only high-energy X-rays come through a thick object, prototype scanning has been restricted to light atom samples and very thin sections. "This might be the case with biopsy samples," said Dr. Cernik.

"We have to replace the silicon and we're working with a number of materials," Dr. Cernik continued. "The favorite of the moment is cadmium zinc telluride and we're testing some of these detectors with the prototype." The next generation device will also have an 80 x 80 detector. "I anticipate that two years from now we will have the first high-energy prototype that can scan large samples," said Dr. Cernik.

Christopher Hall, D.Phil., D.Sc., a professor of materials and director of research at the School of Engineering and Electronics at the University of Edinburgh, previously conducted research with the single-collimator TEDDI process. "What Dr. Cernik has done is demonstrate a method for making this more practical," said Dr. Hall. "It is a major breakthrough and extremely clever what they've done, because it depends on simultaneous developments in instrumentation and hardware—it's a long, long way from where we were 10 years ago. It's a real tour de force as far as instrumentation development is concerned."

#### **Clinical Uses Envisioned by Some**

With Dr. Cernik and colleagues building larger and more powerful and practical color X-ray scanners, questions



Bob Cernik, Ph.D., and colleagues at the University of Manchester use this experimental setup as they work to develop a "color" X-ray scanner that uses additional wavelengths of light to detect the object's chemical structure. The technique is called tomographic energy dispersive diffraction imaging (TEDDI).

Photo courtesy of Bob Cernik, Ph.D.

arise as to how they might be used, particularly in medicine.

Dr. Cernik said he is hopeful that color X-rays will eventually be used to not only depict human anatomy but also suggest diagnoses. "This device could tell you the exact tissue type at each point in the image," he said. "Certain cancer types, or the difference between normal or diseased bone, could be recognized. The scanner could be trained to look for certain types of pathological tissue."

Dr. Hall was a little more skeptical about the medical potential of TEDDI. "What we're getting is information that comes from crystalline X-ray diffraction," he said. "In my view, this technique is beautifully suited to investigating complex heterogeneous crystalline materials—engineering components, welds, archeological materials, ceramics, things of that kind." Medical X-rays, however, are used mainly to look at non-crystalline soft tissue, he said. The lack of crystalline scattering, he said, would reduce the additional information.

Crystalline scattering is absent in soft organic tissue, said Dr. Cernik, adding, "I'm not quite so pessimistic about identifying soft tissue types." Other researchers have described calcifications and tissue differences using energy dispersive diffraction, he said. "I would say that it is more difficult than examining crystalline systems, but not impossible. We will need detectors with a higher efficiency than we currently have, if we are going to get the signal-to-noise to acceptable levels."

In the meanwhile, color X-rays may be used to scan engineering welds and analyze geological samples. They may also have a role in archeology, which yields objects that can't be dissected due to their value. "To be able to put an object like that into an instrument like this and get new information about its detailed chemical or mineralogical composition is very interesting," said Dr. Hall. □

# Radioimmunotherapy Faces Obstacles as Lymphoma Treatment

**P**ROponents of radioimmunotherapy (RIT) for people with non-Hodgkin lymphoma (NHL) say FDA restrictions, differences among medical subspecialties, professional conservatism and CMS reimbursement confusion continue to limit widespread use of the therapy.

About 60,000 Americans are diagnosed with NHL and 20,000 die from it each year. Fewer than 2,000 annually receive radioimmunotherapy.

The first FDA-approved RIT agent was yttrium 90-ibritumomab tiuxetan (Zevalin<sup>®</sup>), originally developed by Biogen Idec and now licensed to Cell Therapeutics. Subsequently approved iodine 131-tositumomab (Bexxar<sup>®</sup>), came from the Corixa Corporation, which is now owned by GlaxoSmithKline. These agents marshal radiolabeled antibodies that seek and bind to CD 20 receptors on B cell lymphoma, killing the malignant cells.

Some practitioners believe RIT agents may result in less durable outcomes than chemotherapy, unconjugated antibody or other treatments. However, supporters assert that, in addition to being useful for treating patients with recurrent disease, RIT agents have enormous promise if approved for upfront treatment, when they can best shut down the disease in patients who may be more responsive to therapy.

FDA approval currently restricts usage to more seriously compromised patients with relapsed or refractory follicular B-cell NHL, for whom extensive chemotherapy and non-radioactive antibody treatments have already failed.

The new therapy is "quite well tolerated, compared to most chemo-



**Roger Macklis, M.D.**  
Cleveland Clinic



**Steven Larson, M.D.**  
Memorial Sloan-Kettering  
Cancer Center



**Betsy deParry**  
Ann Arbor, Mich.

therapy," said Susan Knox, M.D., Ph.D., an associate professor of radiation oncology at Stanford University in California, which treats many patients annually. "Among patients considered incurable, we have had relatively high and durable response rates."

## Lymphoma Survivor is Advocate

Betsy de Parry, of Ann Arbor, Mich., was an early recipient of Zevalin, approved by FDA in 2002, the same year de Parry was diagnosed with Stage IV NHL at age 52. The marketing executive underwent cyclophosphamide, vincristine and prednisone (CVP) and cyclophosphamide, doxorubicin, vincristine and prednisolone plus rituximab (R-CHOP) chemotherapy but the disease was refractory to both.

"Chemotherapy just wasn't working for me and my options were fairly limited," said de Parry. The cost of treatment and side effects to that point was \$162,410. In September 2002, she received Zevalin, a onetime regimen costing \$36,930. Five and a half years later, "I'm alive," she said. "I've never had a recurrence, never been retreated.

There's no evidence of disease in my body."

Though not all people with NHL are found suitable for RIT, researchers report response rates of up to 95 percent, tumor regression within 2 weeks and 5-year progression-free survival rates of 77 percent for Bexxar patients with a complete response. Physicians and pharmaceutical company representatives said they are disappointed that what seemed like a surefire, life-extending treatment has been used so sparingly.

Marketing of RIT agents, said Dr. Knox, originally focused on medical oncologists as gatekeepers, rather than radiation oncologists and nuclear medicine physicians. "As a field, we became involved later in the process and that was unfortunate," she said.

"There's an absolute need to have very, very strong evidence before a conventional treatment like chemotherapy is set aside for a new treatment like radiolabeled antibodies," said Steven Larson, M.D., chief of the Nuclear Medicine Service at New York's Memorial Sloan-Kettering Cancer Center. Dr.

Larson serves on the *RSNA News* Editorial Board. "An inherent conservatism and economics run in the same direction." Therefore, what he describes as a "very effective immunologic therapy and targeted radiotherapy all in one go," continues, but as a last resort.

To receive RIT, patients must seek a radiation oncologist or nuclear medicine physician and leave their medical oncologists, who have little incentive to refer them. Roger Macklis, M.D., a longtime radioimmunotherapy investigator and former chair of the Department of Radiation Oncology at the Cleveland Clinic, said Zevalin and Bexxar represent a clear therapeutic advance. "Though expected to go flying off the shelves, they didn't," he said. An entirely new multidisciplinary team and delivery system is needed, he said, and most medical oncologists, not licensed to administer it, haven't seen curative or even long-term complete remissions that merit the loss of income and control.

### Data Expected to Drive Changes

Dr. Larson said he believes that once the data are clear, interspecialty coordination will ramp up because "most doctors would be extremely reluctant to treat their patients with something not absolutely the best." Clinicians are hopeful that Phase III, multicenter trials under way may further validate and free these radiolabeled antibodies for earlier, frontline treatment.

Oliver Press, M.D., Ph.D., a medical oncologist at the University of Washington in Seattle, is coordinating major Bexxar trials at 300-plus cancer centers involving nearly 550 patients. "These are frontline trials in newly diagnosed patients, who receive both chemotherapy and radiolabeled antibodies, so it's a new use," said Dr. Press, who also chairs the Lymphoma Research Foundation's Scientific Advisory Board. "It's already been pretty clearly demonstrated that RIT is helpful in patients with relapsed lymphoma. If there's a dramatic improvement on this

---

*There's an absolute need to have very, very strong evidence before a conventional treatment like chemotherapy is set aside for a new treatment like radiolabeled antibodies.*

-----  
**Steven M. Larson, M.D.**

trial, it may make a big difference in the utilization of Bexxar." While results may be 2 years away, recent European trials of Zevalin have suggested clear benefits to this combined modality approach.

An Italian study published in the April issue of *The Lancet Oncology* followed 57 patients deemed eligible for Zevalin treatment after chemotherapy. Following the participants for an average of 30 months, the researchers found that 3-year progression-free survival was 76 percent and 3-year overall survival was 100 percent.

A final roadblock to RIT appeared when CMS reduced reimbursement rates for 2008 to well below reported acquisition costs, leaving practitioners to decide whether to subsidize or abandon the drugs. Physicians, hospitals and others raised an outcry and persuaded Congress to intervene and fully reimburse through June 2008.

With minimal, restricted use, drug

manufacturers were under financial pressure, jeopardizing the availability of the agents for Medicare, Medicaid and even privately insured patients.

De Parry accompanied Bexxar co-developer Mark Kaminski, M.D., of the University of Michigan, to meet with CMS Deputy Administrator Herb B. Kuhn in February.

Emphasizing the success of RIT, advocates argued against the CMS reimbursement formula, specifically objecting to flawed cost estimates and the splitting of dosimetric rounds out of a single therapeutic regimen. Kuhn has also heard from Congressional supporters who want full reimbursement until December and more realistic reimbursement rates for 2009.

In their CMS presentation, RIT advocates cited "encouraging data ... that has some scientists whispering the word 'cure.'" While some researchers don't go that far, they still express excitement for the future of the treatment. There are many new antibodies being developed and new ways of improving their use, said Dr. Macklis. "This is the most exciting era to be a lymphoma researcher," he said. "We need to understand how to sequence the various therapeutic strategies and team up the specialists for the general welfare of patients." □

---

## PET-CT and CT Compared in Evaluating Zevalin Efficacy

A STUDY appearing in the March 2008 issue of *Radiology* found that combining 18 fluorodeoxyglucose PET with CT imaging enabled better evaluation of response after yttrium 90-ibritumomab tiuxetan therapy (Zevalin®) for B-cell non-Hodgkin lymphoma.

Gary A. Ulaner, M.D., Ph.D., Patrick M. Colletti, M.D., and Peter S. Conti, M.D., Ph.D., of the Department of Radiology at the University of Southern California, examined CT images and combined PET/CT images of

10 patients who underwent the treatment. Two patients who were classified as partial



responders to therapy on CT imaging alone were reclassified as complete responders upon reevaluation with fused PET/CT. Both reclassified patients had no evident disease at 18 months follow-up. Evaluation using CT criteria alone "may underestimate [Zevalin] response by considering inactive residual CT masses to be residual disease," the researchers write.

# Long-Term Efficacy of Uterine Fibroid Embolization Confirmed

**T**HE three-year follow-up data from the FIBROID (Fibroid Registry for Outcomes Data) Registry continue to show durable and excellent results for uterine fibroid embolization (UFE) across a variety of practice settings.

Ninety percent of women who underwent UFE avoided a hysterectomy, said Scott Goodwin, M.D., the lead author and a professor and chair of the Department of Radiological Sciences in the School of Medicine at the University of California, Irvine.

Study results were published in the January 2008 issue of *Obstetrics & Gynecology*. RSNA first reported on the FIBROID Registry, a multicenter prospective gathering of outcomes data for UFE, in the June 2006 edition of *RSNA News*. Including 25 geographically diverse high-volume centers in the U.S. and a nearly equal number of contributing sites around the globe, the study initially accrued more than 3,300 patients. At the end of three years, 1,916 patients remained in the FIBROID Registry, with 1,278 completing their surveys.

“The procedures were performed by individuals with varying levels of experience, but all of whom met standards of competency,” said Dr. Goodwin. “There was no statistical difference in the outcomes between the procedures conducted at academic medical centers and those performed at community hospitals or in private medical practices. One of the goals of the registry was to establish that good outcomes could be obtained

*One of the goals of the registry was to establish that good outcomes could be obtained across a variety of practice settings.*

**Scott Goodwin, M.D.**

across a variety of practice settings.”

## Symptom Reduction, Improved Quality of Life Reported

The study indicated UFE reduced symptoms such as excessive menstrual bleeding, pelvic pain and infertility, with 85 percent of participants reporting substantial improvements in symptoms and quality of life. “Significantly, this study showed durable results 30 days, six months, one year, two years and, now, three years afterwards,” said Dr. Goodwin.

Dr. Goodwin said he expects the number of UFE procedures to continue to grow, as uterine fibroids affect an estimated 20 to 40 percent of all American women over the age of 35. The percentage is even higher among African-American women, with nearly 50 percent experiencing uterine fibroids.

“There are one million new cases of fibroid disease diagnosed each year,” said Dr. Goodwin.

Treating symptomatic fibroids accounts for more than a third of the 600,000 hysterectomies that are performed annually in the U.S., he said. By comparison, he said, the number of myomectomies or embolizations performed for fibroid relief is only in the tens of thousands.

Women who undergo UFE are usually hospitalized overnight and can return to work in a couple of weeks—



**Scott Goodwin, M.D.**  
University of California, Irvine



**James Spies, M.D.**  
Georgetown University Medical Center

a significantly faster turnaround than the expected four-to-six week recovery after a hysterectomy, said Dr. Goodwin.

## OB/GYNs Targeted with New Information

While the Society of Interventional Radiology and RSNA have worked to promote UFE to interventional radiologists, Dr. Goodwin said it was crucial to publish all four papers from the FIBROID Registry in *Obstetrics & Gynecology*. “Publishing a report like this in *Radiology* is like preaching to the choir,” he said. “It has taken 10 years, but patients are now getting information about UFE from their OB/Gyns when seeking medical options other than surgery to ease fibroid symptoms.”

Dr. Goodwin said he believes more research is being conducted today on UFE than on myomectomies or hysterectomies. This view is shared by another study author, James Spies, M.D., who noted the value of the FIBROID Registry is that it shows a large number of patients in a variety of hospital settings successfully undergoing UFE.

Dr. Spies, a professor and chief of



Angiograms of an approximately 40-year-old patient before and after treatment with uterine fibroid embolization (UFE). The Fibroid Registry for Outcomes Data (FIBROID) multicenter trial indicated UFE reduced fibroid symptoms such as excessive menstrual bleeding, pelvic pain and infertility, with 85 percent of participants reporting substantial improvements in symptoms and quality of life. Durable results were reported up to three years post-treatment.

Images courtesy of Scott Goodwin, M.D.

service in the Department of Radiology at Georgetown University Medical Center, and his colleagues at Georgetown showed a 20 percent fibroid recurrence rate five years after UFE. There is a higher likelihood that women who undergo embolization will need additional surgery later, said Dr. Spies, because the uterus isn't removed. "The uterus is still there, and new fibroids can grow," he said, adding, however, that the recurrence rate is comparable to that following myomectomy.

Dr. Spies also pointed to three additional significant randomized trials conducted in Europe. "The FIBROID Registry and the European studies are key additions to public policy and show embolization gives good results," he said.

In the Randomized Clinical Embolization versus Hysterectomy (EMMY) trial, researchers in The Netherlands found that six weeks after treatment, women who underwent UFE reported higher satisfaction scores than those who had hysterectomies. Two years later, 90 percent of the women in both categories said they were satisfied with their therapies, the researchers reported in the March 2008 edition of *Radiology*.

The Scottish Randomized Study of

Embolization and Surgical Treatment for Uterine Fibroids (REST) study, published in the January 25, 2007, issue of *The New England Journal of Medicine*, compared hysterectomy, myomectomy and UFE. The study indicated that the faster recovery after embolization must be balanced against the need for repeated treatment in a small percentage of the women.

Researchers in Prague, meanwhile, studied myomectomy versus UFE in women trying actively to get pregnant. The study indicated that for women in their 30s or younger who want to have children, myomectomy resulted in a higher pregnancy rate and fewer spontaneous abortions.

"UFE is no longer considered experimental. It is a well established procedure with good quality evidence supporting its safety and effectiveness," said Dr. Spies. □

### Learn More

Abstracts for journal articles cited in this story are available online:

- "Uterine Artery Embolization for Treatment of Leiomyomata," published in the January 2008 issue of *Obstetrics & Gynecology* [www.greenjournal.org/cgi/content/abstract/111/1/22](http://www.greenjournal.org/cgi/content/abstract/111/1/22)
- "Symptomatic Uterine Fibroids: Treatment with Uterine Artery Embolization or Hysterectomy—Results from the Randomized Clinical Embolization versus Hysterectomy (EMMY) Trial," published in the March 2008 issue of *Radiology* [radiology.rsnajnl.org/cgi/content/abstract/246/3/823](http://radiology.rsnajnl.org/cgi/content/abstract/246/3/823)
- "Uterine-Artery Embolization versus Surgery for Symptomatic Uterine Fibroids," published in the January 25, 2007, issue of *The New England Journal of Medicine* [content.nejm.org/cgi/content/abstract/356/4/360](http://content.nejm.org/cgi/content/abstract/356/4/360)

# RSNA Goes Green

**K**KNOWN FOR hosting the largest international medical meeting, RSNA is now using its sharply honed organizational skills to spread environmental awareness throughout all levels of the organization.

“We needed to get with the times,” said RSNA Administration and Human Resources Director Mark Lichtenberger. “We were actually doing a lot of green things, but had never really put it out there.”

## Green from the Ground Up

RSNA’s origins as a green organization date back to the construction of its Oak Brook headquarters in 1996. One of the architects was LEED-certified (Leadership in Energy and Environmental Design), meaning he is considered an expert in the field by the U.S. Green Building Council. As a result, the new building was designed with such environmentally friendly features as erosion and sediment control, public transportation access, storm water management, light pollution reduction and minimum energy performance.

RSNA executive staff wanted a certain look for the new building, particularly the landscaping. The resulting retention

pond, fountain and pesticide-free plants not only met the aesthetic vision but also set the organization on its way to becoming green, said RSNA Building Manager Michael Zawaski, who oversees many of the Going Green efforts.

RSNA’s glass building gives the organization a unique presence on the street it shares with the headquarters of the McDonald’s Corp. and scores high on daylight views—studies have shown that more access to daylight not only cuts energy costs due to lighting but

also positively influences employee mood.

Since moving into the building nearly a decade ago, RSNA also implemented such environmentally friendly activities as using low mercury light bulbs, optimizing the use of alternative materials and maintaining an indoor air quality management plan.

## Making it Official

Though the organization was already going green, RSNA formally launched its Going Green effort last year. Making it official, said Lichtenberger, made RSNA’s 168 employees aware of what had already been done and involved them in efforts going forward. He added that employees found no scarcity of ideas when Going Green was launched—if anything, they found too many.

*“We were actually doing a lot of green things, but had never really put it out there.”*

**Mark Lichtenberger**

in August 2007 with representatives from throughout the organization. Its members immediately went to work winnowing the list, and it wasn’t long before they had a list of things RSNA already was doing or could do almost immediately:

- Print *RSNA News* and other select publications on recycled paper.
- Switch from incandescent to compact fluorescent bulbs
- Ask vendors to become green certified or use green-certified products



**Mark Lichtenberger**  
RSNA Administration and Human Resources Director



**Michael Zawaski**  
RSNA Building Manager

- Recycle computer equipment, batteries and printer byproducts
- Offer to recycle employees’ home computers
- Encourage Web-based meetings to decrease the environmental impact associated with travel and photocopying materials
- Purchase more office supplies made from recycled materials

To reduce the amount of energy consumed in the building, occupancy sensors were installed in some common areas, prompting the lights to turn off when a room is not used for a certain length of time.

Looking ahead, RSNA is considering eliminating Styrofoam cups and asking that employees instead use paper cups or bring their own reusable containers for beverages. To potentially reduce the environmental impact of employees commuting, RSNA is investigating the feasibility of installing a bike rack for employees who wish to bicycle to work.

## Greening the Annual Meeting

RSNA 2007 provided more green opportunities. Bins were provided for badge and lanyard recycling, and the



The retention pond, fountain and other landscaping features of RSNA headquarters in Oak Brook, Ill., help make the Society a green organization. The glass building gives the organization a unique presence and scores high on daylight views—studies have shown that more access to daylight not only cuts energy costs due to lighting but also positively influences employee mood.

*Daily Bulletin* and other meeting materials were printed on recycled and/or recyclable, chlorine-free paper with a soy-based ink. RSNA also worked with the McCormick Place Convention Center and Chicago Restaurant Partners to offer paper, aluminum and plastic recycling; reduce light, power and heating usage; donate leftover food to a shelter; and use 100 percent compostable cups, flatware and packaging for boxed lunches.

### Cost is a Challenge

If there is anything that would rein in RSNA's ambitious green efforts, it would be another type of green—the

dollar. While things like occupancy sensors should eventually pay for themselves through saved energy costs, said Zawaski, the upfront cost isn't trivial. "Doing the basics isn't costly," he said. "It's the larger commitments that are expensive."

Lichtenberger noted that there's a tendency to believe that helping the environment is not only right but affordable too. The reality, however, is that items like recycled paper and copier toner are more expensive than non-recycled. Fortunately, RSNA has not balked at the higher price of doing green business, he said.

"RSNA takes pride in being on the

cutting edge as an association," added RSNA Executive Director Dave Fellers, C.A.E. It has been a very rewarding experience for all of us."

### Employee Involvement is Key

RSNA personnel have contributed to the success of the society's Going Green movement not only by asking for more environmentally friendly practices before the project was officially launched, but also by continuing to suggest ideas as the project moves along. Many employees engage in green practices at home and want to extend those efforts into the workplace, Lichtenberger said.

"We want to encourage our employees to keep suggesting new ideas," Lichtenberger said.

RSNA considers Going Green an ongoing process, said Zawaski, rather than working toward an imaginary point when the organization has "become green."

"It is amazing to watch the green movement evolve not only with RSNA, but also on a local, national and global scale," he said. "The opportunities for organizations to show corporate responsibility just keep multiplying." □

■ Editor's Note: This article is reprinted from *FORUM*, the magazine published by Association Forum of Chicagoland.

## Green Lights: Highlights of RSNA's Environmental Campaign

Here are just a few of the things that have helped make RSNA a green organization:

### Green Site

Storm water management, minimal use of fertilizers, mulching mowers, good variety of landscape plants, including those that reduce heat loads, lack of pesticides to enables wildlife habitat

### Recycling

All building tenants participate in collection of paper, cardboard, and aluminum

### Lighting

Building uses lamps that reduce by 80 percent the amount of mercury contained in traditional fluorescent lamps

### Alternative Materials

RSNA construction projects use medium density fiber board, a wood product made from recycled wood fibers

### IAQ-Compliant Products

Impact of construction materials on indoor air quality is reduced by asking that contractors comply with South Coast Air Quality Management District on adhesives and sealants, Green Seal standards on paints and coatings and Carpet and Rug Institute requirements for carpets and cushions

### Sustainable Cleaning Products

RSNA's cleaning company uses Green Seal Certified bathroom cleaner, scale remover, glass cleaner, multi-surface cleaner and floor stripper

# RSNA Scholar Wants to Change Prognosis for Aggressive Cancer

**A**N RSNA Research Scholar is leading a team of University of Pennsylvania Medical Center (Penn) researchers working to extend a treatment with proven success in lung cancer to the particularly aggressive and often fatal peritoneal carcinomatosis.

Stephen Hahn, M.D., began his research in the late 1990s when, as a radiation oncology resident at the National Cancer Institute (NCI), his mentor Eli Glatstein, M.D., investigated a new treatment called photodynamic therapy (PDT). Their initial research showed that administering a photosensitizing drug intravenously and then applying a laser light superficially to surface malignancies safely and effectively killed cancer cells.

When Dr. Glatstein became vice-chair and clinical director of the Department of Radiation Oncology at Penn, he recruited Dr. Hahn to develop a PDT program. Dr. Hahn's work

was immediately boosted by RSNA Research Scholar Grants to study "PDT of Peritoneal and Pleural Surfaces" in 1998 and "PDT for Peritoneal Carcinomatosis" in 1999.

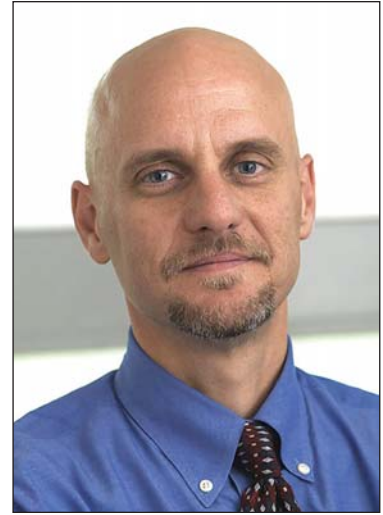
Peritoneal carcinomatosis spreads over the surfaces and through the lining of organs, making it extremely complicated to treat.

"The RSNA grants helped to fund the start up of our clinical trials, which focused experimentally on treating these cancers in the peritoneum and the lining of the pleura," said Dr. Hahn, now chair of the Department of Radiation Oncology at Penn. "Ovarian cancer, sarcomas and several gastrointestinal cancers like colon and pancreatic spread like this.

"We wouldn't have been able to get our initial trials done and understand the biology and the patient care aspects of PDT without the RSNA grants. They got us to where we are today," added Dr. Hahn.

## Absorption Differences Produced Toxic Side Effects

While the medical literature suggested that the photosensitizing drug used in PDT seemed to stay in tumors longer than normal tissues—a fact borne out in animal models—Dr. Hahn and his team found that there was very little difference in drug uptake between tumor and normal tissue in the peritoneum of humans, which



**Stephen Hahn, M.D.**  
University of Pennsylvania

resulted in toxic side effects. However, they found that less severe side effects occurred when PDT was used on cancer of the pleura.

"We published a paper in the *Journal of Clinical Oncology* a couple of years ago where we had superb preliminary results in non-small cell lung cancer where patients had disease spread to the lining of the lung—a very difficult problem and quite deadly," said Dr. Hahn. "The median survival for patients we had treated on the trial was 25 months, where historically the survival was more in the 9 to 12 month range."

According to Dr. Hahn, board certified in internal medicine and medical and radiation oncology, the differences between the peritoneum and the pleura is a matter of logistics. "The abdomen is a very complicated area with lots of loops of bowel and it is very difficult to get a homogeneous dose of light to all of the nooks and crannies," he said. "With the lung, there aren't as many critical structures that limit the dose.



## ON THE COVER

Physicians at the University of Pennsylvania (Penn) deliver intraoperative photodynamic therapy (PDT). Having had success using PDT—which involves an intravenous injection of a photosensitizing drug followed by application of a laser light to surface malignancies—on cancer of the pleura, Penn researchers are determined to obtain similar results with peritoneal cancer.

Image courtesy of Stephen Hahn, M.D.

*Continued on Page 16*





# Research & Education Foundation Donors

THE Board of Trustees of the RSNA Research & Education Foundation and its recipients of research and education grants gratefully acknowledge the contributions made to the Foundation January 19, 2008–February 15, 2008.

## VANGUARD PROGRAM

Bayer HealthCare Pharmaceuticals



**Bayer HealthCare**  
Pharmaceuticals

**\$105,000**

A Vanguard company since 2004

## GOLD VISIONARY DONORS (\$15,000 CUMULATIVE)

David C. Levin, M.D.

## BRONZE VISIONARY DONORS (\$5,000 CUMULATIVE)

Lyne Noel de Tilly, M.D. & Edward E. Kassel, M.D.

Donna & Lee F. Rogers, M.D.

Leo Sheiner, D.O.

### \$5,000 – \$9,999

Valerie P. Jackson, M.D.

### \$1,500 – \$4,999

Thomas H. Berquist, M.D.  
Rainer G. Bluemm, M.D.  
Lyne Noel de Tilly, M.D. & Edward E. Kassel, M.D.  
David C. Levin, M.D.  
Leo Sheiner, D.O.  
John W. Thomas, M.D.

### \$501 – \$1,499

Hillier L. Baker Jr., M.D.  
Donna & Lee F. Rogers, M.D.

### \$251 – \$500

J. Karen Clark, M.D.  
Julie & Adolfo Escobar-Prieto, M.D.  
Robert C. Gibbs, M.D.  
Satish D. Patel, M.D.  
Michael J. Wolf, M.D.

### \$250 OR LESS

William C. Acton, M.D.  
Stephen A. Agatston, M.D.  
Mahr A. Malik, M.D. & Bilal A. Ahmed, M.D.  
Joao M. Almeida, M.D.  
Alvin A. Almodovar, M.D.  
Steven M. Amberson, M.D.  
Brian L. Anderson, M.D.  
German M. Arancibia, M.D.  
Todd M. Arsenault, M.D.  
Martin Asis, M.D.  
Rony Avritscher, M.D.  
Sheereen L. Azimpoor, M.D.  
Diane & William R. Balchunas, M.D.  
Fayyaz Barodawala, M.D.  
James E. Beckett, M.D.  
Clifford J. Belden, M.D.  
John M. Benson, M.D.  
Lucille & Roger A. Berg, M.D.  
Jonas J. Berman, M.D.  
Mark O. Bernardy, M.D.  
Renu Berry, M.D.  
Sumit Bhatla, M.D.  
Paul A. Bilow, M.D.  
Ann Conjura & Rodger A. Blake, M.D.  
John F. Bochniak, M.D.  
Ian Boiskin, M.D.  
Alain Bonafe, M.D.  
Cecile & Frederick J. Bonte, M.D.  
Eric C. Bourekas, M.D.  
Gertrud & Juergen Brandt, M.D.

Mellena D. Bridges, M.D.  
Deborah M. Budris, M.D.  
Kim D. Burroughs, M.D.  
Rachael L. Caiati, M.D.  
Nicole L. Carbo, M.D.  
John B. Carico, M.D.  
Monica & Nils-Olov Carlsson, M.D.  
Martha A. Nowell, M.D. & Mark J. Carvlin, Ph.D.  
Patricia & Robert P. Cavallino, M.D.  
Viplava & Krishna Chadalavada, M.D.  
Riad Charafeddine, M.D.  
Xiao G. Cheng, M.D., Ph.D.  
Crandon F. Clark Jr., M.D.  
Winston F. Clarke, M.D.  
Gregor G. Cleveland, M.D., Ph.D.  
J. Jesus G. Covarrubias, M.D.  
Mara Crans, M.D. & Charles A. Crans Jr., M.D.  
Gerald E. Dalrymple, M.D.  
Lisa & Jay M. Daly, M.D.  
Anil K. Dasyam, M.D.  
Mark M. Davidian, M.D.  
Andrew Dawood, B.D.S., M.R.D. (RCS)  
Francisco De La Cruz, M.D.  
Charles J. DeMarco, M.D.  
Cindy & Peter J. Dempsey, M.D.  
Paresh B. Desai, M.D.  
Julie A. & Alex P. DiBona, M.D.  
Evelyn & Jerome Dubow, M.D.  
George K. Edwards, M.D.  
Terril A. Efir, M.D.  
Ingeborg & Svein-Dag Eggesbo, M.D.  
Robert P. Eichelberger, M.D.  
Iyabo & Anthony U. Eka, M.B.B.S.  
Margaret & Jimmie L. Eller, M.D.  
Shehanaz K. Ellika, M.D.  
Steven M. Epstein, M.D.  
Eleni S. Eracleous, M.D.  
Carl J. Evertsz, Ph.D.  
William R. Eyler, M.D.  
Joshua M. Farber, M.D.  
Brett D. Ferdinand, M.D.  
Angela J. Feyerabend, M.D.  
Rafik Filobbos, M.B.Ch.B.  
Francis T. Flaherty, M.D.  
Anne L. & Scott D. Flamm, M.D.  
Terry S. & Daniel R. Fox, M.D.  
Stephen G. Fox II, M.D.  
Daniel E. Frank, M.D.  
Susan & James D. Fraser, M.D.  
Margaret & Julian R. Frayne, M.B.B.S.  
Valerie & John J. Frederick, D.O.  
George S. Fultz, M.D.  
J.F. Garcia, M.D.

Peter W. Gendall, M.D.  
Sejal & Tony Ghodadra, M.D.  
Andreas Giger, M.D.  
Liliana N. Vega de Gimenez & Carlos R. Gimenez, M.D.  
Phyllis Glanc, M.D.  
Eli Glatstein, M.D.  
Ross H. Golding, M.D.  
Kate & Shaun J. Gonda, M.D.  
Daniel N. Goodman, M.D.  
Nigel C. Graham, M.B.Ch.B.  
Judy L. Greene, M.D.  
Delbert H. Hahn Jr., M.D.  
Christiane M. Hakim, M.D.  
Amer A. Hanano, M.D.  
Jennifer Casarella & Timothy S. Hanes, M.D.  
John A. Harding, M.D.  
Heather Rae & Robin A. Harle, M.B.B.S.  
Jacquelyn & Roger K. Harned, M.D.  
Linda A. Harrison, M.D. & David B. Harrison  
Paul S. Harrod-Kim, M.D.  
Mary B. Hart, M.D.  
Martina & Markus Hauser, M.D.  
Anita E. Hawkins, M.D.  
Health Professionals International Ltd.  
Amir Hedayati, M.D.  
Joffre M. Hew, M.D.  
Christoph M. Heyer, M.D.  
Samuel Hill IV, M.D.  
Alan D. Hoffman, M.D.  
Brian J. Holloway, M.B.B.Ch.  
Carrie J. Horst, D.O. & James Horst  
Karen A. Hunt, M.D.  
Misako Iino, M.D.  
Evert-Jan M. Imkamp, M.D.  
Tunc A. Iyriboz, M.D.  
Oscar A. Jara, M.D.  
John O. Johnson, M.D.  
Michael J. Johnson, M.D.  
Peter B. Johnson, M.B.B.S.  
Steven D. Johnson, M.D.  
Ronald C. Joseph, M.D.  
Melissa M. Joyner, M.D. & Todd Joyner  
Teresa J. Karcnik, M.D.  
Vasavi Rajagopal & Saravanan Kasthuri, M.D.  
Jennifer A. Kelly, M.D.  
James A. Kenney Jr., M.D.  
Michael Kessler, M.D.  
Jamil F. Khamis, M.D.  
Safura & Sana U. Khan, M.D., Ph.D.  
Danny C. Kim, M.D.  
Mark E. Klein, M.D.

Nancy & J. Bruce Kneeland, M.D.  
Laura C. Knight, M.D.  
Julie & Steven P. Knight, M.D.  
Myles B. Koby, M.D., D.D.S.  
Karen L. Kods, M.D.  
Dow-Mu Koh, M.B.B.S.  
Ronald B. Kolber, M.D.  
Mamata Jalisatgi & Shyamsunder R. Koteyar, M.B.B.S.  
Christopher J. Krebs, M.D.  
Cheryl S. & Jeffrey S. Kriegshauser, M.D.  
Shirley & Charles F. Lanzieri, M.D.  
Peter C. Lau, M.D.  
Susan H. Leeson, M.D.  
Georges B. LeRoux, M.D.  
Joseph P. Li Puma, M.D.  
John Lin, M.D.  
Luc M. Linstner, M.D.  
Martha & Peter J. Littrup, M.D.  
J. Norman Liu, M.D.  
Joana P. Loureiro, M.D.  
Alan G. Lurie, D.D.S., Ph.D.  
David C. Madoff, M.D.  
Janine R. Martyn, M.D.  
James M. McAfee, M.D.  
April & Bradford S. McCrary, M.D., Ph.D.  
Robert M. McFarland II, M.D.  
Jennelle & Alexander M. McKinney IV, M.D.  
James F. Meaney, M.B.  
Attef A. Mikhail, M.D.  
Rizvan A. Mirza, M.D.  
Brian J. Moffit, M.D.  
Valdemar Moreno-Ford, M.D.  
Jennifer & Jonathan A. Morgan, M.D.  
Chieko & Yasuo Nakajima, M.D.  
Patrick A. Nelson, M.D.  
Iddo Netanyahu, M.D.  
Joel D. Neuman, M.D.  
Minh C. Nguyen, M.D.  
John O. Nunes, M.D.  
Ronna & Larry Nussbaum, M.D.  
Malak & Abdulmounhem K. Obaideen Sr., M.D., D.I.S.  
Renata Emy Ogawa, M.D.  
Fukiat Ongseng, M.D.  
Carla M. Velasco, M.D. & Mario Patino, M.D.  
Tatjana Pavlovic, M.D. & Vojvjin Pavlovic, M.D.  
Avanee Shah Peel, M.D.  
Christine L. Petersen, M.D.  
Dieu H. Pham, M.D.  
Shellie D. Pike, R.T.(R)(CT), B.S.R.S.  
Linda & Alan Pollack, M.D., Ph.D.

*Continued on next page*

Continued from previous page

Elizabeth & Donald J. Ponec, M.D.  
 Matthew G. Powers, M.D.  
 Sherry & George T. Puskas, M.D.  
 Lorentz G. Quekel, M.D., Ph.D.  
 Tariq Quraishi, M.D.  
 Frank A. Raila, M.D.  
 Steven S. Raman, M.D.  
 Lisa & Carl A. Recine, M.D.  
 Claire & Lawrence J. Reif, M.D.  
 Linda L. Reilman, M.D.  
 John L. Remington, M.D.  
 Kaye & Ralph N. Ricco, M.D.  
 David A. Roberts, M.D., Ph.D.  
 Robert C. Roberts, M.D.  
 Nancy & John O. Roehm Jr., M.D.  
 David M. Roelke, M.D.  
 Richard S. Rome, M.D.  
 Vivian L. & Laercio A. Rosemberg, M.D.  
 Pierre J. Rouge, M.D.  
 Klaus Ruedisser, M.D.  
 Leora B. Sachs, M.D.  
 Barry A. Sacks, M.D.  
 Sadayuki Sakuma, M.D., Ph.D.  
 Kenneth V. Salce, M.D.  
 Mark J. Sands, M.D.  
 Thomas R. Sanford, M.D.  
 James R. Sayre, M.D.  
 David J. Schengber, M.D.

Laura & Paul J. Schmidt, M.D.  
 Andrew M. Schneider, M.D.  
 Anthony M. Shadid, M.D.  
 Monisha R. &  
 Sundeep D. Shah, M.B.B.S.  
 Msallam M. Shami, M.D.  
 Jeff Sheneman, M.D.  
 Jean & John L. Sherman, M.D.  
 Harry S. Shulman, M.D.  
 Richard J. Silberstein, M.D.  
 Rajinder P. Singh, M.D., Ph.D.  
 Dick D. Slater, M.D.  
 Steven & Jenifer G. Slone, M.D.  
 Rachael E. Gordon, M.D. &  
 Donald Snyder  
 Viola Solgner-Tinhof &  
 Peter F. Soegner, M.D.  
 Shyam Srinivas, M.D., Ph.D.  
 Elizabeth & Jim Steel, M.B.B.S.  
 Emily J. Stenhouse, M.B.Ch.B.  
 Michael A. Stewart, M.D.  
 Nathan Stofberg, M.D.  
 Jean-Louis Storms, M.D.  
 Daniel M. Stovell, M.D.  
 Maki Sugimoto, M.D., Ph.D.  
 Gill M. Taylor-Tyree Sr., M.D.  
 Satoru Tazawa, M.D.  
 Jerrold B. Teitcher, M.D.  
 Michael M. Teng, M.D.  
 Desencia E. Thomas, M.D.

Eva Tlusty, M.D.  
 John S. To, M.D.  
 Vasiliki Anastasiadou-Tsirkinidou &  
 Panagiotis V. Tsirkinidis, M.D.  
 Susan & Evan C. Unger, M.D.  
 Giuseppe Vadala, M.D.  
 Mitzi Wagner & Jose Valderrabano, M.D.  
 Cynthia A. & Kris J. Van Lom, M.D.  
 Peter L. Vance, M.D.  
 Reynold M. Villedrouin, M.D.  
 Shannon & Van R. Wadlington, M.D.  
 Milton L. Wagner, M.D.  
 Martin N. Wasser, M.D.  
 LeRoy D. Weaver, M.D.  
 Chao-Jung Wei, M.D., Ph.D.  
 Laura V. Weisse, M.D.  
 David J. Weitz, M.D.  
 Edward H. Welles III, M.D.  
 Kurt H. Wetzler, M.D.  
 Lewis Wexler, M.D.  
 Philip J. Weyman, M.D.  
 Joanne & Edward J. Wickman, M.D.  
 Susan & Gary J. Whitman, M.D.  
 Scott D. Wiedenmann, M.D.  
 Edwin R. Willgress, M.D.  
 C.D. Williams III, M.D.  
 Vina C. Williams-Snijders, M.D. &  
 David Williams  
 Stephanie R. Wilson, M.D. & Ken Wilson

Corinne B. Winston, M.D.  
 Paul W. Wong, M.D.  
 Robert E. Woods, M.D.  
 Caryn C. Wunderlich, M.D.  
 Wei T. Yang, M.D.  
 Huei-mei & Wen C. Yang, M.D.  
 Traci P. Yanke, M.D.  
 Alaine & Brian C. Ying, M.B.B.S.  
 Lei Zhang, M.D., Ph.D.  
 Alain Zilkha, M.D.  
 Ghislaine & Albert Zilkha, M.D.

Donors who give \$1,500 or more in the giving year qualify for membership in the Presidents Circle. Their names are shown in bold face.

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

## RSNA Scholar Wants to Change Prognosis for Aggressive Cancer

Continued from Page 14

You do have heart and esophagus, but they tend to be a bit more shielded than the other organs.”

Dr. Hahn is determined to see better success with PDT in peritoneal cancer. Since being appointed radiation oncology chair in 2005, Dr. Hahn has designated Keith Cengel, M.D., Ph.D., an assistant professor of radiation oncology, to move the PDT project forward. Dr. Cengel received an RSNA Research Resident Grant sponsored by Philips Medical Systems in 2003.

### Molecular Targeting Agent Investigated

While work has continued on the PDT pleura research during the last few years, peritoneal trials have been on hiatus while Drs. Hahn and Cengel have worked with colleagues to find ways to reduce the toxic side effects and increase the overall effectiveness of the therapy.

“PDT has done some things we’re pleased with and it hasn’t done some things that we think it can do,” said Dr. Glatstein, now a professor of radiation

oncology at Penn. “In the pleura, it looks good. In the peritoneal, it hasn’t been as good and so we have a plan to tweak it.”

That “tweak” involves adding a molecular target agent to enhance PDT’s effect on tumors while sparing normal tissue. This next phase of PDT research, funded by a recently renewed National Institutes of Health, NCI Program Project Grant, is scheduled to start later this year.

“PDT is already an FDA-approved treatment for several diseases, including obstructing lung cancer and esophageal cancer, and is particularly used for Barrett’s esophagus,” said Dr. Hahn. “We’re trying to extend the indications for PDT, particularly because it doesn’t seem to have the late effects that radiotherapy has on patients. I think the addition of the molecular targeting agent is a really

exciting approach and will pull us in a good direction.”

Feeling that they are making a personal impact is one of the most satisfying parts of the research, said both Drs.

Hahn and Cengel.

“I was talking to one of our patients yesterday who said that her home state medical oncologist told her to essentially go home and die,” said Dr. Cengel. “What we’re trying to do is to change the end of the story. We’re cowboy optimists. We’re trying

*We wouldn’t have been able to get our initial trials done and understand the biology and the patient care aspects of PDT without the RSNA grants. They got us to where we are today.*

**Stephen Hahn, M.D.**

to cure her. And while our peritoneal work has prolonged some patient lives, we haven’t cured anyone yet, but we think it’s possible. We think this is a potentially curable population.” □

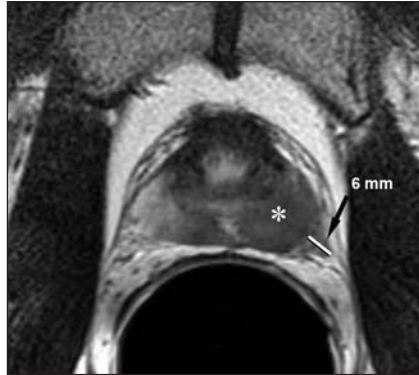
# Radiology in Public Focus

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

## Prostate Cancer: Role of Pre-treatment MR Imaging in Prediction of Outcome after External Beam Radiotherapy—Initial Experience

**E**XTRACAPSULAR extension as seen on pre-treatment MR can predict metastatic recurrence in patients receiving radiation therapy for prostate cancer, research has shown.

David A. McKenna, M.B., B.Ch., of the Department of Radiology at the University of California, San Francisco, and colleagues studied tumor characteristics, treatment and outcome in 80 men who underwent endorectal prostate MR prior to external beam radiotherapy. The researchers found that baseline serum prostate specific antigen level and presence and degree of extracapsular extension at MR imaging, as



**Transverse T2-weighted endorectal MR image in 58-year-old man with PSA level of 7.9 ng/mL and positive transrectal biopsy results showing Gleason 7 cancer in multiple cores.**

An ill-defined mass (\*) of low signal intensity in the left peripheral zone is associated with extracapsular extension (arrow) that measures 6 mm in radial diameter when measured from the expected location of the capsule to the outermost part of the tumor. The patient developed metastases 41 months after external-beam radiation therapy.

(*Radiology* 2008;247:141–146) © RSNA, 2008. All rights reserved. Printed with permission.

measured by the radial diameter of the tumor outside the expected location of the prostatic capsule, were significantly related to the development of metastases after treatment.

The study indicated that mean diameter of extracapsular extension was the sole independent predictive variable. In particular, patients who demonstrated more than 5 mm of extracapsular extension before therapy were highly likely

to develop metastases later.

“Patients with a substantial degree of extracapsular extension may be candidates for more aggressive therapy, such as radiation dose escalation or extended androgen deprivation,” the researchers conclude.

## Low Grade Gliomas: Do Changes in rCBV Measurements at Longitudinal Perfusion-weighted MR Imaging Predict Malignant Transformation?

MR-measured relative cerebral blood flow (rCBV) can predict likely malignancy in low grade gliomas as early as 12 months in advance, researchers have found.

In 13 patients with grade 2 gliomas at study entry, Nasuda Danchaijitr, F.R.C.R., of the Institute of Neurology at the University College London, and colleagues examined T1-weighted MR images obtained at 6-month intervals up to a mean of 23 months after study entry or until tumors showed



evidence of malignancy. In all seven patients who showed progression

to high-grade tumors, T1-weighted images indicated a continuous increase in relative cerebral blood volume (rCBV) up to the point of transformation, the researchers found. Significant rCBV increases were noted at 12 months and 6 months before transformation in those patients, while rCBV in patients who did not have tumor progression remained relatively stable.

Dr. Danchaijitr and colleagues

observe that transforming gliomas “show a marked increase in rCBV which can be observed up to 12, and in some instances, 18 months prior to clinical and imaging transformation.” They conclude that rCBV increase provides an early non-invasive indicator of malignant progression in gliomas, and recommend MR perfusion imaging as a method of determining whether patients are candidates for conservative observation or early aggressive therapy.

(*Radiology* 2008;247:170–178)

Continued on Page 19

# Journal Highlights

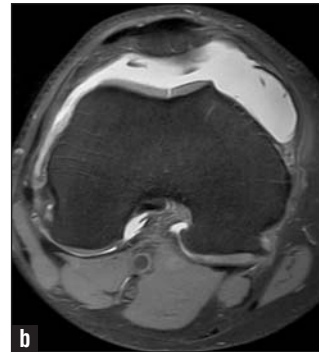
The following are highlights from the current issues of RSNA's two peer-reviewed journals.

## Whole-Body High-Field-Strength (3 T) MR Imaging in Clinical Practice—Part 2: Technical Considerations and Clinical Applications

**W**HILE substantial technical progress has been made in high-field-strength MR imaging systems, relatively little evidence has been published regarding their added clinical value.

In an article appearing in the April issue of *Radiology* ([RSNA.org/radiology](http://RSNA.org/radiology)), Christiane K. Kuhl, M.D., of the University of Bonn, and colleagues detail the current use of body high-field-strength MR in clinical patient care, as well as published evidence regarding its difficulties or advantages. Interpreting data from the perspective of a clinical radiologist, the authors address applications of high-field-

**Radiology**



**Time-of-flight MR angiograms at (a) 1.5 T and (b) 3.0 T in a patient with high-grade stenosis of the right internal carotid artery. Note the improved visibility of the perfused right-sided middle cerebral artery in b.**  
(*Radiology* 2008;247:16–35) © RSNA, 2008. All rights reserved. Printed with permission.

strength MR imaging in:

- Cardiac
- Breast
- Abdomen
- Pelvis
- Musculoskeletal
- Pediatric
- MR spectroscopy

“Good or bad, it appears that the new technology is embraced and used clinically,” Dr. Kuhl and colleagues write. “This is certainly not the first time for this to happen in the history

of diagnostic imaging—there is only a very limited number of studies comparing 1.5 T imaging with MR at a lower field strength, after all. It seems natural to use an improved tool once it is available. However ... there is a clear and urgent need for scientific data to establish the advantage of high-field-strength MR in clinical patient care.”

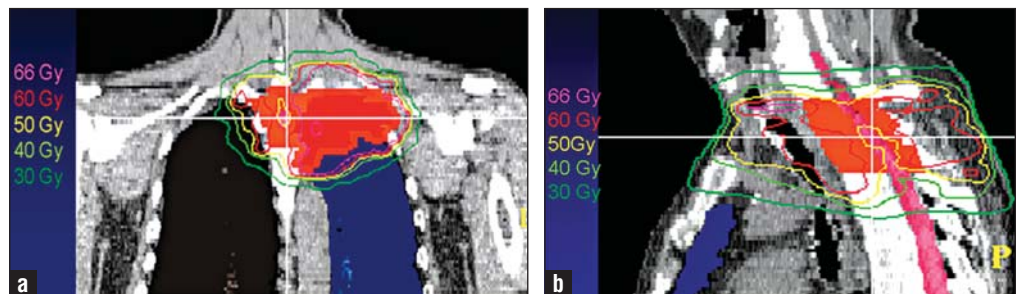
## Imaging of Non-Small Cell Lung Cancer of the Superior Sulcus—Part 1: Anatomy, Clinical Manifestations, and Management and Part 2: Initial Staging and Assessment of Resectability and Therapeutic Response

**I**MAGING is critical in diagnosing and staging superior sulcus tumors, assessing their resectability, determining the optimal disease management approach

**RadioGraphics**

and evaluating response to therapy. CT, MR and positron emission tomography (PET)/CT contribute important and complementary information.

In a pair of articles in



**Images from serial MR perfusion study in 29-year-old man with left frontal low-grade astrocytoma that did not undergo malignant transformation during an observation period of 30 months.**

The transverse rCBV color overlay maps (obtained using the more T2-weighted first image of the perfusion series as background) are windowed to show areas with greater rCBV than white matter. (a) rCBV map at study entry shows tumor with low rCBV (maximum measured rCBV, 0.76). (b) After 30 months, there has been some increase in tumor volume, but the maximum rCBV remains low (0.96).

(*RadioGraphics* 2008;28:551–560) © RSNA, 2008. All rights reserved. Printed with permission.

the March-April issue of *RadioGraphics* ([RSNA.org/radiographics](http://RSNA.org/radiographics)), John F. Bruzzi, F.F.R.R.C.S.I., and colleagues at M.D. Anderson Cancer Center in Houston describe the optimal methods for diagnostic imaging and management of superior sulcus tumors. In particular, the authors emphasize:

- Knowing the superior sulcus anatomy and patient-specific clinical manifestations
- Delineating local-regional extension and detecting nodal metastases

- Understanding the applicability of therapeutic modalities including surgery, irradiation and chemotherapy
- Identifying the imaging features on radiography, thoracic CT and MR imaging

“Because of the close and complex relationships among the anatomic structures in the thoracic inlet, optimal imaging requires a multiplanar and multimodality approach in which information obtained from CT, alone

or with PET, is combined with that obtained from MR imaging,” Dr. Bruzzi and colleagues write. “The usefulness of the imaging findings is enhanced by the radiologist’s knowledge of the patient’s symptoms and thorough understanding of the therapeutic options available.”

Part 1 of this series meets the criteria for 1.0 AMA PRA Category 1 Credit.

# Radiology in Public Focus

Continued from Page 17

## Media Coverage of Radiology

In February, media outlets carried 412 news stories generated by articles appearing in *Radiology*. These stories reached an estimated 54 million people.

News releases promoted the latest findings from the Digital Mammographic Imaging Screening Trial (DMIST) (*Radiology* 2008;246:376-383) and a minimally invasive treatment for deep vein thrombosis (*Radiology* 2008;246:619-629).

Broadcast coverage included CNN,

WABC-TV (New York), WLS-TV (Chicago), WBBM-TV (Chicago), WMAQ-TV (Chicago), WUSA-TV (Washington), WXYZ-TV (Detroit), KGO-TV (San Francisco), KPIX-TV (San Francisco), WCVB-TV (Boston), KUSA-TV (Denver), KTRK-TV (Houston), KXAS-TV (Dallas), WSMV-TV (Nashville, Tenn.) and WRAL-TV (Raleigh, N.C.).

Print coverage included Reuters, Asian News International, *Star-Ledger*

(Newark, N.J.), *Louisville* (Kentucky) *Courier-Journal*, *Health and Medicine Week*, *HealthNews*, *Cancer Weekly*, *Drug Week*, *Women’s Health Weekly*, *Science Letter* and *Belleville* (Illinois) *News-Democrat*. Web placements included Yahoo! News, WebMD, Medscape, *MSNBC.com*, *AOL.com*, *MSN.com*, *Washingtonpost.com*, *iVillage.com*, *Forbes.com* and *USNews.com*.

### Read Media Coverage of Radiology

■ A new link on the *Radiology* home page provides links to media coverage of studies reported in the journal. To read stories in various publications—more than two dozen for one study from the March 2008 issue alone—click Media Coverage at the bottom of the lefthand navigation bar.



## Pediatric Radiology the Focus of April Outreach Activities

In April, RSNA’s “60-Second Checkup” radio segments focused on pediatric radiology, including radiation dose and patient safety issues in pediatric imaging and imaging to detect cancer in children.

# Working For You

## Making MIRC™ Work

RSNA News continues to profile real-world users of RSNA's Medical Imaging Resource Center (MIRC™). Mary Wyers, M.D., attending radiologist in the Department of Medical Imaging at Children's Memorial Hospital and assistant professor of radiology at Northwestern University in Chicago, started using MIRC "out of the box" and has involved her residents in creating MIRC-hosted teaching files for nearly four years.

Making **MIRC™** Work

[RSNA.ORG/MIRC](http://RSNA.ORG/MIRC)  
RSNA'S FREE ONLINE RESEARCH  
AND EDUCATION TOOLS

**I**N SPRING 2004, Dr. Wyers and her colleagues began sorting through old film-based teaching files and hired first-year medical students to take digital photographs of the films. With these and newer digital images, students, residents and research assistants worked under Dr. Wyers' direction to create teaching files on the hospital intranet using RSNA's early authoring tool MIRCat. Children's Memorial now hosts 1,519 cases on MIRC.

"We require each of our residents to create one teaching file case per month," said Dr. Wyers. "We have residents rotating in pediatric radiology from about six different Chicago programs. We have many, many authors."

MIRC helps to organize files for a variety of educational purposes, such as review cases for residents studying for board exams and "classic" educational modules within the pediatric radiology curriculum.

"The idea is to standardize their experience," said Dr. Wyers. "All residents see a Wilms tumor, epiglottis

and other classic pediatric radiology cases, as well as the more unusual ones, such as skeletal dysplasias, which may not come up frequently in regular clinical work."

Authors select images from their PACS and upload them as JPEG files to MIRC. Residents create teaching files under the supervision of attending radiologists. Most require very little training. "Most of them are computer savvy and have no problems using the author service," said Dr. Wyers.

The department still uses the computer they initially purchased to host their teaching files. In addition, they now have a separate server hosting MIRC files online, accessible to the public at [mirc.childrensmemorial.org](http://mirc.childrensmemorial.org).

"MIRC is free, it's easy, and it's continually being upgraded and improved," Dr. Wyers said. She said she looks forward to the development of a tool that selects a random or themed group of cases for teaching conferences and



Mary Wyers, M.D.

the ability to crop uploaded images to facilitate removing patient names.

Exceptional computer skills are not required to use MIRC, Dr. Wyers emphasized. "I am actually a good example of somebody who uses MIRC only as a radiologist," she said. "I am not a computer programmer and

don't have the knowledge to change code." RSNA consultants helped with minor customizations like adding a Children's Memorial graphic, she said.

Most important, said Dr. Wyers, is dedication to the program's success. "It takes commitment from an individual to be the administrator for the site—to implement changes, manage upgrades, and drive other people to use the program," she said.

For more information about MIRC, go to [RSNA.org/MIRC/index.cfm](http://RSNA.org/MIRC/index.cfm) or choose MIRC from the Technology dropdown menu at the top of the [RSNA.org](http://RSNA.org) home page.

## New SAMs on Evidence-based Radiology Now Available

Two new self-assessment modules (SAMs) on evidence-based radiology are available online for those participating in the American Board of Radiology maintenance of certification process:

- *Evidence-based Radiology I*—focuses on the history and principles of evidence-based medicine, discusses the steps involved in applying evidence-based medicine and demonstrates how searching for and evaluating evidence can be done in practicing radiology.

- *Evidence-based Radiology II*—reviews the principles and practical applications of evidence-based medicine while discussing possible limitations and demonstrating how evidence can best be evaluated in a radiology practice.

These modules also qualify as general content SAMs. All SAMs can be accessed at [RSNA.org/education](http://RSNA.org/education). Access is free for RSNA members; non-members are charged a fee. For more information or to submit feedback, e-mail [ed-ctr@rsna.org](mailto:ed-ctr@rsna.org) or call 1-800-381-6660 x3733.

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

# Program and Grant Announcements

## RSNA Outstanding Researcher and Educator Awards

**Nomination Deadline—June 15 • New, Simpler Process**

The RSNA Outstanding Researcher and Outstanding Educator awards annually honor one senior physician or scientist in each award category who has made a career of significant contributions to the field of radiology or radiologic sciences through research or teaching/education. The 2007 Outstanding Researcher was Bruce J. Hillman, M.D., and the 2007 Outstanding Educator was Robert A. Novelline, M.D.

To nominate someone for one of these awards, simply send a one-page letter of nomination and the nominee's complete curriculum vitae to Scott Walter, Senior Manager, Grant Administration, at [swalter@rsna.org](mailto:swalter@rsna.org). More details and a listing of past recipients are available at [RSNA.org/Foundation/RecognitionAwards.cfm](http://RSNA.org/Foundation/RecognitionAwards.cfm).

## RSNA-Sponsored Course at the International Congress of Radiology (ICR)

**June 5–8 • Palais des Congrès, Marrakesh, Morocco**

"Highlights of Diagnostic Imaging in the U.S. and Common Pathologies in America" is the refresher course RSNA will offer at the International Congress of Radiology (ICR). Moderated by RSNA President Theresa C. McLoud, M.D., the course will feature these topics:

- Advances in Molecular Imaging
- 3D Imaging
- Cardiac Disease
- Lung Cancer Screening with Low Dose CT

More information about ICR is available at [www.icr2008.org](http://www.icr2008.org).

## Advanced Course in Grant Writing

**Application Deadline—July 1**

This course will help participants, typically junior faculty members, prepare and submit a National Institutes of Health (NIH), National Science Foundation (NSF) or equivalent grant application by the October 2009 deadline. A participant must possess an M.D. or Ph.D., be a faculty member in a radiology, radiation oncology or nuclear medicine program and never have been a principal investigator on an NIH- or NSF-funded project. The course will consist of four two-day sessions at RSNA Headquarters in Oak Brook, Ill., over a nine-month period beginning in September 2008.

More information about these programs, including application forms, is available at [RSNA.org/research/educational\\_courses.cfm](http://RSNA.org/research/educational_courses.cfm).

## RSNA Clinical Trials Methodology Workshop

**January 10–16, 2009 • Hyatt Regency Scottsdale Resort and Spa at Gainey Ranch • Application Deadline—June 5**

Over the course of this 6½-day workshop, each trainee will be expected to develop a protocol for a clinical study, ready to include in an application for external funding. Participants will learn



how to develop protocols for the clinical evaluation of imaging modalities, covering these topics:

- Principles of clinical study design
- Statistical methods for imaging studies
- Design and conduct of multi-institutional studies
- Sponsorship and economics of imaging trials
- Regulatory processes

Applicants will undergo a competitive selection process for entrance into the course. Trainees will participate in advance preparation, didactic sessions, one-on-one mentoring, small discussion sessions, self study and individual protocol development. Familiarity with basic concepts and techniques of statistics and study design is required.

Apply for the Clinical Trials Methodology Workshop at [RSNA.org/CT2009](http://RSNA.org/CT2009). For more information, contact Fiona Miller at 1-630-590-7741 or [fmiller@rsna.org](mailto:fmiller@rsna.org).

## RSNA/AUR/ARRS Introduction to Academic Radiology Program (Formerly known as Introduction to Research)

**Application Deadline—July 15**

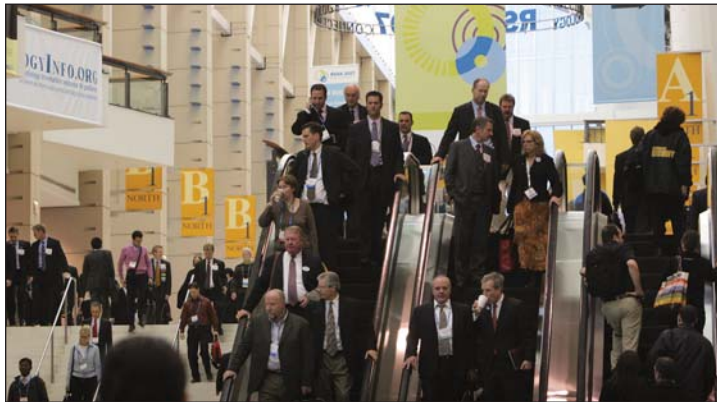
Sponsored by RSNA, the American Roentgen Ray Society (ARRS) and Association of University Radiologists (AUR), this program demonstrates the importance of research in diagnostic radiology, illustrates the excitement of research careers and introduces residents to successful clinical radiology researchers. Successful applicants will be assigned to either a

seminar held during RSNA 2008 or the ARRS annual meeting in 2009. Radiology departments are invited to nominate one second-year resident. A total of 80 residents will be selected to participate. The name of the course was changed to better reflect the course content.

# News about RSNA 2008

## Advance Registration and Housing Open April 21

RSNA 2008 advance registration and housing open April 21 for RSNA and AAPM members. Non-member registration and housing open May 19. The Advance Registration and Housing brochure will be available online only. Go to [RSNA.org/register](http://RSNA.org/register) and open the PDF.



### INTERNATIONAL VISITORS

#### Apply Early for Visa

Personalized invitation letters are available for request at *RSNA2008.RSNA.org*. Click International Visitors. This section of the annual meeting Web site also includes important information about the visa application process. Visa applicants are advised to apply as soon as they decide to travel to the U.S. and at least three to four months in advance of the travel date. RSNA recommends that international visitors to RSNA 2008 start their visa process now.

For more information go to:

- [www.unitedstatesvisas.gov](http://www.unitedstatesvisas.gov)
- [travel.state.gov/visa](http://travel.state.gov/visa)
- [nationalacademies.org/visas](http://nationalacademies.org/visas)

## Registering for RSNA 2008

There are four ways to register for RSNA 2008:

### 1 Internet

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

Fastest way to register!

Use your member ID number from the *RSNA News* label or meeting flyer sent to you.

### 2 Fax (24 hours)

1-800-521-6017

1-847-940-2386

### 4 Mail

Experient/RSNA 2008

108 Wilmot Rd.,

Suite 400

Deerfield, IL 60015-5124

USA

### 3 Telephone

(Monday–Friday,

8:00 a.m.–5:00 p.m. CT)

1-800-650-7018

1-847-940-2155

### Registration Fees

BY 11/7	ONSITE	
\$0	\$100	RSNA Member, AAPM Member
\$0	\$0	Member Presenter
\$0	\$0	RSNA Member-in-Training, RSNA Student Member and Non-Member Student
\$0	\$0	Non-Member Presenter
\$130	\$230	Non-Member Resident/Trainee
\$130	\$230	Radiology Support Personnel
\$620	\$720	Non-Member Radiologist, Physicist or Physician
\$620	\$720	Hospital or Facility Executive, Commercial Research and Development Personnel, Healthcare Consultant and Industry Personnel
\$300	\$300	One-day registration to view only the Technical Exhibits

■ For more information about registering for RSNA 2008, visit [RSNA2008.RSNA.org](http://RSNA2008.RSNA.org), e-mail [reginfo@rsna.org](mailto:reginfo@rsna.org) or call 1-800-381-6660 x7862.

### Important Dates for RSNA 2008

April 15	Deadline for abstract submission
April 21	Member registration and housing open
May 19	Non-member registration and housing open
June 30	Course enrollment opens
Oct. 24	International deadline to have full-conference materials mailed in advance
Nov. 7	Final advance registration, housing and course enrollment deadline
Nov. 30–Dec. 5	RSNA 94th Scientific Assembly and Annual Meeting



**RSNA2008**

Personal Learning in the  
Global Community



# Exhibitor News

## Exhibitors Gather for Planning Meeting in Chicago



More than 85 representatives from companies planning to exhibit at RSNA 2008 attended the Exhibitor Planning Meeting on March 4 in Rosemont, Ill. Among those addressing the group were RSNA Technical Exhibits Committee Chair Jonathan M. Alexander, M.D. (*left*),



and RSNA Technical Exhibits Director Tom Shimala (*center*). Of interest to many attendees was the new technical exhibits layout for RSNA 2008. For the first time, the Technical Exhibition will include three buildings—Hall D (Lakeside Center), Hall A (South Building)



and Hall B (North Building). The new arrangement allows RSNA to accommodate the growing number of exhibiting companies while offering more space to current exhibitors. In addition, large food service outlets will be located in all three exhibit halls. Hall D formerly housed scien-

tific posters, education exhibits and other education content, which will move down one floor to Hall E across from the Arie Crown Theater.

## News about RSNA 2008

### More Fingerprints Collected at O'Hare

The US-VISIT program applies to all visitors (with limited exemptions) entering the U.S. Visitors are photographed and fingerprinted upon arrival. In 2008, the U.S. Department of Homeland Security began collecting additional fingerprints from international visitors arriving at O'Hare International Airport. The upgrade from two- to 10-fingerprint collection is part of the department's effort to enhance security and facilitate legitimate travel by more accurately and efficiently establishing and verifying visitors' identities. For more information, go to [www.dhs.gov/us-visit](http://www.dhs.gov/us-visit).

### Course Enrollment Brochure Available in June

RSNA 2008 attendees will be given the option of accessing the Advance Registration, Housing and Course Enrollment brochure in electronic format only or receiving a hard copy. Previously the brochure was mailed in hard copy to all registrants. In keeping with its environmentally conscious objectives (see *RSNA Goes Green*, Page 12), RSNA seeks to produce only the necessary number of paper copies of the brochure.

People registering online before June 1 will be informed that the course enrollment brochure mails and is posted online in early June. At that point, registrants who prefer to use only the online version can opt out of receiving the hard copy.

# Product News

## FDA CLEARANCE

### Adaptive Radiation Therapy System

**S**IEMENS Medical Solutions ([www.siemens.com/medical](http://www.siemens.com/medical)) has received FDA clearance for its ARTISTE™ multiple-modality system for adaptive radiation therapy. MVision™ 3D megavoltage cone-beam imaging provides outstanding soft-tissue resolution, especially in challenging cases, such as imaging large patients and patients with prostheses. The CTVision™ CT-on-rails system provides in-room diagnostic quality imaging with direct comparison of daily patient anatomy to original planning data.

With a small, 5 mm leaf thickness over the full-field, the 160 MLC™ multileaf collimator provides better conformity to tumor shape independent of tumor size. Its speed and low leakage reduces patient on-table time and dose to normal tissue. The open-design 550 TxT™ treatment table provides the clearance and mechanical strength to accommodate patients weighing up to 550 lbs.



## FDA CLEARANCE

### Faster Radiation Therapy System

Varian Medical Systems ([www.varian.com](http://www.varian.com)) has received FDA clearance for its RapidArc™ radiotherapy hardware and treatment planning

software, which enable image-guided, intensity-modulated radiation therapy (IMRT) to be performed two to eight times faster and more precisely than conventional therapy or helical tomotherapy.

RapidArc delivers a complete IMRT treatment in a single rotation of the machine around the patient, utilizing a

sophisticated, proprietary algorithm that creates a finely-shaped IMRT dose distribution closely matching the size and shape of the tumor. The system works by simultaneously varying the speed with which the treatment machine rotates around the patient, the dimensions of the beam-shaping aperture and the rate at which the dose is delivered. RapidArc can reduce the amount of non-therapeutic radiation reaching healthy tissues during treatment.



## NEW PRODUCT

### Welded-seam Antimicrobial Pads

Patient Comfort Systems ([www.patientcomfortsystems.com](http://www.patientcomfortsystems.com)) has introduced advanced welded-seam technology into its line of antimicrobial pads for MR imaging systems. The technology uses heat welding to protect the inner foam core of the pad from penetration of Methicillin-resistant Staphylococcus aureus (MRSA) bacteria or other biological contamination. Fraying, tears and gaps in stitching at the pad's seams, as well as the wearing away of coating material, can allow MRSA to penetrate and form a reservoir in the pad core, which cannot be adequately cleaned, posing a contamination risk to all patients who come into contact with the pad.

## FDA CLEARANCE

### Large Open-bore MR

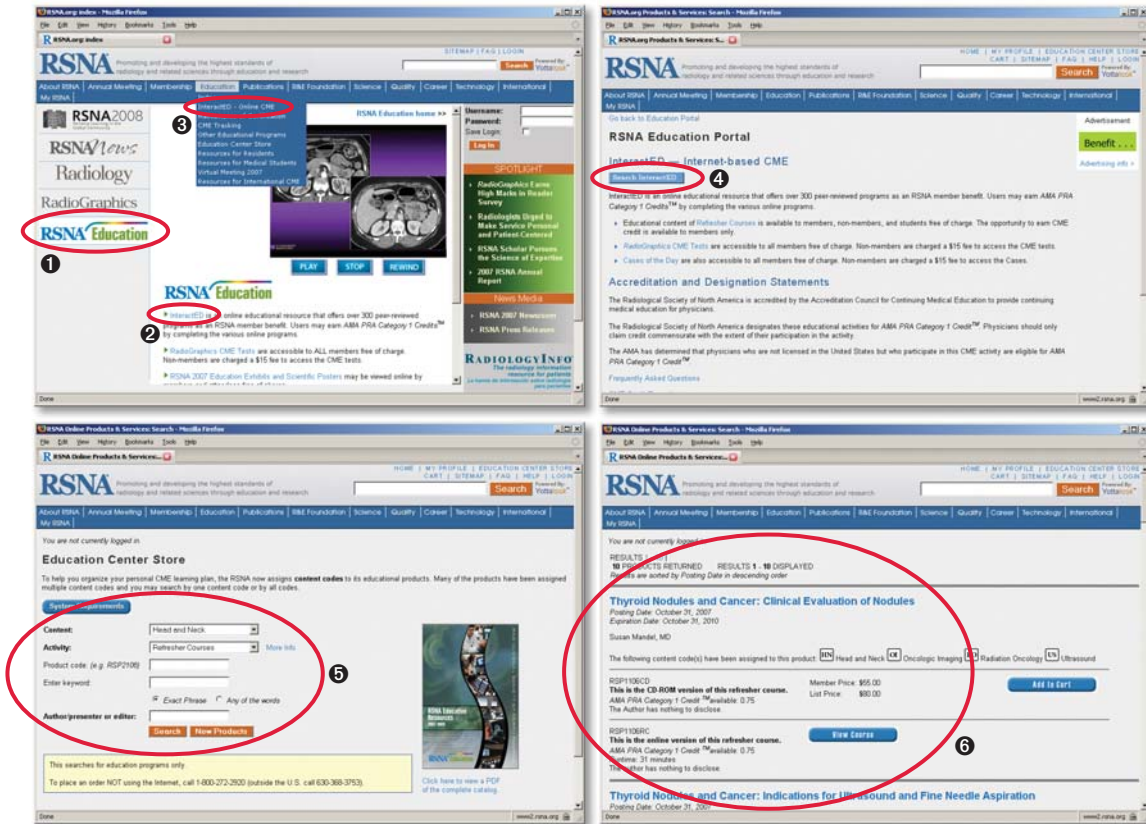
Toshiba America Medical Systems ([www.medical.toshiba.com](http://www.medical.toshiba.com)) has received FDA clearance for the new open-bore 1.5 T Vantage Titan™ MR system. The open bore of the Vantage Titan is 18 percent larger than other 1.5 T systems, featuring a large 71-centimeter patient aperture and Pianissimo™ noise reduction technology.

The Vantage Titan's large clinical field-of-view is unique for its bore size and produces high-quality images without compromising homogeneity or overall imaging performance.

## CORRECTION

In the Product News section of the March 2008 issue of *RSNA News*, photos of the AZUR Peripheral HydroCoil Embolization System (manufactured by Terumo Interventional Systems) and Contura™ multi-lumen balloon catheter (manufactured by SenoRx) were inadvertently reversed.

# RSNA.org



## InteractED®

INTERACTED® is RSNA's online education resource. A new learning management system simplifies use of InteractED, which has amassed more than 15,000 registered radiologists and 300 peer-reviewed programs available for *AMA PRA Category 1 Credit*™.

To access InteractED, click RSNA Education in the lefthand sidebar on the *RSNA.org* homepage ① and then click InteractED ②. You can also select InteractED from the Education dropdown menu at the top of the *RSNA.org* homepage ③.

To select a particular kind of InteractED content—such as a refresher course or Cases of

the Day—or select content by subspecialty, click Search InteractED ④.

Choose the type of content and/or activity from the dropdown boxes and provide optional keywords, product code or author name ⑤.

Select an InteractED activity from the options provided ⑥. RSNA members will be asked for their login and password. Free access to InteractED is a benefit of RSNA membership. Non-members are charged a fee to access some components.

Inquiries about InteractED should be directed to the RSNA Education Center at 1-800-272-2920 or 1-800-381-6660 x3753.

## connections

Your online links to RSNA

### RSNA.org

**My RSNA™**  
*RSNA.org* – click My RSNA

**Radiology Online**  
*RSNA.org/radiology*

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

**RSNA News**  
*rsnanews.org*

**Membership Applications**  
*RSNA.org/mbrapp*

**RSNA Membership Directory**  
*RSNA.org/directory*

**Education Portal**  
*RSNA.org/education*

**RSNA CME Credit Repository**  
*RSNA.org/cme*

**CME Gateway**  
*CMEgateway.org*

**International Radiology Outreach Resources**  
*RSNA.org/International/IROR.cfm*

**InterOrganizational Research Council**  
*radresearch.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*

**RSNA Research & Education (R&E) Foundation**  
 Make a Donation  
*RSNA.org/donate*

Silver Anniversary Campaign  
*RSNA.org/campaign*

**Community of Science**  
*RSNA.org/cos*

**CQI Initiative**  
*RSNA.org/quality*

**RSNA 2008**  
*RSNA2008.RSNA.org*

**Abstract Submission for RSNA 2008**  
*RSNA.org/abstracts*

# Medical Meetings

## May – June 2008

**APRIL 30–MAY 3**

German Radiology Society, 89th German Radiology Congress, Messe Berlin • [www.roentgenkongress.de](http://www.roentgenkongress.de)

**MAY 1–4**

Canadian Association of Radiologists (CAR), 71st Annual Scientific Meeting, Ottawa Marriott Hotel, Ontario • [www.car.ca](http://www.car.ca)

**MAY 1–4**

38th São Paulo Radiology Meeting, Transamérica Expo Center, São Paulo, Brazil • [www.spr.org.br](http://www.spr.org.br)

**MAY 3–6**

American College of Medical Physics (ACMP) 25th Annual Meeting, Fairmont Olympic Hotel, Seattle • [www.acmp.org](http://www.acmp.org)

**MAY 3–9**

International Society for Magnetic Resonance in Medicine (ISMRM), 16th Scientific Meeting and Exhibition, Toronto • [www.ismrm.org](http://www.ismrm.org)

**MAY 4–6**

2008 World Congress of Brachytherapy, Marriott Copley Place, Boston • [www.americanbrachytherapy.org](http://www.americanbrachytherapy.org)

**MAY 4–7**

Radiology Business Management Association (RBMA), 2008 Radiology Summit, Las Vegas Hilton • [www.rbma.org](http://www.rbma.org)

**MAY 6–10**

Society for Pediatric Radiology (SPR), Annual Meeting, Fairmont Scottsdale Princess, Arizona • [www.pedrad.org](http://www.pedrad.org)

**MAY 15–18**

Society for Imaging Informatics in Medicine (SIIM), Annual Meeting, Washington State Convention & Trade Center, Seattle • [www.siim2008.org](http://www.siim2008.org)

**MAY 17–22**

American College of Radiology (ACR), Annual Meeting and Chapter Leadership Conference 2008, Hilton Washington • [www.acr.org](http://www.acr.org)

**MAY 23–26**

Spanish Society of Radiology, 29th Annual Congress, Barceló Renacimiento Hotel, Seville • [www.seram2008.com](http://www.seram2008.com)

**MAY 23–27 VISIT THE RSNA BOOTH**

Italian Society of Medical Radiology, 43rd Annual Congress, New Rome Fair Centre • [www.congresso.sirm.org](http://www.congresso.sirm.org)

**MAY 31–JUNE 5**

American Society of Neuroradiology (ASNR), 46th Annual Meeting, Ernest N. Morial Convention Center, New Orleans • [www.asnr.org/2008](http://www.asnr.org/2008)

**JUNE 2–4**

UK Radiological Congress, NIA, ICC & Austin Court, Birmingham, UK • [www.ukrc.org.uk](http://www.ukrc.org.uk)

**JUNE 5–8**

International Society of Radiology (ISR), 25th International Congress of Radiology, Palais des Congrès, Marrakesh, Morocco • [www.icr2008.org](http://www.icr2008.org)

**JUNE 10–13**

European Society of Gastrointestinal and Abdominal Radiology (ESGAR), 19th Annual Meeting, Istanbul Convention & Exhibition Center, Turkey • [www.esgar.org](http://www.esgar.org)

**JUNE 11–12**

Association of Educators in Imaging and Radiologic Sciences (AEIRS), 41st Annual Meeting, Hotel Albuquerque, New Mexico • [www.aeirs.org](http://www.aeirs.org)

**JUNE 14–18**

SNM, Annual Meeting, Ernest N. Morial Convention Center, New Orleans • [interactive.snm.org](http://interactive.snm.org)

**JUNE 22–25**

World Congress on Interventional Oncology (WCIO) and Best of the American Society of Clinical Oncology (ASCO), Hyatt Regency Century Plaza, Los Angeles • [www.wcio2008.com](http://www.wcio2008.com)

**JULY 27–31 VISIT THE RSNA BOOTH**

American Association of Physicists in Medicine (AAPM), 50th Annual Meeting, George R. Brown Convention Center, Houston • [www.aapm.org](http://www.aapm.org)

**NOVEMBER 30–DECEMBER 5**

**RSNA 2008, 94th Scientific Assembly and Annual Meeting, McCormick Place, Chicago • [RSNA2008.RSNA.org](http://RSNA2008.RSNA.org)**

**RSNA**News

RSNA News  
820 Jorie Blvd.  
Oak Brook, IL 60523  
1-630-571-2670  
1-630-571-7837 Fax  
[rsnanews@rsna.org](mailto:rsnanews@rsna.org)

NONPROFIT ORG.  
U.S. POSTAGE  
**PAID**  
PERMIT #186  
EASTON, PA 18042