

RSNA® *News*

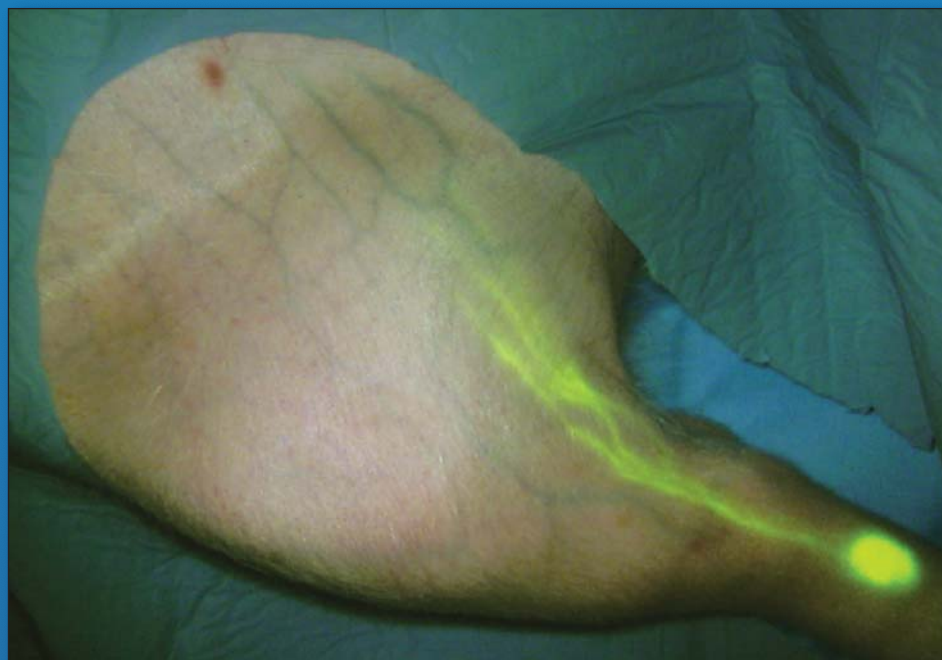


Image courtesy of John V. Frangioni, M.D., Ph.D.

Imaging Innovation Helps Surgeons “Cut by Color”

Also Inside:

- Salary Survey Results Questioned
- Popular Gadgets Find Place on the Job in Radiology
- Survey Reveals Long-lasting Positive Impact of R&E Grants
- RSNA Outstanding Researcher, Educator Announced

RSNA 2008
November 30 – December 5

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RSNA Announces International Visiting Professor Teams

THE RSNA Board of Directors has announced teams for the International Visiting Professors (IVP) program for 2009. The professors and their destinations are:

Argentina

Abida Z. Ginai, M.D., Ph.D., F.R.C.R.

University Hospital, Erasmus Medical Center, Rotterdam, The Netherlands

Homer A. Macapinlac, M.D.

University of Texas/M.D. Anderson Cancer Center, Houston

Theresa C. McLoud, M.D.

Massachusetts General Hospital, Boston

Bolivia

Laura W. Bancroft, M.D.

Florida Hospital, Orlando, Fla.

William W. Mayo-Smith, M.D.

Rhode Island Hospital/Brown University, Providence, R.I.

Estonia

Loren H. Ketaj, M.D.

University of New Mexico, Albuquerque, N.M.

Michelle A. Michel, M.D.

Medical College of Wisconsin/Froedtert Hospital, Milwaukee

Mexico

(In cooperation with the Federación Mexicana de Radiología e Imagen A.C. [FMRI])

Alisa D. Gean, M.D.

San Francisco General Hospital, San Francisco

Janio Szklaruk, M.D., Ph.D.

University of Texas/M.D. Anderson Cancer Center, Houston

South Africa

Jill E. Jacobs, M.D.

New York University Medical Center, New York

L. Santiago Medina, M.D., M.P.H.

Miami Children's Hospital, Miami

Leanne L. Seeger, M.D.

University of California, Los Angeles/David Geffen School of Medicine

For more information about the IVP Program, go to RSNA.org/International/CIRE/ivpp.cfm. An article about the 2008 IVP teams that traveled to China will appear in the February 2009 issue of *RSNA News*.

RSNA Launches Search for New Executive Director

RSNA has retained the services of Korn/Ferry International to assist in the recruitment of a new executive director. To view the job description and apply, visit www.ekornferry.com, click "opportunities" and enter the code re575. At the bottom of the position description, select "click here to be considered for this opportunity."

This is a confidential Web site. Only Korn/Ferry consultants and the RSNA Search Committee will have access to resume information submitted. For answers to questions about the search or to nominate a potential candidate, contact rsna@kornferry.com.



RSNA Annual Meeting Honored for Economic Impact

Publication *Tradeshaw Week* recently gave the RSNA annual meeting its top prize for impact on the local economy.

In its award application, RSNA noted that annual meeting attendees have a significant impact on the local economy, staying in hotels, dining in area restaurants and shopping and touring the city during their stay. Estimated spending by RSNA 2007 registrants totaled \$128 million, more than any other Chicago meeting in the Top 10 as ranked by attendance and almost \$15 million more than its closest competitor. Figures come from the Chicago Convention and Tourism Bureau.

The latest economic impact figure represents an increase over RSNA 2006, where spending by registrants totaled \$115.5 million.

Earlier this year, *Tradeshaw Week* ranked the RSNA annual meeting as the 33rd largest tradeshow of 2007 (as measured by net square feet of exhibit space) and the highest-ranked healthcare-related meeting. It was the highest RSNA has ever ranked on the list.



RADIATION

Fact of the Month

A radiologist flying from Sydney to the RSNA annual meeting receives an effective dose of about 0.05 mSv. This is approximately the same as a chest radiograph.



American Association of Physicists in Medicine

Developers of Physics Education Modules Named

RSNA and the American Association of Physicists in Medicine (AAPM) have selected the developers of 50 Web-based instructional modules detailing the basic science underlying imaging. Each module is being developed by a team led by a physicist and including at least one radiologist.

The modules will be produced in two phases—phase 1 is under way and includes modules on radiography, fluoroscopy, mammography, CT,

ultrasound, MR imaging, nuclear medicine and radiation biology. The modules are designed to improve the basic science education of radiology residents and will also benefit practicing radiologists, particularly those participating in the American Board of Radiology's Maintenance of Certification program.

Basic Concepts in Radiography

Edwin F. Donnelly, M.D., Ph.D.
Ronald R. Price, Ph.D.
David R. Picken III, Ph.D.

Radiographic Image Receptors

Stewart C. Bushong, Sc.D.
Pedro J. Diaz-Marchan, M.D.
Anand Prabhakar, M.D.

Basics of X-ray and Mammographic Systems

George David, M.S.
Jerry D. Allison, Ph.D.
James V. Rawson, M.D.

X-Ray Quality/Dose

Ehsan Samei, Ph.D.
Caroline Hollingsworth, M.D.
George S. Bisset III, M.D.
Charles M. Maxfield, M.D.
Nicole T. Ranger, M.Sc.
Joseph Lo, Ph.D.
James T. Dobbins III, Ph.D.

Mammography Dose and Image Quality

Tom Oshiro, Ph.D.
Lawrence Bassett, M.D.

Fluoroscopy Systems/Dose/Quality

Edward L. Nickoloff, D.Sc.
Jeffrey H. Newhouse, M.D.
Ronald Van Heertum, M.D.
Zheng Feng Lu, Ph.D.

Interventional Dose/Quality

Mark S. Rzeszutarski, Ph.D.
Robert G. Dixon, M.D.
Philip H. Heintz, Ph.D.
Donald L. Miller, M.D.
Mary E. Moore, M.S.

CT Systems

Talissa A. Altes, M.D.
Mark B. Williams, Ph.D.

CT Image Quality and Protocols

Kalpana M. Kanal, Ph.D.
Brent K Stewart, Ph.D.
Martin Gunn, M.B.Ch.B.

CT Dose

Mahadevappa Mahesh, M.S., Ph.D.
Ehsan Samei, Ph.D.
George S. Bisset III, M.D.

Basic Concepts in Nuclear Medicine

Kenneth (Kip) Matthews II, Ph.D.
L. Steven Bujenovic, M.D.

Radiation Detection/Instrumentation

Nicole T. Ranger, M.Sc.
Martin Charron, M.D.

Gamma Cameras/Image Quality

Ramsey D. Badawi, Ph.D.
Bijan Bijan, M.D.

SPECT/SPECT-CT/Image Quality

Ken Nichols, Ph.D.
William Robeson, M.S.
Barry Babchuck, D.Sc.
Christopher J. Palestro, M.D.

PET/PET-CT/Image Quality

Habib Zaidi, Ph.D.
Charles Steiner, M.D.
Marie-Louise Montandon, Ph.D.

Dose Estimates/Internal Dosimetry/ Safety/QC/Regulations

Dolores Arginelli, Ph.D.
Alberto Baroli, M.D., Ph.D.
Lorenzo Bianchi, Ph.D.
Flavia Groppi Garlandini
Cristiana Peroni
Sandro Ridone, Pharm.D., M.Sc.
Luca Vigna, B.Sc.

Ultrasound—Concepts and Transducers

Ann Scherzinger, Ph.D.
Elizabeth Stamm, M.D.

Basic Ultrasound Imaging and Display

Zheng Feng Lu, Ph.D.
Jeffrey H. Newhouse, M.D.
Sherelle Lea Laifer-Narin, M.D.
Edward L. Nickoloff, D.Sc.

Advanced and Doppler Ultrasound Imaging

Kwan-Hoong Ng, Ph.D.
Basri Johan Jeet Abdullah, M.B.B.S.

Ultrasound Image Quality/Artifacts/Safety

Kevin Evans, Ph.D.
Ricky Robert Layman Jr., M.S.
Benjamin A. Tourkow, M.D.
Adele Lipari, M.D.

MR Imaging: Concepts and Tissue Properties

Raleigh F. Johnson Jr., Ph.D.
Thomas K. Nishino, Ph.D.
Joseph Roebuck, Ph.D., M.D.
Stephen Seiler, M.D.

MR Imaging: Instrumentation, Siting and Shielding

Wlad T. Sobol, Ph.D.
Desiree E. Morgan, M.D.
Joshua P. Smith, M.D.
Derek J. Schemmel, M.D.

MR Image Formation

Nathan Yanasak, Ph.D.
Ramon E. Figueroa-Ortiz, M.D.
Jerry D. Allison, Ph.D.

MR Imaging Pulse Sequences

Jerry D. Allison, Ph.D.
James V. Rawson, M.D.
Nathan Yanasak, Ph.D.

MR Imaging: Image Acquisition, Reconstruction and Characteristics

Denis Hoa, M.D.
Emmanuelle Le Bars, Ph.D., M.Sc., B.Sc.
Antoine Micheau, M.D., M.Sc., B.Sc.

MR Imaging Special Acquisition Methods

M. Elizabeth (Beth) Meyerand, Ph.D.
Victor M. Haughton, M.D.

MR Imaging: Image Quality/Safety/Bioeffects

Brent K. Stewart, Ph.D.
Kalpana M. Kanal, Ph.D.
Felix S. Chew, M.D.

MR Image Artifacts

E. Russell Ritenour, Ph.D.
Fried Ott, M.D.

MR Imaging Tissue Properties, Contrast Agents and Reactions

Tom Chih-Chuang Hu, Ph.D., M.B.A.

James V. Rawson, M.D.
Jerry D. Allison, Ph.D.

Basic Radiation Biology Radiation Effects

Mark S. Rzeszutarski, Ph.D.
Karen Brown, M.H.P.
Anne Dunne, M.D.
Albert Parlade, M.D.

Radiation Risks

Donald Peck, Ph.D.
Kimberly E. Applegate, M.D., M.S.
Thomas L. Slovits, M.D.

New Training Methods Examined in AAPM Report

Mechanisms for providing the necessary training and experience to become a qualified medical physicist are outlined in a new American Association of Physicists in Medicine (AAPM) report, "Alternative Clinical Training Pathways for Medical Physicists."

The task group writing the report was chaired by Michael G. Herman, Ph.D., of the Mayo Clinic in Rochester, Minn. He and his colleagues note that 200 to 400 qualified clinical medical physicists are needed in the workforce annually and available residency capacity makes it impossible to meet the need through residency programs only.

"The training and experience requirements for most non-physician professionals involved in radiologic imaging or radiation therapy, including medical physicists, are being standardized at the national level in Congressional bills," Dr. Herman and colleagues write. "It is incumbent upon us to provide the mechanisms to be certain that medical physicists are properly trained."

The report is available at www.aapm.org/pubs/reports/RPT_133.pdf.

MEDICAL IMAGING COMPANY NEWS

Varian, GE Collaborate on 7 T MR

Scientific instrument developer Varian Inc., of Palo Alto, Calif., and GE Healthcare, of Chalfont St. Giles, United Kingdom, have announced they will work together to develop a new 7 T MR imaging system for pre-clinical use.

The two businesses will work together to develop the advanced imager using Varian's magnets, positioning devices and other technology. GE will supply electronics, user interfaces and software.

DelliSanti to Head Carestream Molecular Imaging

John DelliSanti, M.B.A., has been named president of Carestream Molecular Imaging, located in New Haven, Conn.

DelliSanti recently served as executive vice-president and chief commercial officer at Caliper Life Sciences. Prior to joining Caliper, DelliSanti served as vice-president and general manager of U.S. commercial operations for Invitrogen.



Zerhouni Leaves NIH Post

National Institutes of Health Director **Elias A. Zerhouni, M.D.**, stepped down at the end of last month. Dr. Zerhouni said he wanted to pursue other opportunities, including writing projects.

Named to the post in 2002, Dr. Zerhouni is credited with launching the NIH Roadmap for Medical Research intended to move NIH forward as a single entity. He was formerly executive vice-dean of The Johns Hopkins University School of Medicine, where he was also chair of the Russell H. Morgan Department of Radiology and Radiological Science, Martin Donner Professor of Radiology and a professor of biomedical engineering.



Elias A. Zerhouni, M.D.

Kruskal Named Beth Israel Chair

RadioGraphics Associate Editor **Jonathan B. Kruskal, M.D., Ph.D.**, has been named chair of the Beth Israel Deaconess Medical Center Department of Radiology and radiologist-in-chief.

Dr. Kruskal has been a member of the BIDMC Radiology Department for 18 years. He was previously chief of abdominal imaging and associate chief of quality assurance. He is also a professor of radiology at Harvard Medical School.

Dr. Kruskal serves RSNA in a variety of capacities. He oversees a quality initiatives section that debuted this year in *RadioGraphics* and serves on the *RSNA News* editorial board, Public Information Advisors Network and Continuous Quality Improvement Initiative Committee.



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

Niederhuber, Brody Named to NIH Board

National Cancer Institute Director **John E. Niederhuber, M.D.**, and outgoing Johns Hopkins President **William R. Brody, M.D., Ph.D.**, are among those named to the National Institutes of Health Scientific Management Review Board (SMRB). Authorized by the NIH Reform Act of 2006, the SMRB will examine NIH's organizational structure and balance and provide recommendations for enhancing the agency's mission through greater flexibility and responsiveness. Dr. Brody delivered the Annual Oration in Diagnostic Radiology at RSNA 2005.



John E. Niederhuber, M.D.



William R. Brody, M.D., Ph.D.

McKinney is University of Tennessee Chair

J. Mark McKinney, M.D., has been named chair of the Department of Radiology at the University of Tennessee in Knoxville. Previously with the Mayo Clinic in Jacksonville, Fla., Dr. McKinney served as chair of the Hospital Radiology Practice Team, assistant director of the Radiology Residency Program and section head of interventional radiology.

Wake Forest Appoints Blackstock as Radiation Oncology Chair

A. William Blackstock Jr., M.D., has been named chair of radiation oncology at Wake Forest University Baptist Medical Center in Winston-Salem, N.C. Dr. Blackstock has been on the faculty since 1996 and had been serving as vice-chair.

IN MEMORIAM:

Hitoshi Katayama, M.D.

Hitoshi Katayama, M.D., named an RSNA Honorary Member in 2006, died of pancreatic cancer on Aug. 25. He was 75.

An internationally recognized authority on the safe and appropriate use of low osmolar contrast media, Dr. Katayama was best known to some as an author of what came to be called the "Katayama Report." The pivotal large-scale study, published in *Radiology* in 1990, concluded that nonionic contrast media significantly reduced the frequency of severe and potentially life-threatening adverse drug reactions. Dr. Katayama and more than 100 radiologists from across Japan prospectively studied almost 350,000 cases for adverse drug reactions related to high-osmolar ionic contrast media and low-osmolar nonionic contrast media, resulting in the landmark publication.



Hitoshi Katayama, M.D.

IN MEMORIAM:

Henry P. Pendergrass, M.D., M.P.H.

1978 RSNA President **Henry P. Pendergrass, M.D., M.P.H.**, died Sept. 21 from complications resulting from surgery to repair a hip fracture. He was 83.

Known especially for his commitment to academic radiology, Dr. Pendergrass served as a professor and vice-chair of the Department of Radiology at Vanderbilt University in Nashville from 1976 to 1995. Dr. Pendergrass is also remembered for his volunteer contributions to 35 medical societies in many key administrative posts.

Dr. Pendergrass received the RSNA Gold Medal in 1984. He was one of the original trustees of the RSNA Research & Education (R&E) Foundation. He and his wife, Carol, are Silver Anniversary Campaign Pacesetters and are among the Foundation's largest donors.

Eugene P. Pendergrass, M.D., Dr. Henry Pendergrass' father, was 1954 RSNA President. He received the RSNA Gold Medal in 1957 and the New Horizons Lecture is named in his honor.



Henry P. Pendergrass, M.D., M.P.H.



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

MY TURN

Professionalism Means Patients Come First

AS PHYSICIANS, we enjoy a privileged position, but with that privilege comes an obligation to our profession, the public and the patients we serve. A profession may be defined in many ways but there are some common principles among these definitions: (1) there is a body of knowledge to be acquired; (2) there are formal requirements for admission; (3) the relationships with the patients being served are confidential; (4) the members of the profession engage in self-regulation; and (5) the members are guided by principles higher than financial remuneration.

These principles are inherent to our specialty of radiology. In order to practice radiology, there is an enormous body of knowledge that must be acquired. That huge information base continues to expand with the new technologies being developed and knowl-

edge being generated every year. This drives us toward subspecialization.

Although the U.S. health-care system is expensive, quality measures do not place us at the top of developed countries. Third-party payers are trying to both reduce costs and improve these quality measures. Board certification has become a surrogate for quality and has become a requirement for reimbursement by some payers. Board certification and maintenance of certification may become practical requirements for admission to our field.

While physicians consider their interactions with patients to be confidential, the Health Insurance Portability and Accountability Act (HIPAA) has coded this into law.



N. Reed Dunnick, M.D.

The most challenging of these principles may be avoiding self-interest in our decisions and actions. Sending patients to an imaging center in which the referring physician holds an equity position (self-referral) is more common among non-radiologists.

However, radiologists must be aware of our own conflicts of interest as we interact with our referring physicians, vendors and hospital administrators. We must remember, as members of the profession of medicine, that we must always put the interests of our patients first.

N. Reed Dunnick, M.D., is RSNA Board Liaison for Science and American Board of Radiology president. Dr. Dunnick is the Fred Jenner Hodges Professor and chair of the Department of Radiology at the University of Michigan Health System in Ann Arbor.



RSNA Board of Directors Report

AT ITS September meeting, the RSNA Board of Directors endorsed RSNA sponsorship of a meeting on medical simulation. The Board also named participants in some of the Society's international programs and approved appointments to RSNA committees for the coming year.

Measurement the Focus of Medical Simulation Meeting

RSNA will be a sponsor of a 2009 meeting on performance measures in medical simulation. The meeting will be chaired by **Steven L. Dawson, M.D.**, an associate professor at Harvard Medical School and clinical interventional radiologist at Massachusetts General Hospital. Dr. Dawson leads the Simulation Group—also known as the SIM Group—at MGH and is also founder and chair of the non-profit Advanced Initiatives in Medical Simulation.

Dr. Dawson will present “When Opportunity Knocks: Simulation as a Learning Tool in Radiology” during the **RSNA 2008 opening session.**

During the two-day simulation meeting next year, interventional radiologists will define a set of procedures that can be simulated, or are currently simulated, in order to create a list of performance measures. The group will then identify points in the simulations where these measures could be assessed to track trainee performance, with the **goal of ultimately providing the measures to simulator manufacturers.**

“This meeting will establish performance standards that are created by interventional radiology for simulators that were invented by interventional radiologists and which teach interventional radiological procedures,” Dr. Dawson noted in his meeting proposal to RSNA. “Assessment of expertise in these procedures should derive from our estimates of expertise, not those of another specialty.”

In another collaboration, RSNA will cosponsor with SNM the **2nd Cardiovascular Molecular Imaging Symposium**, to be held April 30–May 1, 2009, at the National Institutes of Health in Bethesda, Md.

International Program Participants Named

The RSNA International Visiting Professor (IVP) teams for 2009 will travel to **Argentina, Bolivia, Estonia, Mexico and South Africa.** The IVP program annually sends teams of North American professors to lecture at national radiology society meetings and visit with radiology residency training programs at selected host institutions in developing nations. The goal is to foster teaching and a cultural exchange between radiology departments in the U.S. and those in other countries. The RSNA Committee on International Relations and Education administers the program. Names of the 2009 professors appear on Page 1.

The **2008-2009 Derek Harwood-Nash International Fellows** are Ali Yikilmaz, M.D., of Turkey, and Irene Nakano, M.D., M.Sc., of Brazil. The fellowship enables a faculty member from an international institution to study at a North American institution for 6 to 12 weeks.

RSNA Committees Gain New Members

Appointments to RSNA's many committees were approved by the Board, in consultation with the committee chairs. The Board extends its appreciation to the hundreds of **highly skilled and generous volunteers** that assist RSNA in meeting its mission.

Beverly B. Huckman and R. Gilbert Jost, M.D., have been named 2009 secretary and treasurer, respectively, of the RSNA Research & Education (R&E) Foundation. James P. Borgstede, M.D., Burton P. Drayer, M.D., G. Scott Gazelle, M.D., Ph.D., and



Hedvig Hricak, M.D., Ph.D., Dr. h.c.
Chairman, 2008 RSNA Board of Directors

Vijay M. Rao, M.D., have been named as R&E trustees. Theresa C. McLoud, M.D., was appointed for a second 3-year term as trustee.

Outstanding Researcher, Educator Named

The 2008 RSNA Outstanding Researcher is **Ralph Weissleder, M.D., Ph.D.**, of Boston. The 2008 RSNA Outstanding Educator is **Richard B. Gunderman, M.D., Ph.D.**, of Indianapolis. Profiles of Drs. Weissleder and Gunderman, who will be honored prior to the President's Address at RSNA 2008, appear on Page 16.

The search for a **new RSNA executive director** is under way. The Board has engaged the services of executive recruitment firm Korn/Ferry International to help find appropriate candidates. The process is expected to take six to nine months.

HEDVIG HRICAK, M.D., PH.D., DR. H.C.
CHAIRMAN, 2008 RSNA BOARD OF DIRECTORS

■ Note: In our continuing efforts to keep RSNA members informed, the chairman of the RSNA Board of Directors will provide a brief report in *RSNA News* following each board meeting. The next RSNA Board Meeting will be at RSNA 2008.

Imaging Innovation Helps Surgeons “Cut by Color”

RADIOLOGISTS are poised to contribute a new tool to the surgical arsenal, creating a fluorescent roadmap of sorts to light the way for more favorable surgical results.

Researchers from Beth Israel Deaconess Medical Center (BIDMC) in Boston report the development and early clinical trials of a new imaging system that will essentially light up and color cancerous tumors, enabling surgeons to evaluate whether they've resected an entire diseased area. The team presented their work on fluorescence-assisted resection and exploration—or FLARE—at the 236th National Meeting of the American Chemical Society in Philadelphia earlier this year.

FLARE is portable and consists of a near infrared (NIR) imaging system, a video monitor and a computer. “We don't require the surgeon to relearn anything,” said project director John V. Frangioni, M.D., Ph.D., an attending physician at BIDMC and associate professor of radiology and medicine at Harvard Medical School.

“We're embellishing the surgery with additional information they otherwise wouldn't have,” added Dr. Frangioni.

The additional information comes from the use of chemical dyes called near-infrared (NIR) fluorophores designed to target specific structures when injected into patients. When exposed to NIR light, which is invisible to the human eye, the contrast agents light up targeted cells and are viewed on a video monitor during surgery. If, for instance,

cancer cells are targeted, the image of the lit-up cancer cells can be superimposed over the surgical field, allowing surgeons to cut away the fluorescent “glowing” cells and sparing nerves and other healthy structures in the area.

Dr. Frangioni described the scene. “If you imagine a surgical field where suddenly the tumor is glowing bright green, you teach the surgeon to cut out the bright green,” he said. “When you don't see any more bright green, you know the tumor's gone. It is cutting by color.”

“Chicken and Egg” Dilemma Posed by Contrast Agent

FLARE came together slowly after years of struggle to develop and utilize the right imaging system and to find the proper contrast agent, said Dr. Frangioni. The agent currently being tested is an already available fluorophore being used off-label.

“We've been faced in the last few years with a chicken and egg problem,” he said. “In order to perform this task, you need an imaging system to see the contrast agents. But without an imaging system, why would anyone develop the contrast agents? Without both, there's no justification for either. The milestone we're proud of is being able to translate the imaging system into the clinic using an already available fluorophore.”

As they fine-tune the new method, BIDMC team members devote much of their efforts to finding ways to give sur-



John V. Frangioni, M.D., Ph.D.

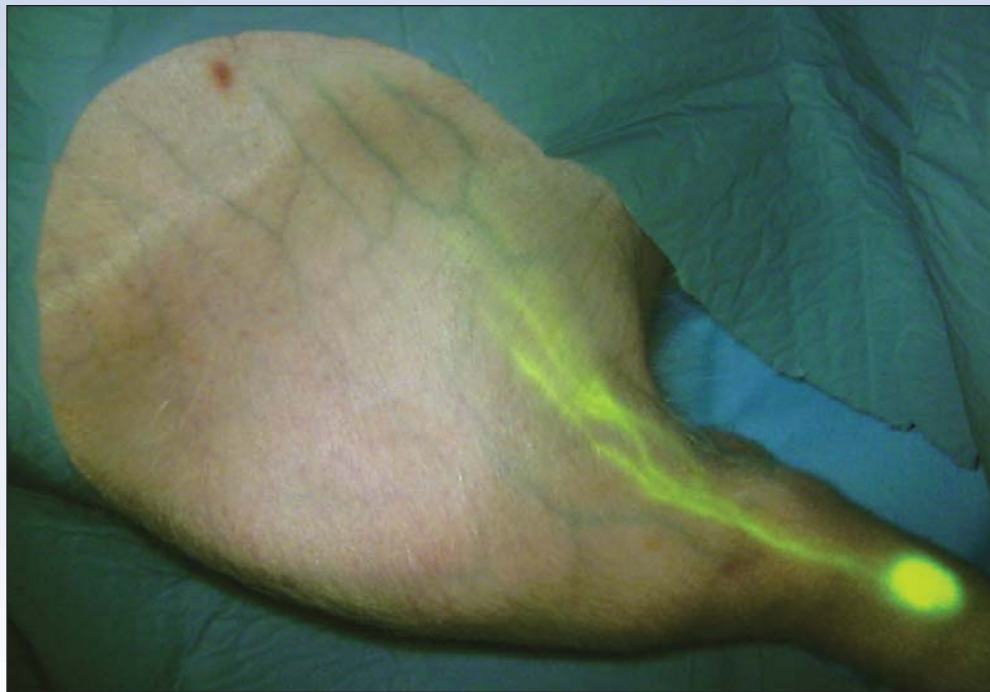
geons real-time information. “The system we developed has two independent channels of near-infrared fluorescence,” said Dr. Frangioni. “You can highlight two different things on the surgical field, and those things are only limited by one's imagination and the chemistry.”

“You might want to see tumor with one channel and nerves with another,” continued Dr. Frangioni. “You might want to see blood vessels with one channel and tumor with the other. Whatever that particular surgery calls for, that is how you would design the contrast agents.” He further described the surgical field: “They're invisible to our eye, but the imaging system and computer translate those wavelengths into a visible color of the surgeon's choice. We always recommend unnatural colors like lime green or fluorescent orange, things that wouldn't normally be in the surgical field, so they're obvious.”

When using the FLARE system, the surgeon sees a screen with four windows—one for color video, one for each of the two independent channels

You can highlight . . . different things on the surgical field, and those things are only limited by one's imagination and the chemistry.

John V. Frangioni, M.D., Ph.D.



**ON THE COVER
Cutting by Color**

John V. Frangioni, M.D., Ph.D., and colleagues are developing fluorescence-assisted resection and exploration (FLARE) to guide physicians during tumor resection. Chemical dyes called near-infrared (NIR) fluorophores are designed to target specific structures when injected into patients. When exposed to NIR light, which is invisible to the human eye, the contrast agents light up targeted cells and are viewed on a video monitor. Here the technique has been used to map lymph nodes in a swine limb.

Image courtesy of John V. Frangioni, M.D., Ph.D.

of NIR fluorescence and a fourth called the “merge” window. “It can be any arithmetic combination of windows, so we can get very fancy and overlay one or both windows on top of the color video,” said Dr. Frangioni. “We can subtract one from another, multiply, divide. It gives us a lot of flexibility. The surgeon really has quite a bit of additional information they otherwise wouldn’t see.”

Breast Cancer is Focus

The BIDMC team is currently focusing human trials on sentinel lymph node mapping in patients with breast cancer. A study launched last summer was conducted on six patients, while another 50-patient study will get under way later this year comparing standard compounds against the new fluorescent compound utilized in the FLARE studies.

Focusing efforts on breast cancer patients made sense from both treatment and surgical perspectives, said Dr. Frangioni, noting that in one-fifth of breast cancer surgeries, the surgeon is not able to remove all of the cancerous tissue. “When the tumor is sent to the

pathologist for analysis, 20 percent of the reports come back saying you cut through the tumor, meaning there’s a fraction of it left behind,” he said.

“When we have breast cancer-specific agents we will study whether the FLARE system results in removal of more cancerous tumor,” he continued. “That process will probably be relatively straightforward because we’re starting with a population where we know we’re leaving tumor behind. If we’re able to improve those results, it should become obvious in the numbers.”

Dr. Frangioni said he looks forward to feedback from other centers now testing the FLARE and the smaller, portable FLARE system. Physicians at Leiden University in The Netherlands and Brigham and Women’s Hospital in Boston are involved. “Part of the milestone and why we’re very proud of this achievement is that the imaging system with its two channels can be used for any surgery for any application,” Dr. Frangioni said. “The fact we’ve got it in the clinic and it’s available for research means that now you can let your imagination go on the contrast agents themselves.

“It’s very easy to mislead oneself by getting excited about the technology,” Dr. Frangioni continued. “It’s really up to unbiased observers to tell us whether it’s useful or not.” □

Learn More

■ More information about the lab of John V. Frangioni, M.D., Ph.D., at Beth Israel Deaconess Medical Center is available at www.frangionilab.org.

Near Infrared Imaging at RSNA 2008

AMONG THE RSNA 2008 presentations on near infrared imaging is scientific paper SSJ15-04, “Semi-automatic



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Landmark-based 2D-3D Image Fusion: Correlation of Near-infrared Fluorescence Imaging with Flat Panel Volume Computed Tomography in Mice.” The paper will be presented by Christian Dullin of the University of Göttingen on Tuesday, Dec. 2, at 3:30 p.m. in Room E353A.

Salary Survey Results Questioned

AN ANNUAL salary study shows a continued trend in modest rises in compensation for most medical specialties, with concurrent losses for medical practices, and has drawn calls for changes to the ways physicians are compensated.

The American Medical Group Association recently issued the *2008 Medical Group Compensation and Financial Survey*, a 2008 report based on 2007 data. The survey, in its 21st year, is conducted by RSM McGladrey, Inc.'s Health Care Consulting Group.

For radiologists, the AMGA Survey does not represent an applicable sample, said John A. Patti, M.D., a radiologist at North Shore Medical Center in Salem, Mass., and the group's chief financial officer for the past 23 years. Dr. Patti also serves as vice-chair of the American College of Radiology (ACR) Board of Chancellors.

AMGA mailed the survey questionnaire to more than 2,700 medical groups. Survey administrator RSM McGladrey received valid responses from 224 medical groups representing more than 44,000 providers in 146 specialties, including radiology.

"When drawing conclusions about the survey, keep in mind that AMGA is a small and atypical piece of the workforce," said Dr. Patti. "AMGA has 67,000 member physicians—less than 10 percent of the total U.S. physician population. Large, multispecialty groups are its primary members." He noted the survey, answered by just eight percent of the groups to whom it was sent, is not enough to draw the nationwide conclusions it makes.

Dr. Patti is a speaker at two RSNA 2008 refresher courses, "Radiology Reimbursement 2008–2009: How We



John A. Patti, M.D.
North Shore Medical Center, Salem, Mass.



Brad Vaudrey, M.B.A., C.P.A.
RSM McGladrey, Inc

Influence Our Economic Future" and "Important Health Policy Issues Affecting Radiology: An ACR Leadership Perspective." Both courses are being offered in conjunction with ACR.

AMGA Survey Recognized for Benchmarking

The survey is indeed geared toward multispecialty groups, said Brad Vaudrey, a director with RSM McGladrey's Health Care Consulting Group, who defended the legitimacy of the survey results. "It is one of the top surveys recognized for benchmarking," he said. The review is important, he added, because "providing a fair market value is essential" when it comes to recruitment and retention.

Vaudrey indicated that radiology was a "hot" specialty for many years, especially in terms of compensation. The AMGA survey shows salaries for radiologists started leveling off in recent years. In 2007, the median compensation for a diagnostic radiologist was \$420,858, up 1.44 percent from 2006.

For interventional radiologists, the median compensation was \$463,219, up 5.28 percent from the previous year.

While the increase for interventional radiologists is above the inflationary levels, "it is a bit of a slow down from previous years," said Vaudrey.

The AMGA assessment shows the highest compensation increases for dermatology, cardiac and thoracic surgery, hematology, pathology and hospitalists. Dermatology compensation rose 8.9 percent and that of hospitalists increased 7.3 percent. Vaudrey noted that while compensation for cardiac and thoracic surgery fell 2.13 percent in 2006, it rose 8.1 percent in 2007.

Overall, there was a 3.5 percent compensation increase in all specialties, a level just under inflationary indexing, said Vaudrey.

The 2008 survey also yielded interesting results with regard to work relative value units (RVUs). The study notes, "For the majority of participating medical groups, work RVUs are the

primary measure of a physician's productivity. These figures include work effort changes as well as CMS value changes that occurred in the 2007 CMS CPT (Centers for Medicare and Medicaid Services Current Procedural Terminology) register. The overall average increase was around 14 percent. The RVU measure is normally a very steady benchmark; however, the changes in RVU values are creating a period of fluctuation."

For diagnostic radiologists, the AMGA analysis shows a 5.83 percent decrease in median work RVUs, from 9,208 in 2006 to 8,671 in 2007. For interventional radiologists, there was a 2.62 percent drop, from 7,815 in 2006 to 7,610 last year. There was a \$55.39 benchmarking per work RVU for diagnostic radiologists, with a \$60.89 benchmarking per work RVU for interventional radiologists.

"A lot of groups pay on a per RVU rate, which held steady to 2006 rates due to the CMS changes this year. I expect a 4.2 percent increase once the groups get used to the conversion factors," Vaudrey said. "There is a lot of uncertainty this year about how this will all shake out in the future."

Dr. Patti questioned this portion of the study as well. "I talk to radiologists every day who say, 'I'm working harder than I ever did in my life.' How can it be that the work RVUs for radiologists fell more than five percent? Today, there is a shift to higher work RVU procedures, such as MR imaging."

ACR Survey to Offer Different Perspective

ACR has performed similar surveys focusing on workload and productivity, but not compensation, said Dr. Patti. An ACR survey on 2002–2003 workload levels, published in the September 2005 issue of *Radiology*, showed that, over the prior decade, procedures per full-time equivalent (FTE) increased about 2 percent annually while RVUs per procedure also rose at the same rate, resulting in a 4 percent annual increase in RVUs per FTE radiologist.

Top Physician Compensation

SPECIALTY	2007	2006	2006–2007 PERCENTAGE CHANGE	2005
Cardiac/Thoracic Surgery	\$497,307	\$460,000	8.11	\$470,000
Diagnostic Radiology – M.D.s (Interventional)	\$463,219	\$440,004	5.28	\$424,992
Cardiology – Cath Lab	\$456,048	\$435,000	4.84	\$406,230
Orthopedic Surgery	\$450,000	\$436,481	3.10	\$409,518
Diagnostic Radiology – M.D.s (Non-interventional)	\$420,858	\$414,875	1.44	\$400,000

Source: American Medical Group Association (AMGA) 2008 Medical Group Compensation and Financial Survey.

A new survey conducted by ACR in 2007 showed that work RVU procedures per FTE grew considerably from 2002–2003 to 2006–2007. "This contradicts the AMGA survey in terms of growth and productivity," said Dr. Patti.

Vaudrey noted, however, that AMGA figures also show an increase between 2002 and 2007, from 6,156 to 8,671.

"There are various reasons for this increase in both AMGA and ACR studies—harder work, an increase in CMS values, improved efficiencies," said Vaudrey. "The one-year decrease in 2007 did occur, but this is coming off more than five years of increase. One year does not make a trend and we will continue to watch the market. However, if I were to speculate, I would say the decrease may indicate that the physicians are not all working less, but have recognized the impact of performing higher RVU valued procedures and could be starting to plateau in their work capacity."

Limited information on the ACR survey can be released at this time because the study has not yet been published, said Dr. Patti; however, the ACR report will show radiology is not stagnating, he said.

Current Compensation System Must Change, Some Say

Donald W. Fisher, Ph.D., AMGA president and chief executive officer, said the survey shows the current payment system to providers is unsustainable due to declining reimbursements, competition for specialists and the cost of new technology. "Groups are spending huge amounts of time and money to improve quality and efficiency of care," said

Dr. Fisher, noting that when a patient is or gets healthy, no extra services are needed and that reduces revenues.

The system should be changed to pay for outcomes or results, Dr. Fisher said. "Instead of paying for the number of services, you pay for the results," he said. He offered an example: "A patient with diabetes suffers congestive heart failure. You figure out how much money it will cost for one year of treatment. Then, you treat the patient with that money. Your incentive to improve the patient is money. Your group will lose money if the patient doesn't improve."

Modifications to the payment system must be made, Dr. Patti agreed, noting that it is important to make those changes realistic and practical. He said he too supports the concept of working together for the health of patients but questions how, in an outcomes-based system, costs would be covered when patients wind up needing more care than expected.

A 3-year pilot to test the concept described by Dr. Fisher is being developed by Blue Cross and Blue Shield and will be launched in North Dakota next year. □

Learn More

■ More information about the American Medical Group Association is available at www.amga.org.

"Implementation of Pay for Performance: Implications for Radiology," is an RSNA 2008 special focus session to be moderated by Howard P. Forman, M.D. More information about registering for RSNA 2008 is available on Page 19.



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Survey Reveals Long-lasting Positive Impact of R&E Grants

A SURVEY this year of more than 600 RSNA Research & Education (R&E) Foundation grant recipients revealed that the grants have significant bearing on the recipients' subsequent funding, research breakthroughs, peer-reviewed publications, academic careers and mentorship.

The survey, which had yielded a 57 percent response rate at the time of results calculation, indicated a substantial return on investment. On average, each dollar awarded by the R&E Foundation generated more than \$30 in subsequent grants.

"The return on investment, calculated as new grant dollars earned as principal investigator and/or co-investigator compared to R&E grant dollars invested, has grown since the 2003 survey from \$20 to \$33, or an increase of 65 percent," said C. Leon Partain, M.D., Ph.D., professor of radiology, radiological sciences and biomedical engineering at Vanderbilt University in Nashville, Tenn., and R&E Board of Trustees liaison to the Evaluation Committee.

The Foundation received a flood of positive comments when respondents were asked about the impact of R&E grants on their careers in a series of free-response survey questions. Said one R&E research scholar: "The grant established me as an independent investigator and helped me to achieve the rank of associate professor with tenure. It allowed me to develop and refine educational informatics tools, techniques and procedures for radiologists, and I was able to go on to obtain a 10-year, \$2 million grant from the

Department of Defense to create additional tools for U.S. Navy healthcare providers."

Another respondent noted: "The scholar grant, in particular, allowed me to study tumor ablation in depth. Since that time, I have used the data and experience garnered from these grants to obtain National Institutes of Health funding, start a small biotech company and invent several medical devices. None of this would have been possible without the 'launch pad' that the scholar grant provided me."

Yesterday's Research Tied to Today's Practice

Many grant recipients said they were thankful for the protected research time their grants allowed, and commented that their success in R&E-funded research inspired them to continue in academic careers. Seventy-one percent of respondents plan to have a career in academic research in the next five years, while 43 percent look forward to careers in academic education. Of the respondents, 6 percent reported they are department chairs and 14 percent reported they are division heads.

Others commented that research scholar grants funded research into techniques that were considered novel or experimental at the time—and therefore not easily funded by other sources—but are now widely accepted as the standard. "My work on noninvasive iron quantification by MR has become the standard of care for transfusional iron overload," said one respondent. Noted another, "MR spectroscopy and MR perfu-



C. Leon Partain, M.D., Ph.D.
Vanderbilt University

sion of brain tumors are clinical tools nowadays in diagnostic radiology and the RSNA scholar grant helped me develop these as such."

Recipients of R&E research seed grants said their awards gained them recognition as serious investigators and opened doors for additional funding. A recipient wrote, "The RSNA seed grant was the most significant in terms of impact—it came early in my career and helped me to 'reclassify' myself as a bona fide academic." Another respondent said the seed grant "was the first recognition I received that my work was potentially important, and was a major incentive to continuing my research career."

Also noteworthy, said the Evaluation Committee, was recipients' success with peer-reviewed publications. Ninety-three percent of respondents reported that they have gone on to publish peer-reviewed articles and 86 percent said they have published articles as a first author.

GIVING TO THE FOUNDATION IS EASY

Use the envelope included with this issue of *RSNA News* to give to the R&E Foundation to support future grants. Donations are also accepted at RSNA.org/donate.

R&E Grants Spur NIH Funding

Many 2008 R&E survey respondents reported subsequent research funding from the National Institutes of Health (NIH). Among those who attributed their NIH success to their R&E grants:

Reed A. Omary, M.D., M.S., vice-chair of research for radiology and an associate professor of radiology and biomedical engineering at Northwestern University's Feinberg School of Medicine



1993 RSNA Research Resident Grant: *Stereotactic Magnetic Resonance-Guided Irradiation to Rat Brain and Gamma Knife Irradiation-induced Changes to Rat Brain Using MRI and 1H-Magnetic Resonance Spectroscopy (MRS)*

1999 Bracco Diagnostics/RSNA Research Scholar Grant: *Real-Time Magnetic Resonance-Guided Endovascular Treatment of Renal Artery Stenosis in a Swine Model*

NIH R01 Grant: *Functional MRI Monitoring of Hepatic Chemoembolization*
\$830,000

"The two RSNA grants, as well as completion of the Advanced Course in Grant Writing, were instrumental in the recent funding decision for my NIH grant proposal," said Dr. Omary.

Kenji Suzuki, Ph.D., assistant professor of radiology and physics at the University of Chicago Cancer Research Centers



2006 Philips Medical Systems/RSNA Research Seed Grant: *Development and Evaluation of Computer-aided Detection of Polyps in CT Colonography on False Negative Cases in Large Multicenter Clinical Trial*

NIH R01 Grant: *3D Massive Training ANN for CAD for Colon Cancer in CT Colonography*

\$1,166,600

"Because of funding of this seed grant, I received recognition by peers at the very beginning of my independent career," said Dr. Suzuki.

Benjamin Yeh, M.D., associate professor of radiology at the University of California at San Francisco



2003 E-Z-EM, Inc./RSNA Research Seed Grant: *CT Perfusion Imaging of Early Response to Systemic Therapy in Gastrointestinal Malignancy Metastases to the Liver*

NIH R01 Grant: *CT Monitoring of Angiogenesis*

\$1,633,000

"The skills and network that I built as a direct result of the Research Seed Grant allowed me to obtain substantial subsequent funding," said Dr. Yeh. "I have also been fortunate to be able to share my interest with several trainees who I have mentored through successful projects in the past several years."

Grant Recipients Become Mentors

A new survey question about recipients' roles as mentors generated a stirring response—84 percent said they serve as mentors to young trainees and investigators. The survey also invited recipients to comment on what they see as the current and future needs of the radiologic specialties and how the R&E Foundation can help. Respondents readily provided feedback that will influence future grant award decisions.

"Medical imaging of the future will be practiced by those who do the research and education to develop and apply it," said Dr. Partain. "Our mandate together is to seek, describe and apply new knowledge and to train new

practitioners. If we do not pursue this mandate with passion and commitment, others will."

Dr. Partain encouraged RSNA members to view these results as affirmation that R&E programs are working as intended—to serve as springboards for future success. "The fraction of members who contribute to the Foundation—our future—is only 10 percent," he said. "We hope all our members will consider joining them, to serve the patients who continue to look to us to provide care and encouragement and hope," he said. □

2009 Grant Application Process Under Way

People interested in applying for 2009 R&E grants can begin preparing their applications online at grants.rsna.org/grants.

Application deadlines are:

- January 10, Education Grants
- January 15, Research Grants
- February 1, Research Medical Student Grant

For more information on grants offered by the Foundation and examples of funded grant applications, go to RSNA.org/Foundation or contact Scott Walter, M.S., Assistant Director, Grant Administration at 1-630-571-7816 or swalter@rsna.org.

Popular Gadgets Find Place on the Job in Radiology

THE radiology community has long been one of inventors and technophiles, and it should come as no surprise that its members are jumping at every opportunity to make use of new popular gadgets as they pour into the mainstream. Several RSNA 2008 presentations reflect this phenomenon.

"A few days ago I let my 3-year-old daughter use the Nintendo Wii™ for the first time, and within a minute she was pointing and clicking," said RSNA 2008 presenter Brian Kalbfleisch, who plans to demonstrate the potential applications offered by the 'Wiimote's' intuitiveness.

"First there is depth—you can move objects on the z axis just by moving closer or farther away," said Kalbfleisch, RSNA's Web architect. "Second is tactile feedback. As you move over objects, you can rumble the Wiimote and also generate sounds."

Kalbfleisch said he envisions many uses in radiology. "Imagine being able to search data and have relevant results appear closer to you," he said. "As you move the Wiimote over images, it can rumble when you move over a problem area, such as cancer. You can rotate and zoom images just by moving your wrist."

In recent years mainstream gadgetry has offered new breakthroughs in image storage, manipulation and transmission. In particular, "smartphones" such as the Apple iPhone™ have readily found their way into radiologists' daily practice.

One unabashed gadgetry fan is the author of the *Not Totally Rad* Weblog.

The diagnostic radiologist and university professor refers to himself as the Samurai Radiologist, a nod to John Belushi's samurai skits on "Saturday Night Live." The Samurai Radiologist, who asked that RSNA maintain his anonymity, received his medical degree in the late 1970s and now resides on the West Coast.

"It's probably the most revolutionary device I've used in the last 10 years," the Samurai Radiologist said of the iPhone. "I remember being at the RSNA annual meeting 15 or 20 years ago and chatting with a friend about the wacky possibility of a device that would let us say, 'Here, let me show you this cool case I have.' I guess this was the device we were thinking of."

Image Quality No Longer an Issue

As with the iPhone's predecessors—"pocket radiologist" and "pocket PACS" have thrived for many years on cheap wireless connections—there is concern about its small screen. Image

We used to play a lot of tricks to get the images to wireless handheld devices, which would inevitably downgrade the image quality.

Adam E. Flanders, M.D.

quality, however, is less of an issue, said RSNA Radiology Informatics Committee member Adam E. Flanders, M.D. "We used to play a lot of tricks to get the images to wireless handheld devices, which would inevitably downgrade the image

quality," said Dr. Flanders, a professor of radiology and rehabilitation medicine, co-director of the Division of Neuroradiology/ENT and director of radiology informatics research at Thomas Jefferson University Hospital in Philadelphia. "Now it's possible

to get a full-fidelity image across the 'ether' and onto your device intact—it's just a miniaturized version of the real image."

Asked whether he would be confident making a diagnosis on a smartphone, Dr. Flanders noted, "I guess that would depend on whether or not it was going to be my final diagnosis or a consultation. If the abnormality is obvious, great; if I don't see an abnormality, I would feel more comfortable re-examining the image at the workstation."

An RSNA 2008 scientific paper session, "Are Second Opinions on Appendicular Skeletal Trauma Accurate on Smartphones?" will address such questions in a specific population. An education exhibit, "Simple Framework for Viewing PACS Images on Smartphones," also addresses questions.

For now, it seems radiologists still prefer the standard workstation. "I have a Blackberry® and I like to show people cine loops of CT angiograms, to demonstrate that you can actually visualize those conditions on the small screen," said Dr. Flanders.

Another valuable use of a Web-enabled smartphone is monitoring practice workflow and efficiency by using secure Web services as add-ons to information systems, added Dr. Flanders. "Every 5 or 10 minutes I can check to see what sorts of studies are stacking up and preempt someone paging me," he said.

Referring physicians may stand to benefit the most from visualization on smartphones, said some radiologists. "An image-enabled smartphone can be a useful tool for mobile clinicians who don't have immediate access to a dedicated enterprise workstation," said

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Dr. Flanders. “They can even share the images with their patients at the bedside.”

Technologically minded radiologists said they are still waiting on a “killer application” for the iPhone. MIMvista, a medical imaging viewer, is the source of much anticipation, said the Samurai Radiologist. “The demo version comes with preloaded cases and you can zoom in, zoom out and window/level,” he said. “If you want to do that with your own images, you have to buy a product they don’t ship yet.”

Noted Dr. Flanders: “There will probably be a rebirth of these things people have started to visit and play around with. They will be especially appealing for educating younger radiologists.”

“Gaming” Approaches, Robots Among RSNA 2008 Topics

RSNA 2008 offerings are brimming with popular gadget applications. Scientific paper sessions, posters and education exhibits explore “gaming” approaches to teaching head and neck vasculature, Adobe Flash for online content and joystick-controlled robots for biopsy, radiofrequency ablation and endovascular procedures. Many presentations are aimed toward junior radiologists and Web-based, interactive tutorials are highly popular this year.

Dr. Flanders noted that not everything radiologists do is image-oriented. A gadget such as Amazon’s Kindle may play a large part in education, he said, allowing radiologists to accumulate a sizeable reference collection. “However, images on the Kindle are not well rendered because the Kindle was never designed to display images,” said Dr. Flanders. “It is optimized to display text and the text is very crisp and easy on the eyes.”

Podcasting is another tool the Samurai Radiologist uses daily. “I’d love to listen to an entertaining ‘all radiology, all the time’ channel while commuting between hospitals,” he said.

One scientific paper session at RSNA 2008, “Dissemination of Radiological Information Using Enhanced Podcasts,” will demonstrate the combined ability to view images and visit Web sites while listening to an audio podcast for a richer learning experience.

“Over the last 15 years I’ve kept running into cool gadgets and my first inclination is, ‘Gee, what do I need

APPLE IPHONE™



that for?” said the Samurai Radiologist. “The only way I ever really answer that question is to buy one and play with it. Sometimes I realize I can’t live without it.”

A gadget’s survival throughout the course of technologic evolution strongly depends on its interoperability, said Bradley J. Erickson, M.D., Ph.D., a professor of radiology and informatics at the Mayo Clinic in Rochester, Minn., and chair of the Society for Imaging Informatics in Medicine.

“Some of these new visualization devices seem quite appealing and are getting better,” Dr. Erickson said. “Many of them are not yet well-tuned for radiology. I suspect some clever persons will figure out how to make that happen.” □

Learn More

■ The *Not Totally Rad* Weblog, authored by the Samurai Radiologist, can be found at nottotallyrad.blogspot.com.

■ To learn more about searching the RSNA 2008 Meeting Program, see Page 29.

RSNA 2008 Lecture/Oration Preview

RSNA 2008 will feature honored lectures by these esteemed medical leaders: Michael J. Welch, Ph.D., of St. Louis, Elizabeth G. McFarland, M.D., of Chesterfield, Mo., and Minesh P. Mehta M.D., of Madison, Wis.



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Eugene P. Pendergrass New Horizons Lecture

Nanoparticles hold great potential not only as diagnostic agents, but also as therapeutic agents, according to the RSNA 2008 New Horizons lecturer.

"The promise of nanoparticles results from their unique size and the ability to attach or encapsulate many different detection, targeting or therapeutic groups to the particles," said Michael J. Welch, Ph.D., who will deliver "Nanotechnology in the Future of Imaging: Prospects and Pitfalls," on Monday, Dec. 1.

For example, said Dr. Welch, radionuclides for PET and SPECT imaging can be attached to nanoparticles, as can probes for optical imaging and gadolinium or other metals used as MR contrast agents. The pharmacokinetics of the nanoparticle can even be altered to suit the requirements of the imaging technology being used, he said.

"If utilizing an imaging technology where longer imaging times can be used, the pharmacokinetics can be lengthened so that there is longer blood retention of the agent and greater uptake is likely to occur in the target site," Dr. Welch said.

Nanoparticles with varying chemical compositions have been studied and applied to imaging modalities including MR, nuclear optical and ultrasound. In addition to detailing the various studies, Dr. Welch will also address complicating issues such as non-specific uptake by the reticuloendothelial system and the enhanced permeability retention effect.

Dr. Welch is a professor of radiology, chemistry and molecular biology and pharmacology at the Mallinckrodt



Michael J. Welch, Ph.D.

Institute of Radiology at Washington University in St. Louis. He also teaches biomedical engineering at the university. Dr. Welch's investigation into the rapid synthesis of positron-labeled organic chemicals is recognized as essential to the development of PET in the early 1970s. His contributions earned him SNM's Benedict Cassen award in 2004.

He is the principal investigator of the PET component of Washington University's small animal imaging resource, one of the five original small animal imaging programs funded by the National Cancer Institute (NCI). He is also principal investigator of the NCI-supported radionuclide resource and co-principal investigator of integrated nanosystems for diagnosis and therapy, supported by the National Heart, Lung and Blood Institute.

Since 1979, Dr. Welch has been the primary investigator of the study titled "Cyclotron Produced Isotopes in Biology and Medicine," supported by NIH. It is the longest continuously renewed research grant at Washington University, now approaching 50 years of progress.

Annual Oration in Diagnostic Radiology

In the decade and a half since CT colonography, or "virtual colonoscopy," was introduced, tremendous technological gains and validation trials of diagnostic performance pushed the field to new level of potential.

"Although CT colonography can provide a time efficient, noninvasive structural examination of the whole colon, the many achievements gained are countered by

significant challenges to overcome," said Elizabeth G. McFarland, M.D., who will deliver this year's Annual Oration in Diagnostic Radiology, "CT Colonography: Achievements and Challenges," on Tuesday, Dec. 2.

In the first decade of CT colonography development, Dr. McFarland was among the researchers who were able to attain National Cancer Institute or corporate funding to pursue optimization of the 3D endoscopic views and CT techniques and conduct validation trials of enriched cohorts of patients for detection of colorectal polyps. Novel work in 3D imagery, computed-aided diagnosis, prepless patient protocols and larger validation trials in screening cohorts followed, she said.

"Throughout these efforts, there was a strong culture of investigators both nationally and internationally who shared a common passion of the pursuit," said Dr. McFarland.

Among the challenges to CT colonography, she said, are the politics of potentially infringing on other specialties and the economics of reimbursement, not to mention implementation obstacles such as defining target lesion size for polyp detection and controlling radiation dose.



Elizabeth G. McFarland,
M.D.

"Similar to the challenges of the low technology field of mammography, the advanced 3D imagery of CT colonography will only face the future challenges of early cancer detection through those who have the discipline to pursue it," said Dr. McFarland.

Dr. McFarland is a radiologist with Diagnostic Imaging Associates at St. Luke's Hospital in Chesterfield, Mo., and serves as medical director and director of CT

colonography at the Center for Diagnostic Imaging in Minneapolis. She is also an adjunct professor in 3D imaging and radiology in the Mallinckrodt Institute of Radiology at Washington University in St. Louis, where she previously spent 10 years as an associate professor.

Dr. McFarland is chair of the American College of Radiology colon cancer committee and has served on the board of directors for the association of university radiologists and on interdisciplinary panels for the American Gastroenterology Association, American Medical Association and ACR. Dr. McFarland also led recent efforts to establish colorectal screening guidelines for the American Cancer Society.

Annual Oration in Radiation Oncology

The origins of radiotherapy are in diagnostic radiology and, while the two fields diverged over the last 30 years, advanced molecular imaging is now driving the need to re-integrate the two fields into a common strategy for improved patient outcome, said the presenter of the RSNA 2008 Annual Oration in Radiation Oncology.

"Advances in molecular medicine and diagnostic radiology will be central to moving the field of radiation oncology to the ultimate goal of personalized medicine or theragnostic radiation

oncology," said **Minesh P. Mehta, M.D.**, who will present "Alchemy, Early Detection, Precision Guidance and Radiotherapy," on Wednesday, Dec. 3.

Dr. Mehta noted that about half the 1.2 million people diagnosed with cancer annually in the U.S. receive radiotherapy, with half of those patients doing so with a curative intent. Encouraging multi-disciplinary interaction, his lecture will focus on early detection, avoidance of geographic/marginal misses, identification of biologically resistant subclones of tumor cells and appropriate therapeutic modifications to overcome this resistance, and improved treatment delivery.

"The need for integrating the fields of radiotherapy and diagnostic radiology into a common strategy for improved patient outcome in cancer is obvious," said Dr. Mehta. "It is an absolute necessity to reintegrate these fields as vital partners in the battle against cancer."

Earning international recognition for his investigation of innovative therapies for brain tumors, Dr. Mehta has explored techniques with radiosurgery, fractionated stereotactic radiotherapy, intensity modulated radiation therapy and image



Minesh P. Mehta, M.D.

guided radiation therapy. He has also studied promising methods such as using targeted agents in conjunction with radiotherapy to overcome therapeutic resistance.

Dr. Mehta is Eric Wolfe Professor of Human Oncology at the University of Wisconsin at Madison. He also teaches neurological surgery at the university. He serves at five of the university's specialized cancer clinics and maintains staff appointments at nearly a dozen hospitals in Wisconsin and Illinois.

Through clinical patient care programs at the University of Wisconsin, Dr. Mehta has chaired major international phase-three randomized studies. One examined the radiation effect modulator motexafin gadolinium in lung cancer patients with brain metastases and demonstrated the improvement in time to neurologic decline. Another study, supported by a program project grant from the National Institutes of Health, assembled a team of top investigators to carry out the first clinical implementation and utilization of tomotherapy.



The New Horizons Lecture is a popular event during RSNA annual meetings. Francis S. Collins, M.D., Ph.D., presented "A Roadmap for the Future of Biomedical Research" at RSNA 2003.

2008 Outstanding Researcher, Educator Announced

RSNA will honor two individuals at RSNA 2008 for their contributions to research and education. **Ralph Weissleder, M.D., Ph.D., is the 2008 RSNA Outstanding Researcher. Richard B. Gunderman, M.D., Ph.D., is the 2008 RSNA Outstanding Educator.**

Dr. Weissleder is a professor of radiology and systems biology at Harvard Medical School, director of the Center for Systems Biology at Massachusetts General Hospital (MGH), director of the Center for Molecular Imaging Research in the Department of Radiology and attending clinician in interventional radiology at MGH. He is also a member of the Dana Farber Harvard Cancer Center and Harvard Stem Cell Institute and an associate member of the Broad Institute of Harvard and MIT.

Dr. Weissleder has made fundamental discoveries in the development of novel nanomaterials for MR detection of lymph node metastases, enzyme activatable probes for minimally invasive cancer detection techniques and long circulating polymers for angiogenesis imaging.

He is the principal investigator of several National Institutes of Health grants and holds more than 30 patents. He has published more than 400 original articles in peer-reviewed journals and has co-authored several textbooks.

A founding member and 2002 president of the Society for Molecular Imaging Research, Dr. Weissleder also helped to launch the RSNA Molecular Imaging Committee and served as its inaugural chair.

Dr. Weissleder has received numerous awards, including the American Roentgen Ray Society (ARRS) President's Award, Society for Molecular Imaging Lifetime Achievement Award and the



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

Academy of Molecular Imaging 2006 Distinguished Basic Scientist Award.

John M. Hoffman, M.D., former chief of the Molecular Imaging Branch of the Cancer Imaging Program of the National Cancer Institute, said of Dr. Weissleder: "I speak from my experience that Dr. Weissleder is regarded as one of the most

respected and accomplished imaging scientists in the world."

Dr. Gunderman is a professor and vice-chair of the Department of Radiology at Indiana University, with faculty positions in pediatrics, medical education, philosophy, philanthropy and liberal arts.

As a member of the Medical Scientist Training Program at the University of Chicago, Dr. Gunderman earned a Ph.D. in social thought and a medical degree. While a student and resident, he designed and taught 16 courses on topics related to medicine, ethics and religion, creating the second-year elective in radiology. At Indiana University, he has designed and taught 13 different courses on radiology, medicine, philosophy and philanthropy.



Richard B. Gunderman, M.D., Ph.D.

Dr. Gunderman is a longtime mentor of medical students and a sought-after lecturer. He is a creator and chair of the educational track for the ARRS annual meeting.

The past recipient of GE-Radiology Research Academic Fellowship from the Association of University Radiologists and the first to receive an RSNA R&E Foundation Education Scholar Grant, Dr. Gunderman now serves on the Foundation's Education Study Section.

Dr. Gunderman is the author of six books. His *Achieving Excellence in Medical Education* represents one of few books on medical education authored by a radiologist. The second edition of his *Essential Radiology: Clinical Presentation, Pathophysiology, Imaging* was hailed by the *American Journal of Roentgenology*: "Anyone who has ever had the opportunity to hear Richard Gunderman lecture would expect only a product of exceptional quality by this erudite radiologist-educator. He delivers the goods!"

"Dr. Gunderman is the owner of incredible intellect and energy," said Andrew J. Taylor, M.D., a professor of radiology at the University of Wisconsin School of Medicine and Public Health. "He has made a lifelong commitment to advance thoughtful discussions and provide educational opportunities for numerous people in numerous arenas, and has done so with personal warmth and respect with every interaction that I have seen him make over the years."

More About RSNA 2008

Session Highlights Best of Japanese Research

"Japan Presents," an Integrated Science and Practice (ISP) session offered in conjunction with the Japan Radiological Society at RSNA 2008, will feature the best in Japanese radiology.

"Japan has played a large role in the development of medical imaging," said session moderator Kazuro Sugimura, M.D., a professor in the Department of Radiology at Kobe University Graduate School of Medicine in Kansai. "The opportunity to have our work collectively introduced to the world's largest society for radiology has greatly motivated the field of radiology in Japan and has become something we can be quite proud of."

The Japan Presents session, scheduled for Monday, December 1, from 10:30 a.m. to 12:00 p.m. in Room E352, will cover non-contrast MR angiography, diffusion tensor tractography of the brain at 3T, development of area-detector CT and physiopathological imaging of chronic obstructive pulmonary disease with oxygen-enhanced MR.

"For CT technology, we will talk about the position of area detector CT within the field of imaging diagnostics, as well as discuss what might be coming next," said Dr. Sugimura. "For MR imaging, we will consider the capacity of diffusion MR technology for tumor detection and tissue characterization, as well as its future development. Will non-contrast MR angiography become a standard test? Is MR a superior tool for diagnosing lung function? Can tractography be applied for spinal cord and peripheral nerve diagnostics? Also, what does the future hold for MR in examining the liver and uterus?"

The session is a chance for international exchange that includes a deeper understanding of radiology in Japan, joint research and study-abroad opportunities, said Dr. Sugimura. "When we share the latest ideas coming out of Japan, we

can greatly stimulate the intellectual curiosity of the attendees, which can yield suggestions for future research, he said.

The series of ISP sessions highlighting international advances debuted last year with "Italy Presents."

New Bistro RSNA Features Lunchtime "Topic Table" Discussions

Making its debut at RSNA 2008 is Bistro RSNA, an expanded dining option offering an extensive menu and room to sit down comfortably and network with colleagues. Each technical exhibit hall, as well as the Lakeside Learning Center, will house a Bistro RSNA.

Special tables at the Lakeside Learning Center Bistro RSNA will be reserved as "topic tables" where attendees can participate in discussions in 14 subspecialties. Topic facilitators will be present at Bistro tables Monday through Wednesday, from 12:00 p.m. to 1:30 p.m.

For Bistro RSNA tickets and a list of topic table discussions, go to www.rsnameal.ticket.com/attendee.php.

Physician-Industry Relationships the Topic of New Course

The RSNA Professionalism Committee will sponsor a new course at RSNA 2008:

RC316 Physicians' Relationships with Industry

Tuesday, Dec. 2, 8:30 a.m. – 10:00 a.m.

In an era of ever-heightening public scrutiny of physicians and their practices, this new course delves into the term "conflict of interest" and addresses the distinction between perceived and actual conflict of interest.

Instructors, including RSNA Professionalism Committee Chair Leonard Berlin, M.D., will detail the prevalence and types of relationships between radiolo-

gists and industry that could give rise to conflicts of interest. Attendees will come to appreciate how even the appearance of conflict could negatively affect the image of the radiologist in the eyes of the public.



Leonard Berlin, M.D.

Dr. Berlin practices at Rush North Shore Medical Center in Skokie, Ill. Joining him in presenting the course will be Eric G. Campbell, Ph.D., of the Institute for Health Policy at Harvard University, Grant Silcox, J.D., of the Medical Imaging & Technology Alliance (MITA) and Rachel F. Brem, M.D., of George Washington Medical Center.

QIBA Kiosk Promotes Quantitative Imaging and Biomarkers

The Quantitative Imaging Biomarkers Alliance is a new coalition of equipment manufacturers, pharmaceutical companies, clinical trial experts, government agencies, clinicians and RSNA. Intended to develop the infrastructure to support reliable and effective use of imaging biomarkers, QIBA has three technical committees: DCE-MRI, Volumetric CT and FDG-PET. The QIBA kiosk will be located adjacent to the Molecular Imaging Zone in the Lakeside Learning Center.



Continued on next page

More About RSNA 2008

Continued from previous page

RSNA 2008 Growing Greener

In its efforts to be a green organization, RSNA has increased its ecofriendly activities at the annual meeting:

- Increased use of electronic documentation
- Meeting publications printed on recycled and/or recyclable paper with soy-based ink
- Biodegradable plates, cups and cutlery used for catering
- Renewable power used in McCormick Place

In addition, RSNA attendees are urged to "go green" by tossing their copies of the *Meeting Guide* and *Daily Bulletin*, as well as their badges and lanyards, into recycling bins. Attendees can also be ecofriendly by riding the Metra Electric Train or sharing a cab for transportation during the meeting.

A full list of "green" initiatives is located in the *RSNA Pocket Guide*.

Pick Up a Free RSNA Buyers Guide CD

RSNA Buyers Guide is a searchable online directory of hundreds of companies providing radiology-related products and services. RSNA 2008 attendees are encouraged to pick up a free Buyers Guide CD-ROM at the Technical Exhibit Help Center in Hall D.



Breast Brachytherapy, Adolescent Self-Mutilation among RSNA 2008 Press Conference Topics

Watch the news for coverage of RSNA 2008. More than 170 members of the medical news media typically attend the annual meeting, generating thousands of stories appearing in print and electronic media in the U.S. and around the world. Among press conferences to be presented are:

- Patient Photos Spur Radiologist Empathy and Eye for Detail
- Radiologists Diagnose and Treat Self-Embedding Disorder in Teens
- New Mammography Technology Effective in Detecting Breast Cancer
- Brain Waves Show Sound Processing Abnormalities in Autistic Children
- Breast Cancer Treatment Offers Better Outcome to Women with Implants
- New Breast Imaging Technology Targets Hard-to-Detect Cancers
- CT Colonography Offers One-Stop Screening for Cancer and Osteoporosis
- Stress-Related Disorders Affect Brain's Processing of Memory
- MRI Shows New Types of Injuries in Young Gymnasts

- Exercise Helps Prevent Age-Related Brain Changes in Older Adults
- New Treatment Eliminates Heel Pain Caused by Plantar Fasciitis
- Portable CT Increases Chance of Stroke Survival and Recovery
- Robotic Technology Improves Stroke Rehabilitation

Register Onsite for Investment Seminars

Saturday, Nov. 29

RSNA will offer two investment seminars at McCormick Place prior to RSNA 2008:

- **9:30 a.m. – 12:30 p.m.**
Effective Estate Planning Strategies, presented by Barry Rubenstein, B.S., J.D., L.L.M.
- **1:30 p.m. – 5:30 p.m.**
Effective Investment Strategies, presented by J. Michael Moody, M.B.A.

Register for these seminars onsite at McCormick Place Room E271AB. You must be registered for the annual meeting in order to enroll in these seminars. These seminars do not qualify for *AMA PRA Category 1 Credit™*. Contact the RSNA Education Center at 1-800-381-6660 x7772 or ed-ctr@rsna.org for more information.

Categorical Course Supplements Available


The RSNA Education Store, located in RSNA Services and Booth 2700 in the South Building, will offer supplements for the RSNA 2008 Categorical Courses:

- **2008 Categorical Course in Diagnostic Radiology: Cardiac Imaging**
- **2008 Categorical Course in Diagnostic Radiology Physics: CT and MR Imaging**

Supplements are \$20 for RSNA members and \$25 for non-members.

Continuing Education Opportunities Abound

Numerous SAMs Offered

RSNA is offering 48 self-assessment modules (SAMs) in 20 subspecialty categories at RSNA 2008. The SAMs are approved for diagnostic and interventional radiologists, radiation oncologists and radiologic physicists participating in the American Board of Radiology maintenance of certification process. SAMs are available to U.S.-licensed physicians for select courses and are a benefit of membership (a fee will be charged for non-members). Look for the SAM icon when registering for RSNA 2008. 

Up to 87.5 AMA PRA Category 1 Credits™ Available

Take advantage of the many refresher courses, scientific sessions, honored lectures and education exhibits at RSNA 2008 to earn *AMA PRA Category 1 Credit™*. Each physician has the opportunity to earn up to 87.5 credits.

Important Registration Information

Registration Materials Mailed

RSNA 2008 registration materials were mailed to North Americans who registered by November 7. If your registration materials do not arrive in time, please plan to visit one of the Help



Centers onsite, located in the Grand Concourse and Lakeside Center, to have the contents reprinted. RSNA encourages attendees to do this on Saturday, November 29, to avoid long lines later in the week.

Registration materials were mailed to international attendees whose registration was completed by October 24. For those registered after October 24, international documents will be available for pickup onsite at Desk A, located in the Lakeside Center Ballroom near Professional Registration.

Name Badge Required

You must wear your name badge at McCormick Place to attend RSNA courses and events or to enter the exhibit halls. RSNA will use radiofrequency identification (RFID) badge scanning technology within the Technical Exhibit halls, the Lakeside Learning Center and multiple session rooms. No personal information is stored in the RFID badge, only an ID number. Badges will be monitored to obtain total attendance counts and exhibit floor traffic. Should you wish to "opt out" of this program, please visit either Help Center onsite located in the Grand Concourse or Lakeside Center.



Meeting Program, Lanyard and Official Meeting Bag Offered

One complimentary copy of the RSNA Meeting Program, official meeting bag and lanyard are available with the

presentation of a voucher at the distribution counters located in the Grand Concourse, South Building and Lakeside Center.



Onsite Registration Available

Those who registered in advance can wear their badge at the McCormick Place Convention Center and proceed directly into the exhibit halls and classrooms. Those who need to register onsite should proceed to Professional Registration in the Lakeside Center Ballroom.

Onsite Registration

Saturday (November 29)

12:00 p.m. – 6:00 p.m.

Sunday – Thursday (November 30–December 4)

7:30 a.m. – 5:00 p.m.

Friday (December 5)

7:30 a.m. – 12:00 p.m.

Onsite Registration Fees

\$100	RSNA Member, AAPM Member
\$0	Member Presenter
\$0	RSNA Member-in-Training, RSNA Student Member and Non-Member Student
\$0	Non-Member Presenter
\$230	Non-Member Resident/Trainee
\$230	Radiology Support Personnel
\$720	Non-Member Radiologist, Physicist or Physician
\$720	Hospital or Facility Executive, Commercial Research and Development Personnel, Healthcare Consultant and Industry Personnel
\$300	One-day registration to view only the Technical Exhibits area (<i>onsite registration for this category is offered at Exhibitor Registration, Grand Concourse—Level 3</i>)

For more information about registration at RSNA 2008, visit RSNA.org/register, e-mail reginfo@rsna.org, or call 1-800-381-6660 x7862.

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More About RSNA 2008

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Technical Exhibition to Span Three Halls

The RSNA Technical Exhibition, featuring the world's largest assembly of health-care imaging products and solutions, will be located in Hall A (South Building), Hall B (North Building) and Hall D (Lakeside Center). More than 700 companies are scheduled to participate within half a million square feet in the three halls. More information about the new layout, along with maps and information about all exhibiting companies, will be published in the RSNA *Meeting Guide* available at McCormick Place.



Plan Your Visit

A searchable database of the RSNA technical exhibitors is available online at RSNA.org/showcase. This list includes complete information about participating companies, including booth numbers, contact information, company description, product listings and a new interactive floor plan. During the meeting, the database can be accessed at Internet Zones throughout McCormick Place and near Cafés A1 and A2 in the South Building.

Attendees can also find exhibitors via the Company Locators at the entrance to each exhibit hall and You Are Here kiosks placed throughout the Technical Exhibition.

New Products and Services Spotlighted in *Daily Bulletin*

Many exhibiting companies use the New Product & Services section of the RSNA *Daily Bulletin* to promote products and services released within the last 12 months. Published Sunday through Thursday, the *Daily Bulletin* is the official daily newspaper of the annual meeting and provides overnight coverage of meeting news. Each edition of the *Daily Bulletin* features a unique New Products & Services section. The *Daily Bulletin* is available at McCormick Place and also online at RSNA.org/bulletin.

Technical Exhibition Hours

Sunday, November 30 – Wednesday, December 3

10:00 a.m. – 5:00 p.m.

Thursday, December 4

10:00 a.m. – 2:00 p.m.





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 August 15 – September 19, 2008.

EXHIBITORS CIRCLE PROGRAM

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Medtronic



BRONZE CIRCLE (\$1,500)

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Hazard Radiology Associates
Hazard, Ky.



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Arlayne T. Shockman, M.D.
*In memory of Gerald Shockman, Ph.D.,
Judith Shockman, M.D., and Joel Shockman, M.D.*
John W. Thomas, M.D.
Nancy & William T. Thorwarth Jr., M.D.
Scott S. White, M.D.

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Linda M. Gruener, D.O.
E. Russell & Julia R. Ritenour
Ingrid E. & Stephen R. Thomas, Ph.D.

\$251 – \$500

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Julie K. Timins, M.D. & William Lupatkin, M.D.
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Norman H. Rahn III, M.D.
George C. Ramsay, M.D.
William J. Tuddenham, M.D. &
Phyllis S. Tuddenham
Jack Wittenberg, M.D.
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\$250 OR LESS

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Kathryn H. & John P. Tampas, M.D.
In honor of Peggy J. Fritzsche, M.D.
Karin Van der Mooren, M.D.
Marjorie C. & Francis X. Van Houten, M.D.
Jean M. Weigert, M.D.
Pat & Charles D. Williams, 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.

Journal Highlights

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

Postoperative Surveillance of Differentiated Thyroid Carcinoma: Rationale, Techniques, and Controversies

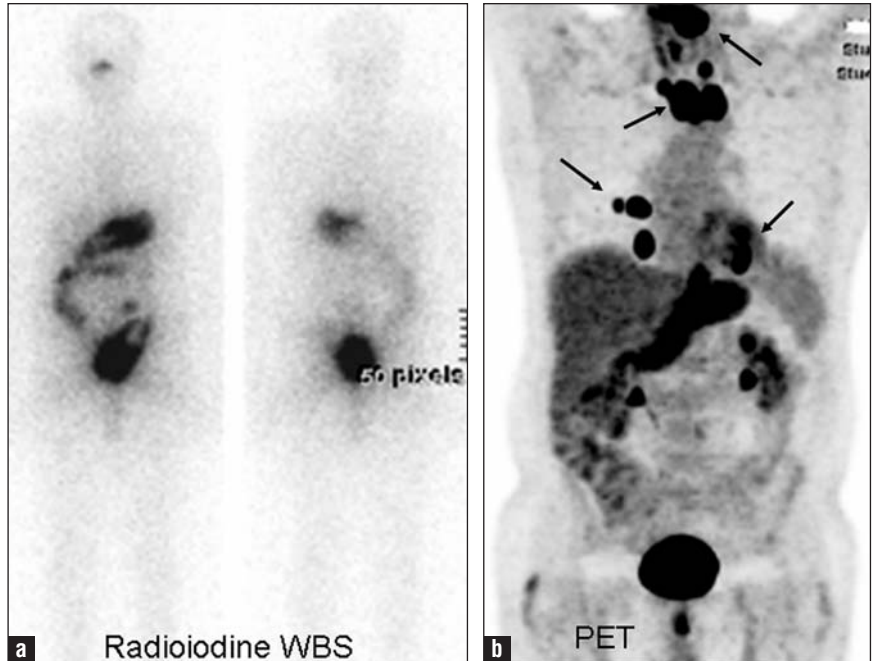
THE MAJORITY of differentiated thyroid carcinomas (DTCs) are cured by means of surgical resection and radioiodine therapy. Although DTC is typically an indolent tumor, current surveillance strategies are imaging intensive because of the high likelihood of local-regional recurrence in the thyroid bed and the cervical nodal chains.

Radiology

In a review article in the November issue of *Radiology* (RSNA.org/radiology), Nathan A. Johnson, M.D., and Mitchell E. Tublin, M.D., detail the accepted surveillance and treatment strategies for DTC recurrence. The authors, both of the University of Pittsburgh Medical Center, specifically address the utility of the following in identifying local and disseminated disease:

- ^{131}I whole-body scintigraphy (WBS)
- Neck ultrasound
- MR imaging
- CT
- Fluorine 18 (^{18}F) fluorodeoxyglucose (FDG) positron emission tomography (PET)
- Coregistered CT/PET

Drs. Johnson and Tublin also dis-



Flip-flop phenomenon in differentiated thyroid carcinoma (DTC), whereby less differentiated tumors downregulate sodium-iodide symporter production (manifesting as loss of radioiodine avidity) and increase glucose transporter-1 expression (manifesting as PET scan positivity).

(a) Diagnostic WBS image shows no abnormal ^{131}I uptake. (b) PET scan obtained two days later shows extensive cervical and mediastinal metastases (arrows).

(*Radiology* 2008; 248:429–444) © RSNA, 2008. All rights reserved. Printed with permission.

cuss recent advances in the understanding of the molecular biology of DTC, as these advances will likely influence how patients are treated and followed up in the near future. “The appropriate intensity of surveillance strategies and the aggressiveness of surgical and radioiodine management of small-vol-

ume recurrence continues to evolve,” they conclude. “Recent advances in our understanding of tumor biology may ultimately allow more appropriate risk stratification and tailored imaging surveillance protocols and treatment of patients with DTC.”

Multidetector CT of Aortic Stent-Grafts with 2D Multiplanar Reformation and 3D Rendering: Utility for Pre- and Postprocedure Evaluation of Stents in the Thoracic Aorta

ADVANCES in multidetector CT permit the high-quality 2D multiplanar reformation and 3D rendering essential for comprehensive assessment of the thoracic aorta. The ability of multidetector CT to allow detailed evaluation

in any plane or perspective enables detection of thoracic aortic disease and assessment of its relationship to normal vessels.

In an article in the November-December issue of *RadioGraphics*

RadioGraphics

(RSNA.org/radiographics), Marchelle J. Bean, M.D.,

of Johns Hopkins Medical Institutions, and colleagues detail the information required by referring clinicians before

Continued on Page 24

Radiology in Public Focus

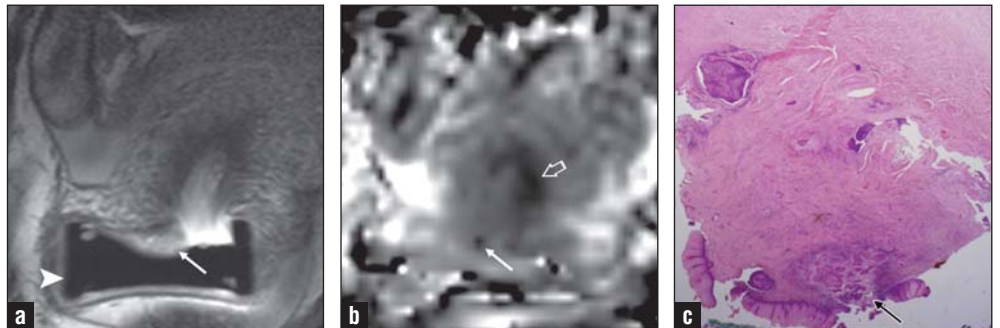
Press releases have been sent to the medical news media for the following articles appearing in the current issue of *Radiology* (RSNA.org/radiology):

Diffusion-weighted Imaging in Cervical Cancer with an Endovaginal Technique: Potential Value for Improving Tumor Detection in Stage Ia and Ib1 Disease

Researchers using an endovaginal diffusion-weighted MR imaging technique have found that apparent diffusion coefficient (ADC) can indicate malignancy and that adding ADC maps to T2-weighted images improves intraobserver agreement.

Obtaining diffusion-weighted images in 59 women with suspected or confirmed invasive cervical carcinoma, Elizabeth M. Charles-Edwards, F.R.C.R., of the Institute of Cancer Research in Surrey, England, and colleagues tested an MR technique that exploits the increased signal-to-noise ratio available with an endocavitary coil. ADC values were significantly lower in malignant lesions than in non-malignant cervical epithelium or cervical intraepithelial neoplasia. When ADC maps were added, sensitivity and specificity improved, as did agreement between the two study observers.

On T2-weighted imaging alone, sensitivity and specificity were, respectively, 55.6 percent and 75 percent for



T2-weighted fast spin-echo (TR/effective TE, 2000/80) (a) coronal MR image and (b) corresponding coronal apparent diffusion coefficient (ADC) map obtained by using endovaginal coil (arrowhead) show 27-year-old woman with stage Ia cervical tumor.

Five-millimeter invasive cervical carcinoma nodule on anterior cervical lip in *a* is evidenced by restricted diffusion in *b* (arrow). (*c*) Histologic section confirms presence of invasive cervical carcinoma nodule in this position (arrow). Crescentic area of restricted diffusion (open arrow) corresponds to normally dense cellular inner cervical stroma, seen as low signal intensity on corresponding T2-weighted image. (*Radiology* 2008;248:541-550) © RSNA, 2008. All rights reserved. Printed with permission.

the first observer and 66.7 percent and 41.7 percent for the second observer. Adding diffusion-weighted imaging to T2-weighted imaging yielded sensitivity and specificity of 88.9 percent and 66.7 percent for the first observer and 77.8 percent and 58.3 percent for the second observer.

Combining high spatial resolution images obtained with an endovaginal coil and diffusion-weighted MR imaging is useful “particularly when considering fertility-sparing procedures in patients with Stage Ia and Ib invasive cervical carcinoma,” Dr. Charles-Edwards and colleagues write.

Media Coverage of Radiology

In September, media outlets carried 228 news stories generated by articles appearing in *Radiology*. These stories reached an estimated 87 million people.

A news release promoted findings from a study on the use of ultrasound to predict cardiac event risk (*Radiology* 2008;248:1050-1055).

Broadcast coverage included WTVF-TV (Nashville), WXIA-TV (Atlanta), WJZ-TV (Baltimore), KYW-TV, (Philadelphia), WBTW-TV (Charlotte, N.C.), KOVR-TV (West Sacra-

mento, Calif.), KSLA-TV (Shreveport, La.), WESH-TV (Winter Park, Fla.), WPEC-TV (West Palm Beach, Fla.), WKBN-TV (Youngstown, Ohio), KOB-TV (Albuquerque, N.M.), WAKA-TV (Montgomery, Ala.), KJRH-TV (Tulsa, Okla.), KNTV-TV (San Jose, Calif.), WALB-TV (Albany, N.Y.), KGPE-TV (Fresno, Calif.) and WBBM-AM (Chicago).



Print and wire coverage included *Winston-Salem Journal*, *Idaho Statesman*, *Staten Island Advance*, *Tuscaloosa News*, *The Truth* (Elkhart, Ind.), *Sulphur Springs News-Telegram* (Texas) and *The Californian*.

Web placements included Yahoo! News, *USNews.com*, *Forbes.com*, *docguide.com*, *healthcentral.com*, *4women.gov* and *goodhealth.com*.

Continued on next page

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Suspicious Breast Lesions: Assessment of 3D Doppler US Indexes for Classification in a Test Population and a Fourfold Cross Validation Scheme

VASCULARITY measurements on quantitative ultrasound yield more complete characterization of malignant breast tissue than subjective grayscale evaluation alone, researchers have found.

Gerald L. LeCarpentier, Ph.D., of the University of Michigan Medical Center, and colleagues assessed 3D Doppler vascularity measurements in conjunction with grayscale criteria for differentiating benign from malignant breast masses in 78 women. Thirty-eight of the study scans had been partially analyzed and published previously, and 40 additional scans provided a test group to evaluate previously determined classification indices. The researchers applied a 3-variable index incorporating speed-weighted pixel density, patient age and grayscale ratings, called SWD-Age-GS, to the test group.

In analysis of all cases, the area under the receiver operating curves con-

firmed the results of previous analyses, the researchers found. "Speed-weighted pixel density performed the best as a diagnostic index, although statistical significance was demonstrated only with respect to the normalized power-weighted pixel density," they wrote.

Dr. LeCarpentier and colleagues noted that in both the learning and test populations SWD-Age-GS performed significantly better than any single index or in the 2-variable index (Age-GS) that could be performed without

the Doppler scan. An additional four-fold cross-validation scheme confirmed overall performance in the entire study population. The researchers found that SWD-Age-GS "performed well regardless of incidental performance variations in its single variable components."

Adding 3D Doppler-based multi-variable indices to ultrasound evaluation of breast lesions enhances diagnostic performance and may eventually eliminate the need for some biopsies, the researchers concluded.

November Public Information Activities Focus on Lung Cancer

In recognition of National Lung Cancer Awareness Month in November, RSNA will distribute public service announcements (PSAs) focusing on symptoms of lung cancer, risk factors and possible treatment options.

In addition to the PSAs, RSNA will also distribute the "60-Second Checkup" audio program to radio stations. The radio segments will focus on lung cancer screening, treatment of medically inoperable lung cancer and the patient-directed radiology information available on *RadiologyInfo.org*.

Multidetector CT of Aortic Stent-Grafts with 2D Multiplanar Reformation and 3D Rendering: Utility for Pre- and Postprocedure Evaluation of Stents in the Thoracic Aorta

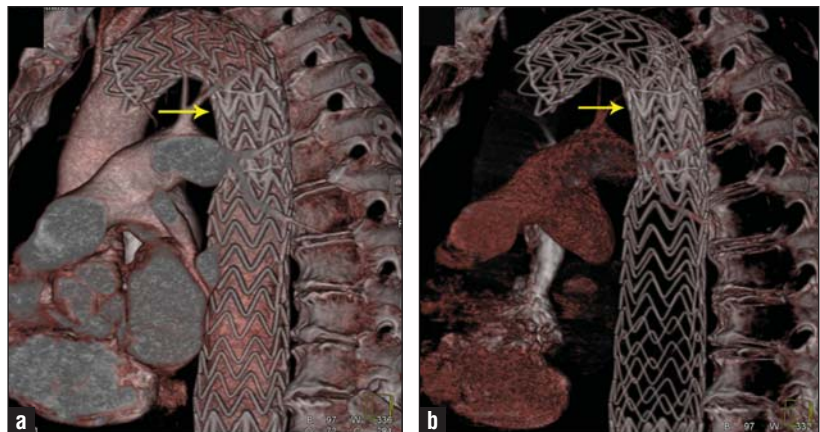
Continued from Page 22

placement of thoracic aortic stent-grafts. The authors also discuss important multidetector CT findings after placement and list potential complications.

Specifically, Dr. Bean and colleagues address:

- Multidetector CT technique
- Pathologic conditions amenable to endovascular stent placement
- Assessment before stent placement
- Stent placement and outcomes
- Follow-up after stent placement
- Efficacy
- Complications such as endoleaks, pseudoaneurysm and aortic perforation

"Radiologists must be able to not only detect pathologic conditions of the thoracic aorta but also provide the referring clinician with the necessary pre- and post-procedure information to determine appropriate clinical care," the authors write.



Aortic aneurysm in a 78-year-old man.

(a) Sagittal color-coded 3D volume-rendered image from contrast-enhanced CT shows an atherosclerotic aneurysm of the thoracic aorta. The aneurysm was successfully treated with an endovascular stent (arrow). This view allows assessment of luminal patency and shows no evidence of contrast material extravasation. (b) Sagittal volume-rendered image, created after removal of internal blood from the dataset, shows only the stent (arrow).

(*RadioGraphics* 2008;28:1835-1851) © RSNA, 2008. All rights reserved. Printed with permission.

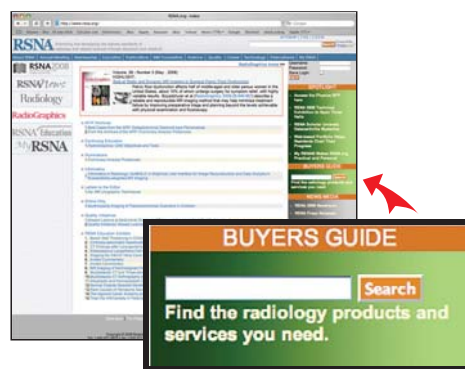
This article meets the criteria for 1.0 AMA PRA Category 1 Credit. CME is available online only.

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Working For You

Associated Sciences Consortium

RSNA News continues its series highlighting the work of organizations working with RSNA in the Associated Sciences Consortium.

Canadian Association of Medical Radiation Technologists

The Canadian Association of Medical Radiation Technologists (CAMRT), founded in 1942, serves as both the certifying body and a professional association for radiological technologists, radiation therapists, nuclear medicine technologists and magnetic resonance technologists.

“CAMRT works in very close collaboration with education programs, regulatory bodies and provincial associations to ensure the development and implementation of the highest standards of practice,” said Charles Shields, CAMRT CEO.

Headquartered in Ottawa, CAMRT is a federation of 10 provincial associations with a membership of more than 12,000. It is the sole provider of medical radiation technologist (MRT) exams in Canada, with the exception of Quebec. As the certifying body, CAMRT develops and maintains com-

petency profiles and national certification examinations for all disciplines. The competency profiles are used by educational programs across Canada as the basis for their MRT curricula. CAMRT also assesses internationally educated candidates for access to the exams.

“As the national professional association, CAMRT addresses professional practice issues by providing professional development opportunities, developing practice-related statements and advocating on behalf of its members and the public,” said Shields. Currently, CAMRT is working with the Canadian Association of Radiologists to develop an advanced practice role for radiologic technologists.

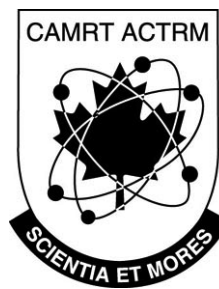
CAMRT’s professional development program provides distance educa-

tion to more than 1,000 participants a year from across Canada and other countries, including the U.S. “The specialty certificate in CT Imaging

has been particularly popular, especially as CT has become a common imaging modality that is crossing all disciplines,” Shields said.

As part of the Associated Sciences Consortium, CAMRT is a sponsor of Associated Sciences course offerings at RSNA 2008. “CAMRT is proud of its partnership with RSNA,” said Shields. “As the first non-U.S.-based organization to participate in the consortium, we have provided our perspective to ensure that the programs offered are of high quality for all the involved professions.”

For information about CAMRT, go to www.camrt.ca.



Special Member Recognition

Last month, RSNA mailed special member recognition ribbons to almost 6,500 people who have been RSNA members for 25 years or more. The teal and gold ribbon can be attached to the RSNA annual meeting badge so that long-time members are easily recognizable at RSNA 2008.

YEARS OF MEMBERSHIP	NUMBER OF MEMBERS
25–29 years	1,208
30–39 years	3,798
40–49 years	1,045
50+ years	436



Imaging Course Presented at AAFP

RSNA and its Public Information Committee sponsored the “When to Order Imaging Studies” course, presented twice at the American Academy of Family Physicians (AAFP) annual meeting in San Diego in September. James P. Borgstede, M.D., presented a session called “Appropriate Use of Imaging Examinations,” which analyzed the value of comprehensive appropriateness criteria for imaging examinations and guided attendees in utilizing those criteria.

Robert J. Stanley, M.D., presented “Radiologic Screening: When is it Indicated?” which helped participants recognize what a good screening test must provide in terms of access, cost, sensitivity and specificity, as well as the proper identification of the population to benefit and the inherent risks associated with screening in general.

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

Program and Grant Announcements

National Institutes of Health Programs Extramural Loan Repayment Programs

Application Deadline—December 1

The National Institutes of Health (NIH) will accept applications through Dec. 1 for its extramural Loan Repayment Programs (LRPs). The programs repay up to \$35,000 of educational loan debt annually for individuals who commit to conducting at least two years of qualified biomedical or behavioral research at a nonprofit institution of their choice. The annual application cycle includes five extramural LRPs: Clinical Research, Pediatric Research, Health Disparities Research, Contraception and Infertility Research, and Clinical Research for Individuals from Disadvantaged Backgrounds.

Each year, some 1,600 research scientists benefit from the more than \$70 million NIH invests in their careers through the extramural LRPs. Approximately 40 percent of all new LRP applications are funded. For more details and to apply, go to www.lrp.nih.gov.

T-R01 Funding Program

Applications Being Accepted

NIH has also announced it intends to invest more than \$250 million over the next five years to foster bold and creative investigator-initiated research through a new transformative R01 (T-R01) program.

NIH will support T-R01 program goals through original studies that will:

- Forge the synthesis of new paradigms for biomedical or behavioral sciences.
- Reflect an exceptional level of creativity in proposing bold and ground-breaking approaches to fundamental problems.
- Promote radical changes in a field of study with a profound impact in other scientific areas.

T-R01 grants will be evaluated by new procedures being piloted by the NIH Center for Scientific Review (CSR) that are distinct from the traditional NIH peer-review process. For more information on T-R01 grants, go to www.nihroadmap.nih.gov/grants/index.asp.

Writing a Competitive Grant Proposal

January 30–31, 2009 • RSNA Headquarters, Oak Brook, Ill.

Application Deadline—December 15

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

Limited seating is available for this 1½-day intermediate-level program. The course combines didactic and small group interactive sessions to help radiologic researchers understand and apply the key components of writing a competitive grant proposal. Topics to be covered include the NIH grant review process, developing specific aims and funding opportunities.

Guided by a faculty of leading researchers with extensive experience in all aspects of grant applications and funding, the program will focus on developing realistic expectations and provide tools for getting started. Faculty includes G. Scott Gazelle, M.D., Ph.D., of Massachusetts General Hospital in Boston, and King C. Li, M.D., of Methodist Hospital in Houston.

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

Bioengineering & Imaging Research Opportunities Workshop 6 (BIROW VI)

January 15–16, 2009 • Bethesda North Convention Center, Maryland

BIROW workshops identify and explore new opportunities for basic science research and engineering development in biomedical imaging, as well as related diagnosis and therapy. The workshop will provide information and ideas for new investigators, support accelerated development of biomedical imaging as a scientific discipline and facilitate coordinated imaging research. RSNA is co-sponsoring this workshop. For more information, go to www.birrow.org.



**Bioengineering
& Imaging
Research
Opportunities
WORKSHOP 6**

Product News

NEW PRODUCT

Radiation Therapy Archive Platform

CoActiv (www.coactiv.com) introduces EXAM-RT™ Archive, a digital viewing, archiving and retrieval platform for a full range of radiation therapy-related data, including CT images, cone beam images, CMS radiation therapy plans and DICOM-RT data files. The platform can complement an existing EXAM-PACS® installation or be implemented independently using dedicated archiving hardware. New functionality supports all seven DICOM-RT extensions and enables digital storage in a single unified patient information file. EXAM-RT Archive stores information in its native format in a single comprehensive, redundant and HIPAA-compliant digital archive.



FDA CLEARANCE

Radiation Therapy Planning Software

CMS (www.cmsrtp.com), an Elekta company, has received FDA clearance for its new Atlas-Based Autosegmentation (ABAS) software. ABAS provides

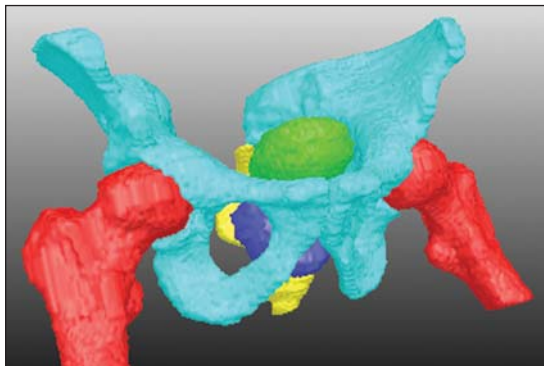


image segmentation, or contouring, with an estimate of the anatomy boundary contours needed to create a radiation treatment plan. A standalone, vendor-neutral product that communicates using standard DICOM file formats for both input and output,

ABAS is compatible with any radiation treatment planning system that can read standard DICOM RT structure set files. ABAS also provides structure-specific refinement algorithms for head and neck and prostate treatments, in addition to a general algorithm for other treatment sites.

FDA CLEARANCE

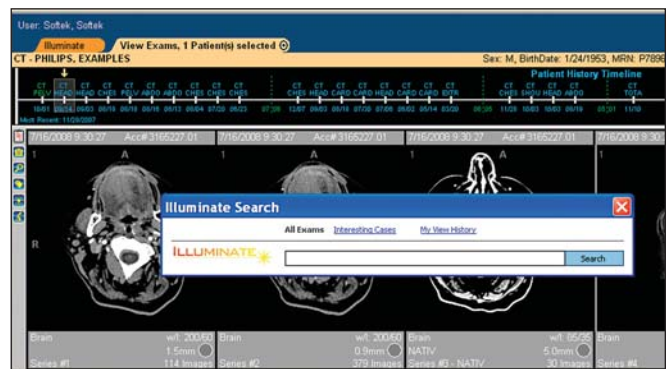
Breast Density Assessment Software

Hologic (www.hologic.com) has received FDA clearance for its R2 Quantra™ software application, intended for use with Hologic digital mammography systems. Quantra provides radiologists with an automated method for assessing breast density. Quantra creates an internal 3D model of the breast from which it derives estimates of the fibroglandular tissue volume and total breast volume; volumetric breast density is the ratio of these values. Using the Quantra tool to provide numeric values for each breast may aid radiologists in the assessment of breast tissue composition without the subjectivity of human interpretation.

NEW PRODUCT

PACS Search Engine

Illuminate™ by Softek (www.softek-illuminate.com) enables users of the Philips iSite PACS to search and locate radiologic reports and their corresponding images with a free-text, Google™-like interface. Illuminate is designed specifically for iSite PACS. Users can search every word of every report and generate results in less than a second. Users need not know a patient ID number or have technical assistance to run lengthy queries but can instead simply enter the word or phrase that defines the case.



RSNA.org

RSNA 2008 Meeting Homepage

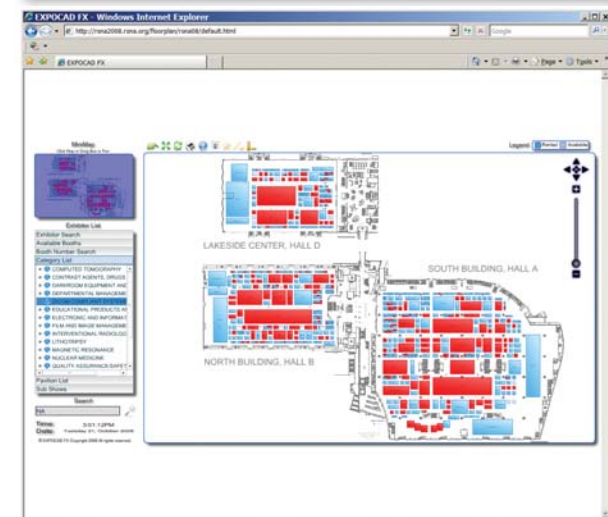
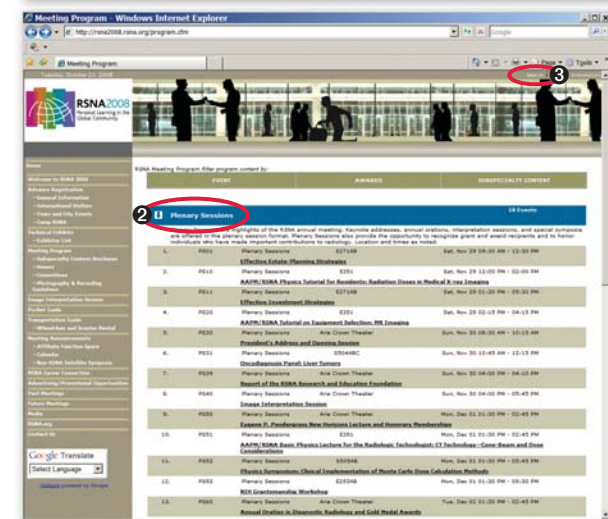
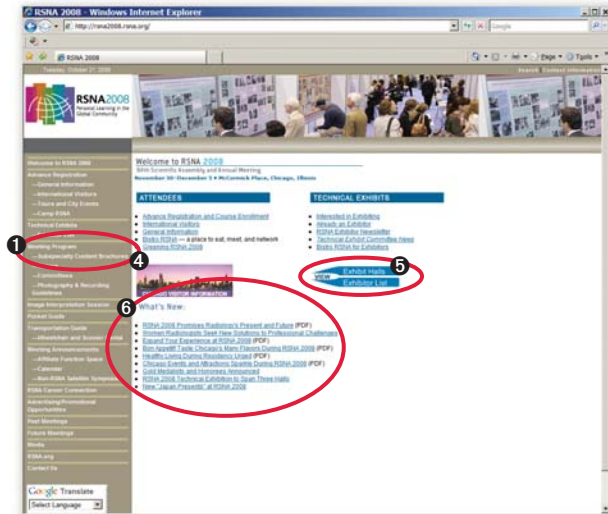
Visit RSNA2008.RSNA.org to plan your time at this year's annual meeting.

Find scientific sessions, courses, education exhibits and scientific posters related to your areas of interest by accessing the *RSNA Meeting Program* online. Click Meeting Program in the left-hand navigation bar ❶. See a list of all events in a particular category by clicking a section heading such as Plenary Sessions ❷. Search the meeting program by clicking Search at the top right hand corner of the page and completing as much information as you know about the event you're seeking ❸.

Subspecialty content brochures also help you refine your experience by organizing components of the annual meeting by subject. Twenty-one topics are available this year. Click Subspecialty Content Brochures in the left-hand navigation bar ❹.

Make the most of your time in the RSNA 2008 Technical Exhibition. Discover what exhibitors plan to demonstrate by viewing an interactive exhibitor list and map ❺.

More information about RSNA 2008 is available by clicking the links underneath What's New on the main meeting page at RSNA2008.RSNA.org ❻.



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- RSNA 2008**
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Medical Meetings

December 2008 – April 2009

NOVEMBER 30–DECEMBER 5

RSNA 2008, 94th Scientific Assembly and Annual Meeting,
McCormick Place, Chicago • RSNA2008.RSNA.org

DECEMBER 10–12

Society for Pediatric Radiology (SPR), 6th Symposium on Pediatric Cardiovascular MR Imaging, Hospital for Sick Children, Toronto • www.pedrad.org

JANUARY 7–11, 2009

Indian Radiological & Imaging Association (IRIA), 62nd Annual Congress, Sri Krishna Memorial Auditorium, Patna • www.iria.in

JANUARY 15–16, 2009

Bioengineering & Imaging Research Opportunities Workshop 6 (BIROW VI), Bethesda North Convention Center, Maryland • www.birow.org

FEBRUARY 4–8, 2009 VISIT THE RSNA BOOTH

Sociedad Mexicana de Radiología e Imagen (SMRI), World Trade Center, Mexico City • www.smri.org.mx

FEBRUARY 7–12, 2009

SPIE, Medical Imaging, Disney Coronado Springs Resort, Lake Buena Vista, Fla. • spie.org

FEBRUARY 23–27, 2009

Integrating the Healthcare Enterprise (IHE®), Connectathon and Education Conference, Hyatt Regency Chicago • www.ihe.net

MARCH 6–10, 2009 VISIT THE RSNA BOOTH

European Congress of Radiology (ECR), Austria Center, Vienna • www.ecr.org

MARCH 7–12, 2009

Society of Interventional Radiology (SIR), 34th Annual Meeting, San Diego • www.sirweb.org

MARCH 15–20, 2009

Society of Gastrointestinal Radiologists (SGR) and Society of Uroradiology (SUR), Abdominal Radiology Course, Grand Wailea Resort Hotel & Spa, Maui, Hawaii • www.sgr.org

APRIL 2–5, 2009

American Institute of Ultrasound in Medicine (AIUM), Annual Meeting, Marriott Marquis, New York • www.aium.org

APRIL 4–8, 2009

Healthcare Information and Management Systems Society (HIMSS), Annual Conference and Exhibition, Chicago • www.himssconference.org

APRIL 18–24, 2009

International Society for Magnetic Resonance in Medicine (ISMRM), 17th Scientific Meeting and Exhibition, Honolulu • www.ismrm.org

APRIL 21–25, 2009

Society for Pediatric Radiology (SPR), 52nd Annual Meeting, La Costa Resort and Spa, Carlsbad, Calif. • www.pedrad.org

APRIL 25–29, 2009

American Radium Society (ARS), Annual Meeting, Four Seasons Vancouver, British Columbia • www.americanradiumsociety.org

APRIL 26–29, 2009

Society of Breast Imaging (SBI), 9th Postgraduate Course, The Broadmoor, Colorado Springs, Colo. • www.sbi-online.org

APRIL 26–MAY 1, 2009

American Roentgen Ray Society, Annual Meeting, John B. Hynes Veterans Memorial Convention Center, Boston • www.arrs.org

APRIL 27–29, 2009

International Atomic Energy Agency (IAEA), International Conference on Advances in Radiation Oncology, Vienna International Centre, Austria • www.iaea.org

APRIL 30–MAY 1, 2009

SNM/RSNA, 2nd Multimodality Cardiovascular Molecular Imaging Symposium, National Institutes of Health, Bethesda, Md. • interactive.snm.org

APRIL 30–MAY 2, 2009

French Society of Radiology, InterAmerican College of Radiology, Sao Paulo Society of Radiology and Brazilian College of Radiology, French and Latin American Congress of Radiology, São Paulo, Brazil

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