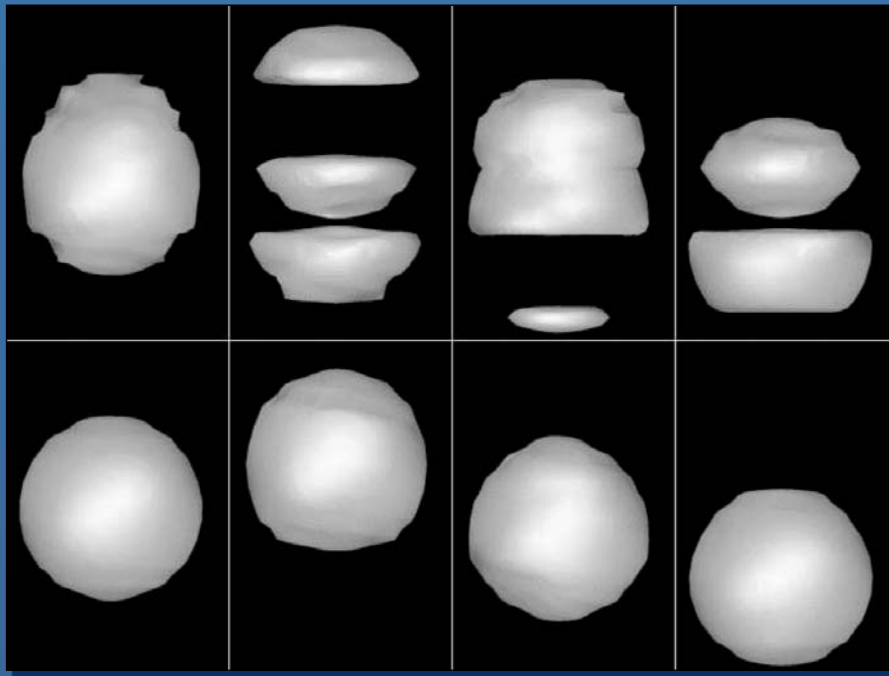


RSNA *News*



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New Imaging Technology Targets Moving Tumors

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- RSNA Supports Free Access to Scientific Articles
- RSNA 2004 Eases Way for MOC Requirements
- Radiologist Uses Imaging, Whimsy to Teach Anatomy

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RSNA News

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Becker Heads to NCI

RSNAs Board Liaison for Science **Gary J. Becker, M.D.**, will be the new branch chief of image-guided intervention (IGI) for the Cancer Imaging Program (CIP) at the National Cancer Institute (NCI) beginning in June. Dr. Becker previously was the assistant medical director at the Miami Cardiac and Vascular Institute at Baptist Hospital.

Gary S. Dorfman, M.D., has been the interim branch chief of IGI for the past year. "He has been an effective leader and I look forward to collaborating with him at IGI," says Dr. Becker.

Dr. Dorfman will continue his involvement at CIP as a special assistant to Associate Director Daniel C. Sullivan, M.D., and to Dr. Becker. Dr. Dorfman is also an emeritus professor of radiol-

ogy at Brown University, and vice-chairman and professor of radiology at the University of Massachusetts Medical School.

Dr. Becker plans to remain very active in RSNA and the American Board of Radiology. "My new position should provide me with insights and perspective that will be valuable in my role as RSNA Science Liaison," he says.



Gary J. Becker, M.D.

ACR Presents 2004 Honors

The American College of Radiology (ACR) presented its 2004 gold medals and honorary fellowships at the ACR annual meeting this month in Washington.

The gold medalists are:

Stanley Baum, M.D.,
Philadelphia

W. Max Cloud, M.D.,
Wilbraham, Mass.

C. Douglas Maynard, M.D.,
Winston-Salem, N.C.

H. Rodney Withers, M.B.B.S., Ph.D., D.Sc., Los Angeles

The ACR honorary fellows are:

Marie Overgaard, M.D.,
Aarhus, Denmark

Hans Gosta Ringertz, M.D., Ph.D.,
Stockholm, Sweden

Michael J. Welch, Ph.D.,
St. Louis



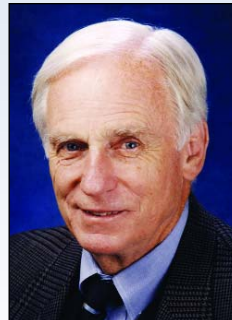
Stanley Baum, M.D.



W. Max Cloud, M.D.



C. Douglas Maynard, M.D.



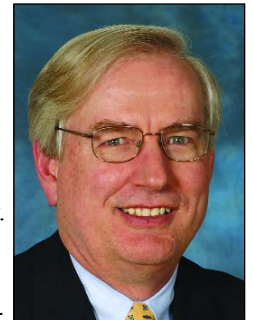
H. Rodney Withers, M.B.B.S., Ph.D., D.Sc.

Royal New Executive Director of ABNM

Henry D. Royal, M.D., begins his new position next month as executive director of the American Board of Nuclear Medicine. Dr. Royal is currently a professor of radiology at Washington

University School of Medicine in St. Louis, and is the associate director of nuclear medicine at the Mallinckrodt Institute of Radiology.

Dr. Royal is an investigator for the Prospective Investigation of Pulmonary Embolism Diagnosis II (PIOPED II) study. He is president of the Society of Nuclear Medicine, is a member of the board of directors of the National Council on Radiation Protection and Measurements, and has been listed as one of the "Best Doctors in America" since the first edition in 1992.



Henry D. Royal, M.D.

McClellan New Head of CMS

FDA Commissioner **Mark McClellan, M.D., Ph.D.**, who is board-certified in internal medicine, is the new administrator for the Centers for Medicare & Medicaid Services (CMS). The U.S. Senate approved Dr. McClellan's nomination in March.

Meanwhile, healthcare

executive **Herb Kuhn** will head the Center for Medicare Management (CMM) of CMS. Kuhn, a former vice-president for federal relations for the American Hospital Association, was most recently a corporate vice-president for advocacy at Premier Inc., a not-for-profit hospital alliance.



Mark McClellan, M.D., Ph.D.

McCloud to Receive ARRS Gold Medal

RSNAs Board Liaison for Education **Theresa C. McCloud, M.D.**, will receive a gold medal from the American Roentgen Ray Society (ARRS) during the ARRS annual meeting this month in Miami Beach. Dr. McCloud is the associate radiologist-in-chief and the director of education in the Department of Radiology at Massachusetts General Hospital in Boston.

ARRS gold medals will also be bestowed upon **John E. Madewell, M.D.**, professor of radiology and director of clinical radiologic operations in the Ambulatory Clinical Building at the University of Texas M.D. Anderson Cancer Center in Houston, and **Beverly P. Wood, M.D., M.Sc.**, from the University of Southern California Keck School of Medicine.



Theresa C. McCloud, M.D.



Beverly P. Wood, M.D., M.Sc.

Sausville Leaves NCI

Edward A. Sausville, M.D., Ph.D., is the new associate director of clinical research at the University of Maryland Greenebaum Cancer Center. He is also on faculty at the University of Maryland School of Medicine.

Dr. Sausville previously was the associate director of the NCI Developmental Therapeutics Program, which has played a key role in developing many of the new cancer drugs in use today.

IN MEMORIAM:

Archie Fine, M.D.

Archie Fine, M.D., an RSNA member since 1942, died in March at the age of 97.

The *Cincinnati Enquirer* reports that Dr. Fine served as an associate clinical professor of radiology at the University

of Cincinnati and was also a former director of radiology and radiology residency at Jewish Hospital, where he developed the radiation oncology division.



Send your submissions for *People in the News* to rsnanews@rsna.org, (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.

ANNOUNCEMENTS

Initial Enrollment to Begin in Landmark CORAL Study

Initial enrollment begins this fall in a first-of-its kind study involving radiology, cardiology, nephrology and hypertension.

The co-principal investigator of the Cardiovascular Outcomes in Renal Atherosclerotic Lesions (CORAL) study is Timothy P. Murphy, M.D., an interventional radiologist at Rhode Island Hospital/Brown Medical School in Providence.

“CORAL will evaluate clinical endpoints, such as heart attack, heart failure,

stroke and kidney failure, in hypertensive patients undergoing renal artery stenting, and will compare them to patients receiving only medical therapy,” Dr. Murphy says.

The \$28-million study is funded primarily by the National Heart, Lung and Blood Institute. It is a prospective, multicenter, randomized clinical trial that will include 1,080 patients, and as many as 65 study sites in the United States.

FDA Issues Call to Academic Researchers

The U.S. Food and Drug Administration (FDA) has issued a major report identifying the problems and potential solutions to the daunting task of ensuring that unprecedented breakthroughs in medical science are demonstrated to be safe and effective for patients as quickly and inexpensively as possible.

The report, “Innovation or Stagnation?—Challenge and Opportunity on the Critical



Path to New Medical Products,” also focuses on the unique opportunities for FDA to collaborate with academic researchers, product developers, patient groups and other stakeholders to make the critical path much faster, predictable and less costly.

To review the press release and the report, go to www.fda.gov/oc/initiatives/criticalpath/whitepaper.pdf.



Radiologic technologists from South Dakota were among the 100 R.T.s from across the country who lobbied on Capitol Hill in favor of the CARE bill.

R.T.s Urge Lawmakers to Support CARE Bill

More than 100 radiologic technologists (R.T.s) journeyed to Capitol Hill in early March to gain lawmaker support for the Consumer Assurance of Radiologic Excellence (CARE) bill. The bill would set federal minimum standards for education and certification of personnel who deliver radiation therapy and perform all types of medical imaging examinations, except sonography.

The R.T.s visited nearly 300 congressional offices during a 10-hour marathon. Christine Lung, director of government relations for the American Society of Radiologic Technologists (ASRT), predicts that as a result of their efforts, the number of House cosponsors for the CARE bill will increase from 74 to 90.

Members of ASRT also presented awards for radiologic science advocacy to Rep. Mike Doyle (D-Pa.) and Sen. Mike Enzi (R-Wyo.).



Rep. Mike Doyle



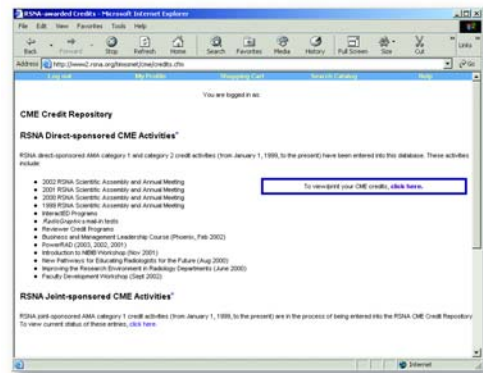
Sen. Mike Enzi

New Recognition Level for Physicians

The American Medical Association has added a new level of achievement in its Physician's Recognition Award (PRA) program. The PRA with Commendation recognizes physicians who regularly demonstrate a high level of commitment to their continuing education. For more information or to apply, go to www.ama-assn.org/ama/pub/category/2923.html.

Physicians must participate in at least 50 credits per year of educational activities that meet AMA standards to earn the standard PRA. PRA with Commendation requires 90 credits.

RSNA 2004 will have 80.5 AMA PRA category 1 credits available. Any continuing medical education credits that RSNA members earn through the Society are automatically stored in the RSNA CME Credit Repository (www.rsna.org/cme). RSNA is working with other organizations to develop a single gateway that provides access to the CME repositories of multiple radiology organizations.



NIH Commons

The National Institutes of Health (NIH) has a secure, interactive Web site in which NIH grantee organizations can check on the status of grant applications, view scores and summary statements, submit progress reports and more. The NIH Commons can be accessed at <https://commons.era.nih.gov/commons/index.jsp>.

RSNA Board of Directors Report

The RSNA Board of Directors met in early April in Tucson, Ariz., approving several proposals that will expand the use of new technology to improve education at RSNA's 90th Scientific Assembly and Annual Meeting.

Lifelong Learning

Case-based presentations, using an audience-response system (ARS), will be incorporated into more refresher courses this year. Used primarily in the past in the Essentials of Radiology and Case-based Review courses, ARS technology will be incorporated in additional refresher courses as part of an optional self-assessment component beginning in 2005.

In addition, the Board has approved plans to conduct an adult education conference next spring to explore the most effective ways that adults learn. This information will be used to add value to RSNA education courses and make them more user-friendly.

RSNA has already instituted a Society-wide coding system to help with maintenance of certification (MOC). See the article on page 11 for more information.

DPS

Beginning this year, RSNA will pilot a new digital presentation system (DPS)—a Web-based software system that changes the way to submit, review and present scientific and educational information.

For the past few years, virtual presentations were offered in the *infoRAD* area and on *RSNA Link* (www.rsna.org) following the meeting. These virtual presentations were narrated PowerPoint presentations of some of the scientific paper sessions.

For the upcoming meeting, educa-

tion exhibits and scientific posters in neuroradiology and thoracic radiology will use DPS. Dedicated computers and special theaters will be utilized to enhance the opportunity to review the materials in the DPS pilot. The presentations will also be available in the RSNA meeting area of *RSNA Link* for six months after the meeting.

Virtual presentations of some of the scientific paper sessions will also continue, but will be available only on *RSNA Link* after the meeting. This change will allow moderators to choose the best sessions for virtual presentation.

RFID

A pilot will also be conducted using a radiofrequency identification (RFID) system. This technological advancement uses an RFID chip, implanted in a consenting attendee's name badge, to compare the effectiveness and accuracy of the current barcode system. The hope is that by getting a better understanding of the types of courses and exhibits an

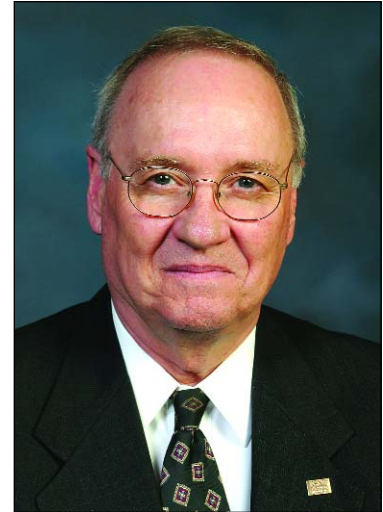
attendee wants to visit during the meeting, RSNA can further improve its scientific assembly and annual meeting.

The RFID system will be used on a voluntary basis in

2004 and will include only those who are participating in case-based review courses.

More News about RSNA 2004

Brian O'Sullivan, M.D., from Toronto, has been selected to deliver the 2004 Annual Oration in Radiation Oncology. Michael E. Phelps, Ph.D., will deliver the Eugene P. Pendergrass New Horizons Lecture on molecular imaging and Harry K. Genant, M.D., will deliver the Annual Oration in Diagnostic Radiol-



Robert R. Hattery, M.D.
Chairman, 2004 RSNA Board of Directors

ogy on the future of bone imaging in osteoporosis.

The 2004 Gold Medalists and Honorary Members will be announced in the June issue of *RSNA News*.

Plans are under way for a mock medical-legal jury trial to be held on Sunday during the meeting. The case involves a lung lesion missed in a previous chest examination. The unscripted trial will include two attorneys, expert witnesses and a Chicago judge. More information will be included in a future edition of *RSNA News*.

Simulator Taskforce

RSNA is teaming up with the Society of Interventional Radiology to form a workgroup on medical simulators. The workgroup will monitor the evolving field of medical simulators and provide ongoing assessment of the readiness of medical simulator technology to support educational programs and potential skill testing in diagnostic and interventional procedures.

International Visiting Professor Program

The Board has approved the host

*RSNA is teaming up with
the Society of Interventional
Radiology to form a
workgroup on medical
simulators.*

societies and locations for the 2005 RSNA International Visiting Professor Program. They are:

- Brazilian College of Radiology – Sao Paolo, Brazil
- Royal College of Radiologists of Thailand – Bangkok, Thailand
- Sri Lankan College of Radiologists – Colombo, Sri Lanka

Other Board Action

- RSNA will cosponsor the third Biomedical Imaging Research Opportunities Workshop, scheduled in March 2005.
- RSNA will donate \$250,000 to the

RSNA Research & Education Foundation to help fund some of the record-number of grant applications submitted to the Foundation in the past year.

- Medical physicists who are members of the American Association of Physicists in Medicine can now serve on RSNA committees without required membership in RSNA.
- For one year, radiologists in Iraq will be allowed to join RSNA without paying dues. They will be provided with free online access to *Radiology* and *RadioGraphics*.
- A new editorial fellowship will be

offered to residents and fellows who have participated in the Introduction to Research Program. It will be an abbreviated version of the current editorial fellowship for radiologists.

ROBERT R. HATTERY, M.D.

CHAIRMAN, 2004 RSNA BOARD OF DIRECTORS

Note: In our continuing efforts to keep RSNA members informed, the chair of the RSNA Board of Directors will provide a brief report in RSNA News following each board meeting. The next RSNA Board Meeting is in June.

LETTER TO THE EDITOR

TO WHOM IT MAY CONCERN:

As a graduate of the radiology practitioner assistant (RPA) program, I wanted to write in and say that I am disappointed in the article in the February issue of *RSNA News*, "Radiologist Assistants will Share the Workload in Diagnostic Imaging." It paints the RPA in an unfavorable light. Is this article implying that RPAs were not properly trained or supervised? To make the point that ACR and ASRT did not play a role in the development of the program and therefore do not recognize this program makes it sound as such. In addition, I noticed that the author made a point to say that ACR and ASRT collaborated in the development of the radiology assistant (RA) program and therefore stand behind this. Did he/she forget to research that the RPA program sent two delegates to assist in the development of the RA program? How come this was not mentioned?

For one, I was hoping that this would lead to a unification of the two programs because this would be in the

best interests of all who have spent two years learning their advanced training. If not a unification then maybe RSNA or ACR would even give a separate status, but either way, to disregard those who already paved the way to get this going is not very fair.

I just wanted to voice an opinion. Thank you for your time and consideration.

RICHARD DUNHAM
PENSACOLA OPEN MRI
PENSACOLA, FLORIDA

DEAR MR. DUNHAM:

ACR continues to laud the efforts of radiologic technologists to advance their understanding of the radiology sciences through educational means. The article correctly notes that ACR and ASRT were not involved in the development of the RPA program at Weber State University. While ACR



and ASRT did collaborate to develop the Joint Statement on the Roles and Responsibilities of the Radiologist Assistant, the article did not mention the important contributions made by representatives from the RPA community to the Advanced Practice

Advisory Panel. ARRT is currently working to develop certification for the RA. Determining appropriate educational training for persons seeking to sit for the exam will be one of the issues confronted by that group. ACR remains hopeful that the development of the RA will enhance the performance of radiologic procedures and patient care while providing a professionally satisfying career pathway for radiologic technologists.

CHARLES D. WILLIAMS, M.D.
CHAIR, COMMISSION ON HUMAN
RESOURCES
AMERICAN COLLEGE OF RADIOLOGY



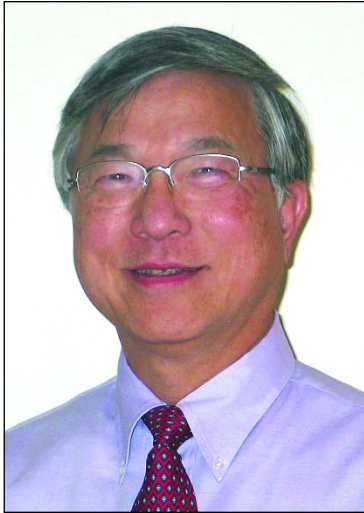
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New Imaging Technology Targets Moving Tumors

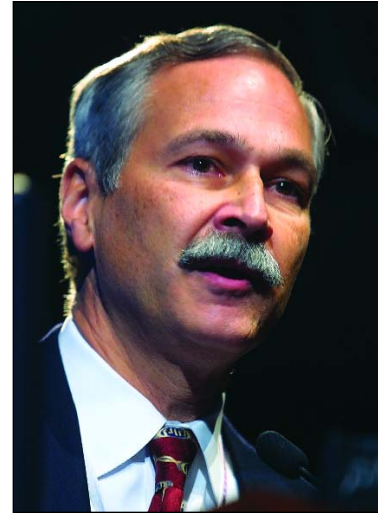
A new combination of imaging software and hardware may allow radiation oncologists to target radiation to moving tumors while sparing nearby normal tissue. The technology, called Advantage™ 4D (Adv4D), is the result of a collaboration between GE Medical Systems and Varian Inc. The system is being alpha tested at a handful of sites, including the University of Pittsburgh Medical Center (UPMC).

“For the first time, we will be able to manage the motion of target tumors, such as lung cancers, that move during breathing,” says Andrew Wu, Ph.D., director of medical physics at UPMC. “We can demonstrate the motion of the target volume and treat the patient with respiratory gating that is included in this new software package and 4D-CT unit,” says Dr. Wu, who has been testing the system for nine months. “Incorporating Adv4D with intensity modulated radiation therapy (IMRT), we will be able to deliver radiation at specific respiratory cycles. For example, when a patient exhales, the lung tumor motion usually reproduces itself. So when the tumor returns to its position, the radiation is automatically turned on.”

Dr. Wu likens 4D respiratory gating to a shooting gallery at a county fair, where the target is moving back and forth across the shooter’s field. “In the human torso, the tumor is irradiated only when it’s in a specific window,” says the physicist. “Radiation oncologists will no longer have to enlarge the radiation field in



Andrew Wu, Ph.D.
University of Pittsburgh Medical Center



Richard T. Hoppe, M.D.
Stanford University Medical Center

order to capture the moving tumor. They will be able to apply stronger doses within a smaller radiation field.”

Adv4D got an even earlier start in Boston, under the leadership of George

T.Y. Chen, Ph.D., head of the Division of Radiation Physics at Massachusetts General Hospital and a professor at Harvard Medical School.

“We had a clinician who was very interested in treating moving lung tumors with IMRT,”

says Dr. Chen. “A physicist questioned what we were seeing with helical CT scanners, and wanted to perform phantom studies. He took a series of spheres—rubber balls and marbles—and scanned them.”

Dr. Chen explains that when the spheres were moved up and down to

simulate respiration, the size and shape often was distorted. “As a result you could underestimate the actual size of the tumor. We talked to Varian and GE and they began to work on various ways of modifying a cardiac CT scanning protocol image in four dimensions,” he says. “4D-CT scanning gives you an anatomical 3D map as a function of time. It performs this fundamentally by acquiring the images and monitoring the respiration, then re-sorting the images to form 10 to 20 spatially and temporally coherent data sets. It’s almost equivalent to having a 3D-CT scan every half second.”

Dr. Chen says there are two ways to treat a moving tumor. “One is to gate radiotherapy; the other is to assess the degree of motion—the true shape of the tumor and the true trajectory—and then understand the implications of that motion and devise a dynamic treatment approach. If the motion is limited, say a few millimeters, then in a number of cases it may be totally acceptable to

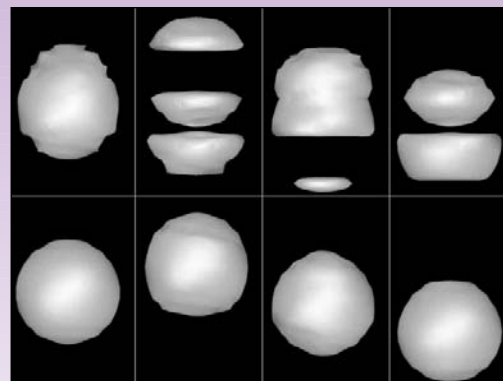
Radiation oncologists will no longer have to enlarge the radiation field in order to capture the moving tumor. They will be able to apply stronger doses within a smaller radiation field.

Andrew Wu, Ph.D.



A patient (model) is being treated with 4D respiratory-gated intensity modulated radiotherapy with an accelerator.

Image courtesy of Andrew Wu, Ph.D.



(Top row) Moving ball scanned in axial mode. The four images represent a sphere imaged at different respiratory phases. (Bottom row, from left) A static sphere followed by 4D-CT images of the sphere during sinusoidal up/down motion.

Images courtesy of George T.Y. Chen, Ph.D.

allow that amount of variation and not degrade the delivered dose distribution. If the motion is large, we may be able to deliver radiation through a portion of the respiratory cycle and still be within the zone of confidence that we are delivering an adequate dose.”

Dr. Chen’s colleague, Eike Rietzel, Ph.D., has been working to quantify the accuracy of 4D-CT and determine how to optimize the imaging to obtain very accurate geometrical data as a function of time. “What he did,” says Dr. Chen, “was to accurately quantify the fact that 4D scanning gives a much more accurate representation of the shape and trajectory of the tumor compared with the standard scanning technique.”

Alpha sites using 4D software with high-end CT or PET, which is also being studied in the treatment of moving tumors, include:

- Massachusetts General Hospital – Boston
- University of Pittsburgh Medical Center – Pittsburgh
- University of Texas M.D. Anderson Cancer Center – Houston
- Holy Name Hospital – Teaneck, N.J.
- Princess Margaret Hospital – Toronto
- Alta Bates Medical Center – Berkeley, Calif.

The Next Steps

While prototype systems use image-guided therapy in a tracking mode, there are technical issues that still need to be resolved. “In the future, we will be imaging the tumor during treatment to ensure that the target is within the zone,” says Dr. Chen.

He anticipates some technical challenges involving the routine use of 4D-CT. “One technical barrier is that there can be 20 times as much technical data, so we have to become more creative in dealing with these additional data. Computer vision techniques can potentially help in the segmentation of moving objects,” Dr. Chen says.

“The convergence of imaging and treatment technologies is improving our ability to treat cancer patients,” says Richard T. Hoppe, M.D., chairman of the Department of Radiation Oncology at Stanford University Medical Center in Palo Alto, Calif. “Respiratory gating is one more step in being more precise with our treatment delivery systems. A major thrust of investigation over the last several years has been ways to accommodate organ motion, and organ motion means tumor motion. What’s

wrong with what we do now is that we irradiate more tissue than we want to, so we have to build into our treatment plans extra margins to compensate for respiratory motion. If we didn’t have to build in those extra margins, more tissue could be spared, and in the case of lung cancer, that would mean less scarring of normal tissue.”

Dr. Hoppe, who is also the Henry S. Kaplan—Harry Lebeson Professor of Cancer Biology at Stanford, adds that Adv4D gating makes hypo-fractionated radiation more feasible. “There’s a lot of exploratory activity right now in the use of fewer radiation treatments—three to five treatments each with a much higher dose than conventional fractionated therapy. There are protocols looking at treatment of limited lung cancers in patients who may not be good surgical candidates using hypo-fractionated radiation, and if you’re treating that tumor with a high dose on a limited number of occasions, you want to minimize the dose to the normal lung,” he says. □

NIBIB Develops New Research Program for Radiology Residents

A key RSNA objective—training more radiology residents for a career in research—could get a boost on a national level if Congress approves the proposed fiscal 2005 budget for the National Institute of Biomedical Imaging and Bioengineering (NIBIB).

Meredith Temple-O'Connor, Ph.D., acting director of training at NIBIB, says the parameters of the Medical Resident Research Training program are still evolving. "We are still shaping it, but we have gotten a clear message from our advisory council that we need to promote radiologists getting careers in research."

The one- to two-year grants would be awarded to universities that agree to funnel medical residents into research areas of interest to NIBIB. Upon completion of their training experience, program participants would then be expected to apply for other grants, such as the NIH Career Development Awards.

President Bush's proposed FY 2005 budget for NIBIB calls for an \$8.7 million increase to \$297.6 million. Any diminution of the proposed increase could affect the launch

of the new Medical Resident Research Training program. While the program won't focus exclusively on radiologists, C. Douglas Maynard M.D., an RSNA past-president and member of the NIBIB Advisory Council, notes that creation of the program is in response to heavy interest from radiology groups, expressed at workshops such as the workgroup on research training and

infrastructure in academic radiology departments, sponsored in part by RSNA. "RSNA believes strongly that more radiology residents need to receive training and have the opportunity to do research during their residency years," says Linda B. Bresolin, Ph.D., M.B.A., C.A.E., assistant executive director for research and education at RSNA.

The proposed increase for NIBIB is just over three percent. While small, it is still larger than almost all of the other 26 institutes and centers in the National Institutes of Health (NIH). "We're a growing child, and one always has to nurture a growing child," says Belinda Seto, Ph.D., NIBIB's new deputy director. Dr. Seto's arrival at NIBIB gives the institute an experienced NIH insider with detailed knowledge of the congressional funding process and the exigencies of extramural and intramural research. She previously worked in the office of the NIH director and as the acting deputy director of extramural research.

While there is intense pressure on Capitol Hill to keep discretionary spending at a minimum, chances are that Congress will increase the NIBIB budget. The overwhelming majority of NIBIB's money, as is the case at other institutes, goes to Research Project Grants (RPGs), which are generally two- to five-year awards to medical schools, universities, hospitals and private companies. They are investigator-initiated, peer-reviewed and competi-



Belinda Seto, Ph.D.
National Institute of Biomedical Imaging and Bioengineering

tively awarded.

NIBIB's \$297.6 million budget includes the \$1.875 million it would contribute to the NIH Roadmap for Medical Research program, which has a separate budget. The Roadmap program channels funds, a proposed \$237 million in fiscal 2005, to three areas of NIH research: improving clinical research (Re-engineering the Clinical Research Enterprise), encouraging interdisciplinary research (Research Teams of the Future) and providing new knowledge and research tools to assist other researchers (New Pathways to Discovery).

For more information on NIBIB and its many programs and activities, go to www.nibib.nih.gov. □

We have gotten a clear message from our advisory council that we need to promote radiologists getting careers in research.

Meredith Temple-O'Connor, Ph.D.

RSNA Supports Free Access to Scientific Articles

RSNA is among 48 not-for-profit scholarly publishers supporting the free-access model for the dissemination of scientific, technical and medical research. The 48 publishers have formed a coalition called Washington D.C. Principles for Free Access to Science.

Members of the D.C. Principles coalition use business models that derive revenue from multiple sources to make their journal content as freely available as possible to their member communities and to the public, as well as to scientists in underserved countries.

Advocates for a new, open-access model have aggressively promoted their concept as “immediate unrestricted access to scientific ideas, methods, results and conclusions [that] will speed the progress of science and medicine, and will more directly bring the benefits of research to the public.” However, under that model, authors would have to pay for their articles to be published, which could open a Pandora’s box of untold consequences involving the independence, reliability and rigorous peer-review process of established scholarly journals.

RSNA’s Journal Policies

For RSNA’s peer-reviewed science journal *Radiology* and RSNA’s peer-reviewed education journal *RadioGraphics*, authors do not pay to have their research published. Rather, each journal is financed through non-member subscriptions, allocation of membership dues and advertising. These revenue sources allow full RSNA members to access the printed and online journals at no additional charge.

All abstracts are available for free



Members of the D.C. Principles coalition held a press conference in March at the National Press Club in Washington to explain the free-access approach to scientific literature. (front row, from left) **Alice Villalobos, Ph.D., Karin Wittenborg, M.L.S., and William Rosner, M.D.** (back row, from left) **John K. Iglehart, Robert D. Wells, Ph.D., and Martin Frank, Ph.D.**

on the Internet at the time of publication. In addition, the full text of important articles, such as last year’s series on severe acute respiratory syndrome (SARS), become immediately available for free. All other articles become available for free two years after publication.

In many cases, individuals can access scientific journal articles for free at state institutions or other large public libraries because the institution has a journal subscription.

In mid-March, members of the D.C. Principles coalition held a press conference to explain the free-access

approach to scientific literature. “People who are advocating open-access models have been very vocal about it.

We are here today, to present the other side of the story,” said Martin Frank, Ph.D., executive director of the American Physiological Society and spokesperson for the coalition. “We recognize that we have something to give back to society far in excess of what might be lost in an open-access environment.”

RSNA Assistant Executive Director for Publications and Communications Roberta E. Arnold, M.A., M.H.P.E., says that RSNA’s publishing model is

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designed to ensure the quality, wide-spread dissemination, financial stability and longevity of its journals. "So far, the open-access model meets only the second goal—widespread dissemination. The open-access model may not result in publications of high quality. It's too early to tell if their publications have any staying power," she says.

Potential for Conflict of Interest Under Open Access

One of the biggest proponents of the open-access model is the Public Library of Science, whose funding sources are author fees of \$1,500 per paper, as well as a \$9 million grant. In addition, they have just introduced an institutional membership category ranging in price from \$2,000 to \$100,000.

"They say they seek to provide free and immediate online access to scientific literature. They also say that their large submission fee—and paperless product—will be sufficient to cover the costs of their efforts over the long haul.

There is reason to be skeptical," says Robert D. Wells, Ph.D., director of the Center for Genome Research at Texas A&M University, and president of the Federation of American Societies for Experimental Biology. "The costs of online scientific publishing are significant and include quality peer review, editorial services, formatting, indexing, archiving and Web hosting. What will the Public Library of Science do when their grant runs out?"

Dr. Frank says the open-access model could put the integrity of the peer-review process at risk. "Among the journals published by the members of the coalition, peer review is fairly rigorous. Some journals publish half of the articles submitted; others publish only about 10 percent," he explains.

"Under the open-access model, will you be tempted to accept more manuscripts to help pay for the journal? Of course, you will. There is always the potential for conflict of interest. When it concerns money, the conflicts seem to magnify."

Dr. Wells adds: "Journals published by scientific societies represent a wide range of approaches to scientific communication. This diversity is a major strength—it lends itself to experimentation and innovation. These publications have also demonstrated that they are sustainable over many decades, and in this era of rapid change, are not tied to a single model of funding."

Change can sometimes bring about unintended consequences. "Everyone wants everything for free, but somebody is going to have to pay for it," says William Rosner, M.D., a professor of medicine and an associate dean at Columbia University College of Surgeons and Physicians in New York.

"Nobody has explored the consequences of open access. The consequences may really be quite severe."

Dr. Rosner, a past-chair of the publications committee for the Endocrine Society, which uses revenue from subscriptions and advertising to support a number of charitable activities, such as

scholarships to young scientists and information to the public on the Internet and through brochures. "None of the things we provide, at no cost to the recipients, are free," he says. "I think these and similar activities should not be threatened because it's too inconvenient to go to the library—either electronically or in person."

A Call for Awareness and Support

"It's my belief that not-for-profit scholarly societies and their publications are



Roberta E. Arnold, M.A., M.H.P.E.
RSNA Assistant Executive Director for Publications and Communications

both the 'keepers of the flame' of high quality scientific and medical publishing and also the seedbed of innovation in scholarly publishing," says Arnold. "Zealotry, which the open-access proponents have, is not enough, and money, which the commercial publishers have plenty of, is not enough. The free-access enterprise requires engaged participants and society members who form a community interested in scientific discovery, who impel the research, who read, discuss and critique the published results, and who educate their younger members when new research becomes community-accepted science and practice." □

Note: For more information and to view the D.C. Principles for Free Access to Science, go to www.dcpinciples.org.

RSNA 2004 Eases Way for MOC Requirements

Board certification, once earned, has traditionally been awarded for life. However, the American Board of Radiology (ABR) began issuing time-limited, 10-year certificates in radiation oncology in 1995 and in diagnostic radiology and radiologic physics in 2002. Further, time-limited subspecialty (CAQ) certificates were first issued in 1994 for pediatric radiology and vascular/interventional radiology, in 1995 for neuroradiology and in 1999 for nuclear radiology.

In March 2000, American Board of Medical Specialties (ABMS) members—including ABR—voted unanimously to transition from recertification programs to maintenance of certification (MOC) programs. Like other medical specialty boards, ABR is developing plans for a comprehensive program (ABR-MOC) for radiologists, radiation oncologists and radiologic physicists with time-limited certificates. MOC programs are designed to encompass four components, of which the cognitive examination will be only one element. Other important emphases will be on pursuing lifelong learning, through CME activities, self-assessment and practice performance assessment as part of a program of continuous quality improvement. Each of these activities also will be expected to address the six “competencies” identified as important to good medical care: patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism and systems-based practice.

“Maintenance of certification requirements place a lot more emphasis on a process of lifelong learning,” says RSNA Board Liaison for Education Theresa McLoud, M.D., professor of



Theresa McLoud, M.D.
RSNA Board Liaison for Education

radiology at Harvard Medical School and associate radiologist-in-chief and director of education at Massachusetts General Hospital in Boston. “It’s not simply a recertification process in which physicians take another examination to renew a certificate. It has to be a continuing process of lifelong learning that needs to be documented.”

Four Basic Requirements of MOC

The requirements for MOC for diagnostic radiologists, radiation oncologists and radiologic physicists will be covered in more detail by ABR in three white papers expected to be issued this spring. However, it is likely that, to renew a certification when it expires, a diagnostic radiologist will be required to present to ABR evidence of:

- Professional standing, such as an unrestricted license to practice medicine.
- A commitment to lifelong learning, including continuing medical education (CME) activities and involvement in a periodic self-assessment process



Linda B. Bresolin, Ph.D., M.B.A., C.A.E.
RSNA Assistant Executive Director for Research and Education

to guide continuing learning.

- Cognitive expertise, measured by performance on an examination.
- An evaluation of the radiologist’s performance in practice, including the quality of medical care he or she provides and the physician’s professionalism and communication skills as they relate to patient care.

“The radiologists’ examination will be computer-based,” Dr. McLoud explains. “It will have two components. There will be general content that all radiologists will take and there will also be focused content, tailored to areas in the individual’s practice. ABR has not yet completely determined the actual content of the general examination.”

What RSNA is Doing

To help its members meet MOC requirements, RSNA is working on a number of initiatives. “RSNA has some programs that are already in place and other things that are in development,”

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Dr. McLoud notes. "For example, radiologists can get CME credits at the RSNA annual meeting. That's part of the lifelong learning process that needs to be documented. ABR has proposed that radiologists obtain 50 hours of CME credit per year to fulfill the MOC requirements, of which at least 25 hours should be on subjects relevant to the physician's clinical practice."

ABR met in January and proposed that radiology societies, including RSNA, develop self-assessment programs for their members. "Among the options is a test to assess the individual's knowledge in certain areas," Dr. McLoud says. "The Board would like the societies to develop self-assessment modules that radiologists can use, which would include pre- and post-tests."

RSNA's Education Council decided in February to enhance a number of existing CME offerings, both at the annual meeting and on the Internet, to include optional self-assessment components, according to Linda B. Bresolin, Ph.D., M.B.A., C.A.E., assistant executive director for research and education at RSNA.

"Physicians will have the option of taking the courses for just the CME credit or for both the CME credit and the self-assessment component," Dr. Bresolin says. "At the annual meeting, the CME offerings include all the educational components of the scientific program, such as the refresher courses, the scientific sessions and the focus

sessions. We would provide a self-assessment overlay for some of these CME programs. For example, radiologists seeking credit for a self-assessment program might complete a self-assessment exam before attending a refresher course and then take another test after the course to determine if their level of knowledge has improved."

Self-assessment activities are

intended to help physicians identify areas where they might benefit from additional CME or other educational activities to fill in knowledge gaps or to expand their practices in directions identified by themselves in their personal "educational plans."

Self-assessment components to CME offerings should be available at RSNA 2005. RSNA has formed an MOC coordinating committee to work with other committees involved in CME, such as the Scientific Program Committee and Refresher Course Committee.

Last year, RSNA began offering case-based review courses at the annual meeting. "This is the type of learning the MOC requirements encourage," Dr. Bresolin says. "They are day-long overview courses organized around clinical cases that use audience-response technology to reinforce learning through audience participation. They will be repeated this year as well."

A series of refresher courses, called the Essentials of Radiology, has been updated and will again be offered at RSNA 2004 to provide radiologists with the general knowledge they need for MOC.

"We also are looking at ways to add self-assessment components to RSNA's

Maintenance of certification requirements place a lot more emphasis on a process of lifelong learning.

Theresa McLoud, M.D.

online educational program, InteractED," Dr. Bresolin says. "We probably will cluster online programs in certain content areas. So individuals would be able to take a self-assessment questionnaire and be directed to online programs that would help them attain knowledge in areas where their knowledge is lacking. Then they would take another test to see if their knowledge had improved."

To help radiologists identify CME activities related to their subspecialty, RSNA has streamlined and made uniform all of the content codes used in the annual meeting program, on InteractED (www.rsna.org/education/interactive/

Content Codes for CME Credit Categories

BR	Breast (Imaging and Interventional)
CA	Cardiac Radiology
CH	Chest Radiology
CT	Computed Tomography
ER	Emergency Radiology
GI	Gastrointestinal Radiology
GN	General
GU	Genitourinary Radiology
HN	Head and Neck
HP	Health Policy/Management/Informatics
MK	Musculoskeletal Radiology
MO	Mammography
MR	Magnetic Resonance Imaging
NM	Nuclear Medicine
NR	Neuroradiology
OB	Obstetric/Gynecologic Radiology
OT	Other
PD	Pediatric Radiology
PH	Physics and Basic Science
RO	Radiation Oncology
US	Ultrasound
VI	Vascular and/or Interventional Radiology

index.html), in CME activities in *Radiographics*, in the Education Resources Catalog, and for the online CME Credit Repository (www.rsna.org/cme).

All CME credit a member earns through RSNA will be automatically recorded in the CME Credit Repository. "The repository will list individual courses and sessions attended and will include the codes assigned to the courses and sessions," says Mellie Pouwels, M.A., managing director of the RSNA Education Center. "The record will also include a total number of CME category 1 credits earned and a separate total of credits earned by content category."

The RSNA Board of Directors is discussing development of an electronic CME template on *RSNA Link* (www.rsna.org) that radiologists will be able to use to develop an individual lifelong learning plan. RSNA is working with the American College of Radi-

Continued page 22

Radiologist Uses Imaging, Whimsy to Teach Anatomy

Each Tuesday at 7:00 p.m., about a dozen students file into McDonnell Hall at Washington University in St. Louis for a two-and-a-half hour course in “Medical Imaging of the Human Body.” This is not a pre-med class designed for future radiologists. The class is for adult and student undergraduates seeking a “take home” understanding of the human body and to learn something about modern diagnostic imaging.

This unconventional three-credit course, part of the college’s continuing education program in biology, was conceived by its instructor, Albert M. Hammerman, M.D. “It basically teaches human anatomy through the art of medical imaging,” says Dr. Hammerman, part owner of Metro Imaging in St. Louis.

Four years ago, the Washington University alumni office called Dr. Hammerman and asked if he would like to become more involved with the University. “I had been thinking about teaching undergraduates, and pitched the idea of teaching anatomy with the aid of medical imaging. My idea was a course for both science and non-science majors,” Dr. Hammerman says.

His proposal was well received. “My reaction was one of enthusiasm because in continuing education it’s not always easy to nurture people’s interest in broad scientific ideas and directions,” says Steven Ehrlich, Ph.D., associate dean for undergraduate programs at Washington University’s University College in Arts & Sciences. “Dr. Hammerman’s course is a wonderful complement to the tremendous amount of research going on in the area of life and biological sciences. This is a unique course,

because at the undergraduate level in our division, we don’t see a lot of interest in biological research,” says Dr. Ehrlich.

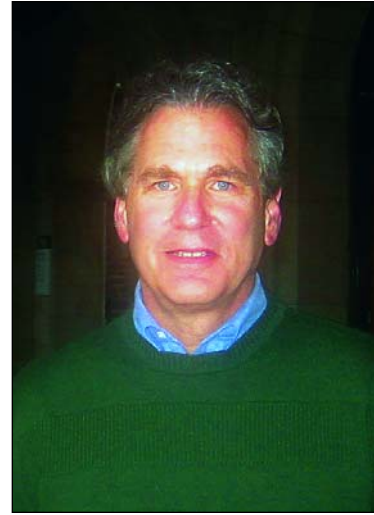
Dr. Hammerman says he designed the course to be more interesting than typical classes in pure anatomy. “The goal of the class is to not only to teach standard anatomy, but also to do so in a manner that’s practical and meaningful as related to one’s own health. I believe that various cross-sectional imaging techniques make it easier to understand how one anatomic structure relates to and affects another, in both healthy and diseased states,” he explains.

Dr. Hammerman’s PowerPoint presentations cover the entire body with the aid of chest x-rays, and CT and PET scans. “We deal with common illnesses that students can relate to, such as osteoporosis, arthritis and heart disease. We also talk about screening, including controversies

If radiologists have any spare time and want to get involved in teaching, offering a course like this at a university is just a wonderful opportunity to share their knowledge of radiology and influence pre-med students to become radiologists.

Tiffany Lewis, Pre-Med Student

such as whole-body screening. And we’ll touch on diseases that affect organ systems,” he says. “When we’re studying the heart, we’ll talk about chest pain, what it might mean and



Albert M. Hammerman, M.D.
University College in Arts & Sciences
Washington University, St. Louis

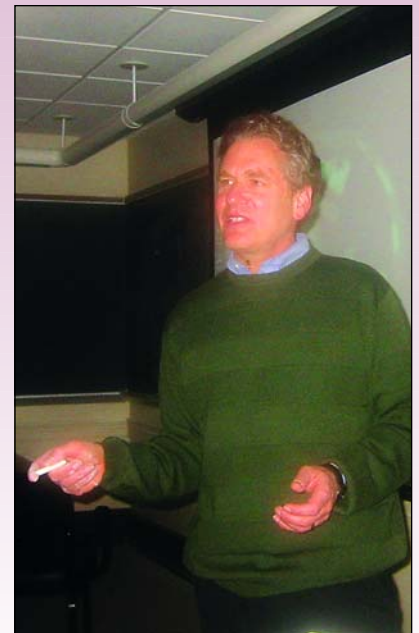
what radiologic tests might be ordered by a physician. We cover everything from stress testing to 3D-MR angiography and cardiac scoring. For the head, we’ll talk about types and causes of headache, and we’ll look at slides of cerebral arteries, brain tumors and meningitis.”

In any given class, the students may be asked, “Where’s Waldo?” The popular cartoon character serves as a point of reference that helps students identify body parts on which Waldo is hidden.

“Keeping the course interesting takes work,” says Dr. Hammerman. “Another way we have fun is by looking for radiologic ‘bloopers’ in order to stress proper positioning, right and left determinations and artifacts.”

About half of those taking the course are pre-med students, while 25 percent are allied medical students and the remaining 25 percent are adults

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Radiologist Albert M. Hammerman, M.D., teaches a weekly course, "Medical Imaging of the Human Body," to adults and undergraduate students at Washington University in St. Louis.

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with a variety of interests. One of Dr. Hammerman's recent pre-med students, Tiffany Lewis, says it was this course that piqued her interest in radiology. "The course was interactive and fun. I never considered radiology as a field, but after taking Dr. Hammerman's course it's something that I'm really considering," she says.

Lewis also was influenced by the time she spent at Metro Imaging shadowing Dr. Hammerman's brother, Harley J. Hammerman, M.D. She says she especially liked the patient interaction and the ability to work with people at the clinic. "Dr. Hammerman would show me CT and MR images of patients he had had that day and asked if I saw anything. Most of the time I could pick out a lot of the things that were wrong. It was encouraging that I got that much out of the course," Lewis says.

She adds that she hopes other radiologists will get more involved in teaching at a basic level, "If radiologists have any spare time and want to get involved in teaching, offering a course like this at a university is just a

wonderful opportunity to share their knowledge of radiology and influence pre-med students to become radiologists."

Dr. Ehrlich agrees that there is demand for such a curriculum offering. "The feedback has all been positive. Dr. Hammerman is a very dynamic and committed teacher and is very good at communicating some of these very complicated principles of the human anatomy in ways that are easily understood by people without technical backgrounds," Dr. Ehrlich says.

"Al's course, though not a requirement for medical school, is an attractive course and it's a nice supplement for people who want to do pre-medical studies and take a look at aspects of anatomy that you would not get in a standard anatomy course," he adds.

Dr. Hammerman spends about an hour each day gathering patient films, text and online pictures and then cutting and pasting them for his PowerPoint slides. "Colleagues in my group are very supportive. They arrange it so that I'm not on call either the night before or the night after my class. I do

all my own printing—700 or more pages of material a week—so I can have syllabi available for the students. By the end of the course they've each accumulated a 400-sheet book of all the images presented in class. I don't charge for this material. Metro Imaging absorbs the cost of paper, ink and toner," he says.

Dr. Hammerman has some advice for other radiologists who may want to teach a class like this. "College administrators were not the only people that had to be sold on the idea," he says. "You also have to sell it to the biology department because if you're going to teach for credit, they want to make sure that the class fulfills science requirements and that the students are getting an adequate amount of knowledge." □

Program and Grant Announcements

NEW!

Education Grant Deadline Change

The RSNA Research & Education Foundation Board of Trustees has changed the deadline for Education Grants from June 1, 2004, to January 10, 2005.

The affected grants are:

- World Wide Web-Based Educational Program Grant
- Educational Scholar Program Grant
- International Radiology Education Program Grant to "Teach the Teachers" from Emerging Nations
- Institutional Clinical Fellowship in Cardiovascular Imaging
- Institutional Fellowship in Radiologic Informatics

For more information on these or any other Foundation grants, contact Scott Walter at swalter@rsna.org or (630) 571-7816.

NEW!

Digital Presentation Skills for the Radiologist



RSNA is sponsoring a comprehensive, one-day workshop that will help radiologists master the tools and techniques that will give their clinical presentations added impact.

The course, which will include hands-on experience and personalized instructions, will be held on Saturday, August 7, 2004, at RSNA Headquarters in Oak Brook, Ill. Online registration is available at www.rsna.org/education/shortcourses.

Registration Fees:

RSNA Members: \$199

Non-Members: \$249

6.75 AMA PRA category 1 credits available

For more information, contact the RSNA Education Center at (800) 381-6660 x7715 or at ed-ctr@rsna.org.

NIH Symposium

Online registration is open for the National Institutes of Health (NIH) symposium, Biomedical Informatics for Clinical Decision Support: A Vision for the 21st Century. The symposium, sponsored by the Bioengineering Consortium and the Biomedical Informa-



tion Science and Technology Initiative Consortium, will be held June 21-22, 2004, at the Natcher Conference Center on the main NIH campus in Bethesda, Md. For more information, go to www.becon.nih.gov/symposium2004.htm.

Leadership Strategies for Radiology Practices

Online registration is available at www.rsna.org/education/shortcourses for this dynamic, interactive RSNA course, which will be held July 23-25, 2004, at the Chicago Marriott Downtown.

Directed by Lawrence R. Muroff, M.D., the course is designed for current and future leaders in radiology and focuses on relevant topics including financial issues, strategic planning, billing, compliance and legal matters. Didactic morning lectures are followed by split interactive breakout sessions for academic or private practice strategic planning in the afternoon.

Registration Fees:

RSNA member: \$695

RSNA member-in-training: \$295

Non-members: \$795

20 AMA PRA category 1 credits available

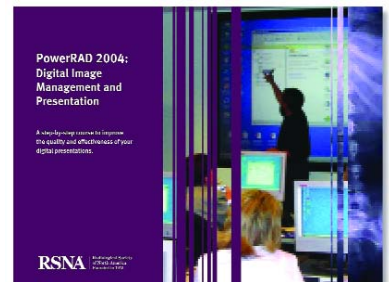
For more information, contact the RSNA Education Center at (800) 381-6660 x7715 or at ed-ctr@rsna.org.

NEW!

PowerRAD 2004

Register online at www.rsna.org/education/shortcourses for this one-day RSNA workshop on Saturday, August 28, 2004, at RSNA Headquarters in Oak Brook, Ill.

Paul J. Chang, M.D., from the University of Pittsburgh, will take you step by step through the process of converting analog radiologic images into an electronic format and editing images and text



using various lecture software, such as PowerPoint.

This course includes printed lecture notes and CD-ROM software. Since RSNA will provide all attendees with the use of a desktop computer for this course, space is limited.

Registration Fees:

RSNA Members: \$199

Non-Members: \$249

6.5 AMA PRA category 1 credits available

For more information, contact the RSNA Education Center at (800) 381-6660 x7715 or at ed-ctr@rsna.org.

Radiology in Public Focus

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

MR Imaging of Newborns Using a MR-compatible Incubator with Integrated Radiofrequency Coils: Initial Experience

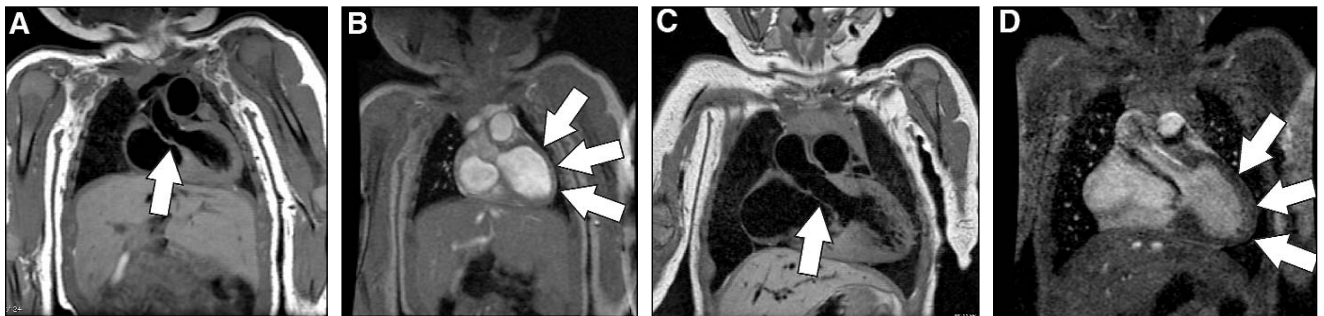
A fully MR-compatible incubator may significantly reduce the logistical challenges of MR examination of neonates.

Stefan Blüml, Ph.D., from Childrens Hospital Los Angeles, and colleagues imaged 13 patients from the neonatal intensive care unit (NICU) who were

already scheduled for clinically indicated MR studies.

“The use of an MR-compatible incubator offers potential for obtaining state-of-the-art, high spatial resolution anatomical MR images and spectra of newborns, a particularly vulnerable patient population,” the researchers

write. “Newborn patients can benefit from improved safety, efficiency and quality of diagnostic imaging information. The safe environment of an MR-compatible incubator can increase the number of patients referred for non-invasive diagnostic MR examinations.” (*Radiology* 2004;231:594-601)



(A, B) MR images of the heart acquired with the MR-compatible incubator and the integrated body coil in a 1-week-old neonate examined for assessment of vessel branching. (C, D) MR images obtained with the standard head coil in a 1-month-old baby examined for assessment of pulmonary

and systemic venous drainage. Note the sharp definition of the left ventricular outflow tract and the aorta (arrows in A and C) and the superior blood-myocardial contrast (arrows in B and D) on the images acquired with the MR-compatible incubator.

Electromagnetic Breast Imaging—Average Tissue Property Values in Women with Negative Clinical Findings

With the hope of improving contemporary breast imaging and deepening the understanding of the biology of breast disease, Steven P. Poplack, M.D., and colleagues from Dartmouth Hitchcock Medical Center in Lebanon, N.H., have developed three alternative imaging techniques: near infrared spectroscopy (NIR), electrical impedance spectroscopy (EIS) and microwave imaging spectroscopy (MIS).

The breasts of 23 Caucasian women without clinical or mammography findings were imaged with non-

ionizing radiation of varying frequencies in the coronal plane.

The researchers found that each modality gave information on breast tissue features that could be used to form a baseline so that pixel-by-pixel variations could indicate malignancy.

“In the future, property map images will probably be most useful to detect and characterize breast disease,” the researchers write.

(*Radiology* 2004; 231:571-580)



RSNA press releases are available at www2.rsna.org/pr/pr1.cfm.

CT-guided Immunotherapy: A Technically Feasible and Safe Approach to Delivery of Gene Therapy in the Treatment of Metastatic Renal Cell Carcinoma

CT can safely and reliably guide gene therapy agents to patients with metastatic renal cell carcinoma.

Robert D. Suh, M.D., and colleagues from the University of California Los Angeles Medical Center, studied 29 patients who underwent up to three cycles of six weekly intra-tumoral IL-2 plasmid DNA injections. The patients had a wide variety of superficial and deep tumor sites.

Of the 284 intra-tumoral

injections performed, needle placement and injection of gene therapy agent was achieved in all cases. No patients experienced serious adverse events or unacceptable toxicities.

The researchers write, “Localized intra-tumoral injection of IL-2 plasmid DNA has been shown to generate a systemic anti-tumor immune response; therefore, immunotherapy injections may ultimately become an effective treatment option even in the setting of widespread metastatic disease.” (*Radiology* 2004;231:359-364)

Journal Highlights

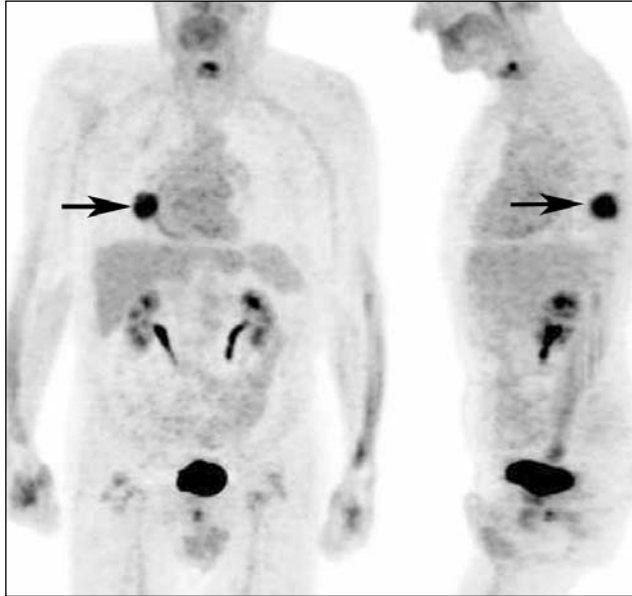
Clinical Applications of PET in Oncology

Positron emission tomography (PET) is a molecular imaging technique that provides images of physiologic processes. PET is used for characterizing brain disorders such as Alzheimer disease and epilepsy and cardiac disorders such as coronary artery disease and myocardial viability. The major utilization of PET clinically is in oncology.

Radiology

In a special review article appearing in the May issue of *Radiology*, Eric M. Rohren, M.D., Ph.D., from Duke University Medical Center, and colleagues describe the physics and instrumentation aspects of PET as well as its developing applications.

To access this article online, go to radiology.rsnaajnl.org.



Frontal (left) and left lateral (right) maximum intensity projections from FDG PET scan in an 80-year-old man referred for diagnosis of lung carcinoma. Newly discovered right lower lobe pulmonary nodule (arrows) is intensely hypermetabolic, with SUV of 12. Subsequent biopsy demonstrated non-small cell carcinoma.

(*Radiology* 2004;231:305-332)
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Optimizing Doppler and Color Flow US: Application to Hepatic Sonography

For patients with chronic liver disease or portal hypertension or who have undergone liver transplantation or surgery, Doppler ultrasonography can provide rapid, comprehensive and accurate evaluation of the entire hepatic vasculature.

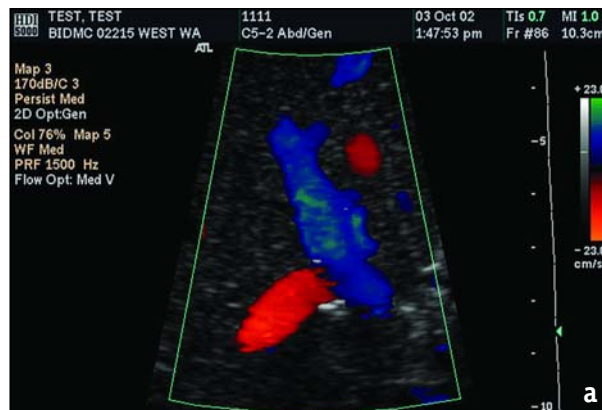
RadioGraphics

In the May-June issue of *RadioGraphics*, Jonathan B. Kruskal, M.D., Ph.D., and colleagues from Beth Israel Deaconess Medical Center in Boston, discuss ways to optimize Doppler US of hepatic blood flow, including:

- Selection of transducers
- Choice of scanning techniques
- Adjustments of the essential operator-dependent technical parameters, such as frame rate, wall filters, gain, velocity range, angle correction, gate size and position

They also liberally illustrate how each parameter influences detection of flow and should be adjusted for optimal depiction and characterization of the hepatic vasculature.

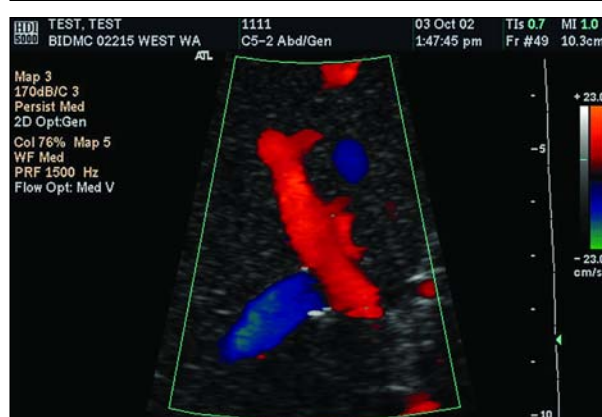
To access this article online, go to radiographics.rsnaajnl.org.



Inversion of Color Flow

(a) On a color Doppler flow US image obtained with color Doppler flow US as the active scanning mode and inversion of the color bar, portal venous flow appears blue, which falsely suggests reversal of flow (i.e., away from the transducer). (b) On a color Doppler flow US image obtained with reversal of this inversion, appropriate directional flow is noted.

(*RadioGraphics* 2004;657-675)
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Working For You

Annual Meeting Web Site More User Friendly

You can now quickly and easily stay informed about various aspects of the RSNA annual meeting through the newly redesigned annual meeting section of *RSNA Link* (www.rsna.org).

From the home page, click on the annual meeting logo in the top left-hand section. You'll be taken to a page where you'll find up-to-date information on everything you need, including course details, registration, new annual meeting features and information on the technical exhibits.

More detailed information is available on page 25.

Radiology Adds Two New Sections

RSNA's peer-reviewed science journal *Radiology* added two new sections in 2004 to reflect the growing interest and expertise in these two areas—Evidence-based Practice and Molecular Imaging.

The associate editors for Evidence-based Practice are G. Scott Gazelle, M.D., M.P.H., Ph.D., Dermot E. Malone, M.D., and Harald O. Stolberg, M.D., F.R.C.P. The associate editors for Molecular Imaging are Sanjiv Sam Gambhir, M.D., Ph.D., John M. Hoffman, M.D., and Ralph Weissleder, M.D., Ph.D.

Subspecialty Content Alerts Available from RadioGraphics

RSNA members and subscribers to *RadioGraphics Online* can be notified by e-mail every time an article is posted in their subspecialty area of interest.

To take advantage of this relatively new feature, go to *radiographics.rsna.org*, click on Subspecialty Collection Alerts and then enter the e-mail address to which you want the notifications sent.

The list of subspecialties matches the maintenance of certification codes, which are now consistent throughout RSNA's educational material. See page 11 for details.

SERVICE TO MEMBERS:

I have had various positions at RSNA through the years. I started working in the Meetings Department, then worked in the Membership Department and finally in Program Services, where I am currently the assistant director. My varied experience within the organization has provided me with a unique perspective that helps me see how all the departments within RSNA work together to serve RSNA members.

In all of my positions with RSNA, the one constant has been working with volunteer members. The Program Services Department works closely with physician committees in developing the educational program for the RSNA Scientific Assembly and Annual Meeting. We assist the volunteer leadership in inviting, selecting, scheduling and communicating with annual meeting faculty and presenters. This includes more than 600 invited faculty, who teach the plenary and refresher courses, as well as

presenters of more than 3,000 preferred presentations, consisting of scientific papers, scientific posters and education exhibits.

Through the entire process, the program services department ensures that all of the requirements of the Accreditation Council for Continuing Medical Education (ACCME) are met so that category 1 CME can be provided to attendees.

WORK PHILOSOPHY:

It is important to have a "can do" attitude along with enjoying working with the volunteers and staff. I recognize that our members and meeting presenters are very busy in their practices and so it is important to be readily available to assist them. Only the physician volunteers can provide the content expertise;

my goal is to assist them in every way to reduce their amount of work. I always try to look at the big picture, while ensuring the details are also being handled.

WORKING FOR YOU PROFILE



NAME:

Annette Savage

POSITION:

Assistant Director
Program Services

WITH RSNA SINCE:

1979–1985 and
1987–present

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

Product News

NEW PRODUCT

New Pediatric Positioning Board

Technologists at Columbus Children’s Hospital have developed a device designed to improve film quality and patient comfort by helping to keep children still and comfortable during radiologic examinations.



The Columbus Pediatric Radiography Board is a lightweight, stable, transparent positioning board that would replace the Pigg-o-stat®.

“The consistent positive parent response that we see with the use of the Columbus Board underscores the fact that customer service goes beyond simple ‘service’ in pediatric healthcare and clearly is an issue of exceptional patient and family care,” said William E. Shiels, D.O., chief of radiology at Columbus Children’s Hospital.

NEW PRODUCT

Automated Remote Monitoring Services for Synapse PACS

FUJIFILM Medical Systems USA has introduced Active Monitoring, a comprehensive set of automated remote monitoring services for Synapse PACS. Active Monitoring is designed to continuously and securely monitor and log the performance metrics of a facility’s Synapse system. By proactively detecting system anomalies and subsequently remedying any problems, the system ensures that Synapse remains fully functional and without interruption to users.

“With Active Monitoring, our technical support staff can proactively identify and diagnose problems early on, even before our customers are aware of any issues,” explained Bob Cooke, executive director of marketing for Fuji. “As a result, we can enhance customer productivity by virtually resolving many problems before they occur, and thus eliminating system disruptions and subsequent unscheduled and unnecessary service calls.”

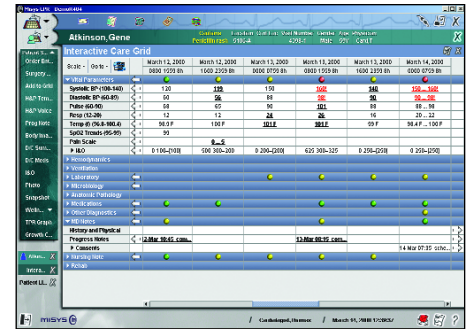
NEW PRODUCT

Integrated Information Management for Physicians and Caregivers

Misys Healthcare Systems has introduced Misys Optimum™, a suite of products that provides physicians and caregivers with integrated information management across the continuum of care.

The products include clinical systems and services that support data sharing among acute, ambulatory and post-acute care providers, affiliated and non-affiliated.

“Misys Optimum meets the growing market demand for information technology solutions that bring together essential patient information across all of the key care delivery settings,” said Tom Skelton, chief executive officer for Misys Healthcare Systems. “Misys Optimum will provide clinicians with tools to optimize clinical and financial results, as well as productivity, freeing them to focus on the delivery of safe, effective patient care.”



Misys CPR’s Interactive Care Grid allows physicians and caregivers to access and manage a patient’s care across multiple settings.

NEW PRODUCT

Mobile C-arm System

Siemens Medical Solutions has introduced a new mobile C-arm system – ARCADIS® Varic. The new C-arm system, which recently received FDA clearance, delivers up to 65 percent more imaging power in a compact and lightweight design for superior maneuverability.



“ARCADIS Varic is the latest offering in our family of exceptional C-arm products,” said Holger Schmidt, president of the Special Systems Division at Siemens Medical Solutions. “This new system’s power, mobility, connectivity, and unique imaging features make it an excellent solution for our customers, delivering improved clinical results and workflow in the operating room.”



Research & Education Foundation Donors

THE BOARD OF TRUSTEES of the RSNA Research & Education Foundation and its recipients of research and educational grant support gratefully acknowledge the contributions made to the Foundation February 25–March 24, 2004.

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Dr. & Mrs. Arthur Eisen
In memory of Morris Petasnick
Dr. Alfred Mansour & Maryetta
In memory of Dr. Charles Nice
Michael Metzman, M.D.
In honor of Patricia A. Hudgins, M.D., on becoming President of ASNR
Corine A. Yee, M.D. & Michael T. Oliver, M.D.
In memory of William & May Yee and Thomas F. Oliver
Robert M. Steiner, M.D.
In memory of Jack Westcott, M.D.

RSNA Helps Build Long-Term Professional Relationships

The year was 1989. Allen D. Elster, M.D., was attending the RSNA Scientific Assembly and Annual Meeting in Chicago. “During one of the scientific sessions, I met a resident who was presenting research closely related to mine,” explains Dr. Elster. “I approached him and asked if he would be willing to share some of his data. He eagerly agreed.” This chance interaction resulted in a jointly authored landmark paper in *Radiology* describing morphological changes of the pituitary gland during pregnancy and post partum.

Now, 15 years later, Dr. Elster is the director of the Division of Radiologic Sciences, chair of the Department of Radiology and a professor of radiologic sciences at Wake Forest University School of Medicine in Winston-Salem, N.C. He still keeps in touch with that resident and is even trying to recruit him for a faculty position at Wake Forest.

Significant Impact of RSNA Research Scholar Grant

Dr. Elster says his 1990-1992 Research Scholar Grant from the RSNA Research & Education Foundation was a turning point in his career. “When I applied to be a RSNA Research Scholar, it was a time of great flux. My wife and I had a four-year-old son and infant triplet daughters,” he says.

In addition to time management, one important lesson he learned as an RSNA R&E Foundation Research Scholar was that you must find the time to interface with people outside of radiology. “I worked with a chemist specializing in the synthesis of rare-earth compounds and a biologist who was an expert in fluorescent microscopy,” he explains. “I hooked up with people

who had critical research tools and techniques not available in most radiology departments. I learned then that radiologists need to reach out and learn from researchers in other departments, even those on undergraduate campuses.”

At the time, MR contrast agents were being developed. So thanks to the award for his research, “MR Contrast Agents: Mechanisms of Action and Tissue Localization,” Dr. Elster had the time to conduct research and experiments on the fluorescent analogues of gadolinium. “I couldn’t have performed this significant block of research interspersed with my daily medical practice. That’s why the RSNA Research Scholar Grant was so helpful,” he says.

When Dr. Elster applied for the RSNA Research Scholar Grant, his radiology chairman was C. Douglas Maynard, M.D. In nominating Dr. Elster, Dr. Maynard wrote: “Our faculty believes that Dr. Elster is destined to be one of the premier academic neuroradiologists in the country.

At a very young age he has already made considerable impact on the academic community, and he has the background to become an outstanding researcher. His training in electrical engineering and neurophysiology provide him with unique qualifications to be involved in basic science research and neuroscience, which would be applied to medical imaging.”

The long-term relationship between Drs. Elster and Maynard continues today. “Allen has clearly lived up to our expectations,” says Dr. Maynard,



Allen D. Elster, M.D., M.B.A.
1990-1992 Research Scholar Grant Recipient, RSNA Research & Education Foundation

an RSNA past-president. “He is one of the premier neuroradiologists in the country, editor-in-chief of the *Journal of Computer Assisted Tomography*, and chair of one of the top radiology departments in the United States. His

[Radiology] is a fantastic field. Don't worry about what Medicare is going to do. This is the place to be for the next 20 to 30 years.

Allen D. Elster, M.D., M.B.A.

unique ability to multitask allows him to have a varied and accomplished professional career as well to be a devoted husband and father. He is a great credit to his institution and to the field of radiology.”

In a 1992 report to the RSNA R&E Foundation Board of Trustees, Dr. Elster wrote: “My productivity from the two-year scholarship was recognized this year by Wake Forest University in the form of a promotion to professor of radiology. In fact, I set a local institutional record for the shortest time

Continued on next page

RSNA Helps Build Long-Term Professional Relationships

Continued from previous page

in moving from instructor to full professor (5 years).”

Continued Impact of RSNA on His Career

Dr. Elster has attended every annual meeting since 1984, except for one. “I make every attempt to attend each year, because RSNA is clearly the premier radiology and scientific organization,” he says.

Dr. Elster tries to attend the first two or three days of the RSNA meeting and then return to Wake Forest to allow younger radiologists the chance to go to the meeting. “When I get back, I help out by reading x-rays on short-staffed services. It’s worth it. I want other people in this department to get ahead. My success depends upon allowing my residents, fellows and faculty to get where they want to go in the world,” he notes.

Dr. Elster’s passion for education and teaching began very early. While studying surgery, he became interested in radiology. His areas of interest include imaging of stroke, pituitary function and the physiology of MR contrast agents. He’s written seven textbooks, including the first whole-body MR imaging atlas in 1986.

Just as his career path took an unexpected twist, his educational experience

also took some interesting turns. He graduated summa cum laude from Vanderbilt University in 1976, earning degrees in electrical and biomedical engineering. He received a Rhodes Scholarship to Oxford University where he earned his master’s degree in neurophysiology in 1978. He received his medical degree in 1980 from Baylor College of Medicine and went on to train in surgery at Massachusetts General Hospital between 1980 and 1983. He completed a diagnostic radiology residency in 1986 at the University of Texas Medical School-Houston, followed by a fellowship in neuroradiology at Bowman Gray School of Medicine. He joined the faculty at Wake Forest in 1987. In 1999, Dr. Elster received his M.B.A. from the Wake Forest University-Babcock Graduate School of Management.

As for those considering or starting a career in radiology, Dr. Elster has some words of encouragement. “Congratulations on your excellent career choice. This is a fantastic field. Don’t worry about what Medicare is going to do. This is the place to be for the next 20 to 30 years,” he says.

In choosing a research focus, Dr. Elster recommends that medical students and residents “think around the edges.”

“Don’t necessarily look at what is ‘hot’ right now. While everyone is focusing on disease X or technique Y, there are tremendous opportunities in forgotten disease P or underappreciated technique Q,” he explains. “In the early 1990s, everyone rushed into MR

research while CT, ultrasound and PET research was relatively quiet. Now these modalities are surging ahead.”

Dr. Elster doesn’t pretend to know the future, but when asked about what research he thinks is being overlooked

right now, he smiles and asks, “What about research in portable chest x-ray, the most common of all radiologic procedures? Is there nothing left to discover about this?”

He adds that while researchers look at areas of personal interest, they need to remember that they’ll have to work with others. “Your research must be multidisciplinary. There is far too much for one person to learn and accomplish alone. I don’t think you’ll ever again see a solitary recipient of the Nobel Prize in Medicine,” he says. □



RSNA 2004 Eases Way for MOC Requirements

Continued from page 12

ology and other radiology groups to develop a single gateway through which members can access and print CME certificates from multiple organizations. The launch is anticipated later this year.

Practice Assessment

In addition to documenting lifelong learning and self-assessment, the ABR-MOC program requires radiologists with time-limited certification to show evidence of having participated in a

practice assessment as part of an ongoing quality improvement process.

“Practice assessment will be the most difficult component for RSNA and the other societies to develop,” Dr. McLoud says. “The model everyone thinks of first is peer review in the practice setting. However, onsite peer review of a practice can be burdensome and expensive.” Other options will also need to be explored, including electronic pooling of data on a regional basis or electronic submission of anonymized, interpreted cases. “RSNA

could facilitate this process through its Medical Imaging Resource Center,” she says.

Radiologists who have board certification for life do not have to meet the MOC requirements, but they should consider voluntary participation in the programs developed to meet these requirements, such as self-assessment and practice assessment, Dr. McLoud adds. □



Note: Subspecialty content alerts are available from *RadioGraphics Online*. See page 18 for details.

News about RSNA 2004

International Delegates

NEW!

Entry Requirements into the United States

The U.S. Visit Program was launched in January 2004 to protect the safety of U.S. citizens and international visitors. Beginning September 30, 2004, foreign visitors (including the 27 countries from the Visa Waiver Program) will be photographed and fingerprinted upon arrival to a U.S. airport or seaport. The quick and efficient processes take only few seconds in most cases.

For more information, go www.dhs.gov/us-visit.

Visa Waiver Nations

Starting October 26, 2004, visa waiver travelers from all 27 Visa Waiver Program countries must present a machine-readable passport or a U.S. visa upon arrival to a U.S. airport or seaport.

For more information, go to www.travel.state.gov/wvp.

Invitation Letter

An Annual Meeting invitation letter from RSNA Executive Director Dave Fellers, C.A.E., is available for healthcare professionals who need to apply for a visa in order to attend RSNA 2004.

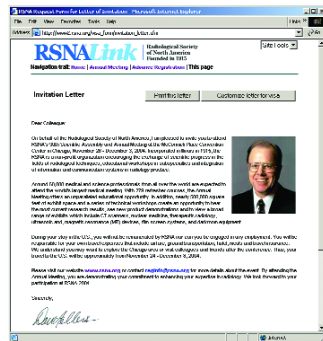
Print a letter from your computer

Go to www.rsna.org. Click on the Annual Meeting logo. Go to the Registration & Housing section.

Print a generic version of the letter or customize it with your name and address before you print it.

E-mail a request for a mailed letter – Send an e-mail request to reginfo@rsna.org. Include your name, as it appears on your passport, and your mailing address.

International attendees are strongly encouraged to apply for a visa at least three or four months in advance of RSNA 2004—in other words, by the end of July 2004.



November 28 – December 3, 2004
McCormick Place, Chicago

Advance Registration for RSNA 2004

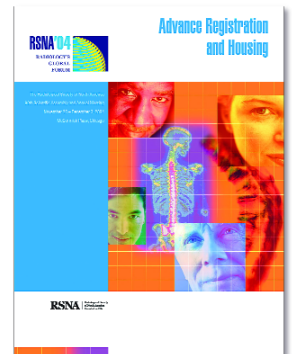
Brochure Available

Registration for RSNA 2004 is now open for RSNA and AAPM members. General registration begins May 24.

The first Advance Registration and Housing brochure is available in electronic format only. You can get a copy online or by fax:

Download a brochure

- 1 Go to www.rsna.org
- 2 Click on the annual meeting logo
- 3 Click on Registration and Housing for a PDF version of the brochure.



Request a faxed copy

- 1 Call the fax-on-demand server at (847) 940-2146
- 2 Select a document
 - Enter 1300 for the entire brochure
 - Enter 1375 for the registration form only
- 3 Enter your fax number (including 1 or 011, plus city and country codes)
- 4 Enter your telephone number and extension

Four Ways to Register

Once you download the advance registration information or have it faxed to you, there are four easy ways to complete the registration process:

1 Internet

Go to www.rsna.org

Use your member ID# from the *RSNA News* label or meeting flyer sent to you, or search by your last name. If you have questions, send an e-mail to rsna@itsmeetings.com.

2 Fax (24 hours)

(800) 521-6017
(847) 940-2386

3 Telephone (Monday–Friday, 8:00 a.m.–5:00 p.m. CT)

(800) 650-7018
(847) 940-2155

4 Mail

ITS/RSNA 2004
108 Wilmot Rd., Suite 400
Deerfield, IL 60015-0825 USA

Benefits of the RSNA Housing Block

RSNA has secured more than 100,000 room nights at 67 downtown hotels offering the lowest rates in the city.

Booking through the RSNA housing bureau:

- Supports RSNA's efforts to negotiate the best available hotel room rates
- Gives you access to free shuttle transportation to/from McCormick Place to or near contracted hotels
- Provides you with free Metra train service between McCormick Place and the Randolph Street stop with a special convention schedule
- Is convenient. The Registration and Housing link is at www.rsna.org

Refresher Course Enrollment Begins June 21

Enrollment for refresher courses begins June 21. **Earn up to 80.5 category 1 CME credits at RSNA 2004**

Course enrollment information will be mailed in late June and also will be available on *RSNA Link* in electronic format.

Registration Fees

BY 11/12	ONSITE	
\$0	\$100	RSNA Member, AAPM Member
\$0	\$0	Member Presenter
\$0	\$0	RSNA Member-in-Training, RSNA Student Member and Technical Student
\$0	\$0	Non-Member Refresher Course Instructor, Paper Presenter, Poster Presenter, Education or Electronic (<i>infoRAD</i>) Exhibitor
\$110	\$210	Non-Member Resident/Trainee
\$110	\$210	Radiology Support Personnel
\$520	\$620	Non-Member Radiologist, Physicist or Physician
\$520	\$620	Hospital Executive, Commercial Research and Development Personnel, Healthcare Consultant, Industry Personnel
\$300	\$300	One-day badge registration to view only the Technical Exhibits area

For more information about registration at RSNA 2004, visit www.rsna.org, e-mail reginfo@rsna.org, or call (800) 381-6660 x7862.

Important Dates for RSNA 2004

May 24	General registration and housing opens
June 21	Refresher course enrollment opens
Nov. 12	Advance registration deadline
Nov. 28–Dec. 3	RSNA 90th Scientific Assembly and Annual Meeting

RSNA 2004 Exhibitor News

June Exhibitor Planning Meeting

Booth assignments will be released June 22 at the Exhibitor Planning Meeting and Luncheon. All exhibitors for RSNA 2004 are invited to attend at Rosewood Restaurant and Banquets near Chicago's O'Hare International Airport.

Advertising at RSNA 2004

Many opportunities exist for exhibitors to promote their exhibits at RSNA 2004—the world's largest annual medical meeting. For more information, see www.rsna.org/advertising/index.html or contact:

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|---|--|
| ■ Jim Drew
Director of Advertising
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Important Exhibitor Dates for RSNA 2004

May 17	Housing Letter Mails
May 31	Block Housing Forms available online
June 22	Exhibitor Planning/Booth Assignment Meeting
July 6	Technical Exhibitor Service Kit available online
July 9	Block Housing deadline date
July 30	Deadline for reduction/cancellation (for full refund) Deadline for Exhibitor Information Form
August 13	Deadline for final payment Deadline for reduction/cancellation (for partial refund)
November 12	Exhibitor advance badge request deadline
Nov. 28–Dec. 3	RSNA 90th Scientific Assembly and Annual Meeting

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

■ For up-to-date information about technical exhibits at RSNA 2004, go to www.rsna.org and click on the annual meeting logo.

www.rsna.org

R&E Foundation Newsletters

The RSNA Research & Education Foundation now posts its two newsletters on *RSNA Link*. To access *Foundation Frontline* or *Foundation X-aminer*, go to www.rsna.org. In the left-hand column, mouse over R&E Foundation, then Newsletters and click on the title of either newsletter or its archive.

RSNA 2003 Summary

A two-page recap of RSNA 2003 is available as a portable document format (PDF) file in the Annual Meeting section of *RSNA Link*.

A three-minute slideshow from the meeting is also available in the Technical Exhibitors area. It's called "Sights from RSNA 2003." Version 9 of Windows Media Player is required.

RSNA 2004

RSNA Link (www.rsna.org) is updated regularly to include the newest online features and most up-to-date information about RSNA 2004. Among the newest features:

- Advance registration and housing for RSNA and AAPM members
- Quick Reference page for technical exhibitors
- International invitation letter

For more information, see the Meeting Watch section on pages 23-24.

Soon to come to *RSNA Link* (www.rsna.org):

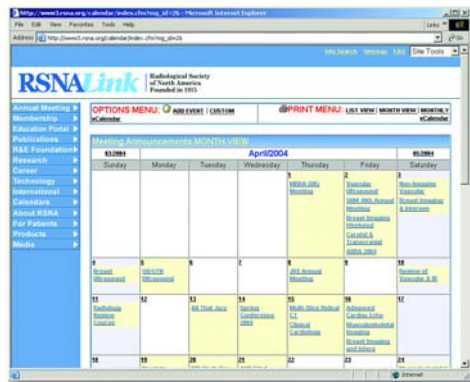
- General registration opens May 24
- Refresher Course Enrollment opens June 21
- Exhibitor Guide

Formerly called *Buyer's Guide*, the annual database of technical exhibitors at the scientific assembly will now be called



Exhibitor Guide. The guide will include a list of the technical exhibitors, their booth numbers, and contact and company information, as well as interactive floor plans.

An abridged version of the exhibitor list will appear in the middle section of the *Daily Bulletin*, the official daily newspaper of the RSNA annual meeting.



New Interactive Calendars

RSNA Link has replaced two static calendar pages with interactive calendars.

Go to www.rsna.org. In the left-hand column, click on Calendars and then choose either CME and Other Meetings or RSNA Important Dates.

For the CME and Other Meetings calendar, CME administrators and others can use an online form to submit announcements about radiologic meet-

ings, courses, workshops, etc. RSNA staff reviews each submission and posts all appropriate announcements.

The newly improved RSNA Important Dates calendar is searchable and has the same look and feel of the CME and Other Meetings calendar.

The direct URL to the CME Calendar is www3.rsna.org/calendar/index.cfm?mg_id=26.

connections Your online links to RSNA

RSNA Link
www.rsna.org
Radiology Online
radiology.rsnaajnl.org
Radiology Manuscript Central
radiology.manuscriptcentral.com
RadioGraphics Online
radiographics.rsnaajnl.org

Education Portal
www.rsna.org/education/etoc.html
CME Credit Repository
www.rsna.org/cme
RSNA Medical Imaging Resource Center
mirc.rsna.org

RSNA Index to Imaging Literature
rsnaindex.rsnaajnl.org
RSNA Career Connections
careers.rsna.org
RadiologyInfo™
RSNA-ACR public information Web site
www.radiologyinfo.org

RSNA Online Products and Services
www.rsna.org/member-services
RSNA Research & Education Foundation Make a Donation
www.rsna.org/research/foundation/donation

Community of Science
www.rsna.org/research/cos.html
History of the RSNA Series
www.rsna.org/about/history/index.html
Membership Applications
www2.rsna.org/timssnet/mbrapp/main.cfm

Medical Meetings

June – July 2004

JUNE 5–11

American Society of Neuroradiology (ASNR), 42nd Annual Meeting, Washington State Convention & Trade Center, Seattle
• www.asnr.org

JUNE 6–8

U.K. Radiological Congress 2004, UKRA, Manchester, U.K.
• www.ukrc.org.uk

JUNE 12–16

American Medical Association (AMA), House of Delegates Annual Meeting, Hyatt Regency, Chicago • www.ama-assn.org

JUNE 15–18

European Society of Gastrointestinal and Abdominal Radiology (ESGAR), 15th Annual Meeting and Postgraduate Course, Geneva, Switzerland • www.esgar.org

JUNE 19–23

Society of Nuclear Medicine (SNM), Pennsylvania Convention Center, Philadelphia • interactive.snm.org

JUNE 20–22

American Institute of Ultrasound in Medicine Annual Meeting (AIUM), Marriott's Desert Ridge Resort & Spa, Phoenix
• www.aium.org

JUNE 21–22

BECON/BISTIC SYMPOSIUM: Informatics for Clinical Decision-making in the 21st Century, Natcher Auditorium, NIH Campus, Bethesda, Md. • www.becon.nih.gov/becon_symposia.htm

JUNE 23–26

Computer Assisted Radiology and Surgery (CARS), 18th International Congress and Exhibition, Chicago • www.cars-int.de

JUNE 24–25

Institute of Electrical and Electronics Engineers (IEEE), 17th IEEE Symposium on Computer-based Medical Systems (CBMS 2004), Hotel Four Points by Sheraton, Bethesda, Md.
• www.cvia.ttu.edu/Conferences/cbms2004/cbms2004.html

JUNE 24–27

Radiation Therapy Oncology Group (RTOG), Capital Hilton, Washington, DC • www.rtog.org

JUNE 25–29

International Congress of Radiology (ICR), hosted by the Canadian Association of Radiologists, Palais des Congrès de Montréal, Montreal, QC, Canada • www.icr2004.com

JUNE 25–29

Canadian Association of Medical Radiation Technologists (CAMRT), Annual General Conference, Montreal, QC, Canada
• www.camrt.ca

JULY 22–24

Sociedade Brasileira de Angiologia e Cirurgia Vascular (SBACV-ES), Regional Espírito Santo, First Brazilian Congress in Vascular Ultrasound, Vitoria, Brazil
• www.ecovascularvitoria.com.br

JULY 23–25

Leadership Strategies for Radiology Practices, RSNA Education Center, Chicago Marriott Downtown
• www.rsna.org/education/shortcourses

JULY 25–29

American Association of Physicists in Medicine (AAPM), David L. Lawrence Convention Center, Pittsburgh
• www.aapm.org

AUGUST 7

Digital Presentation Skills for the Radiologist, RSNA Education Center, RSNA Headquarters, Oak Brook, Ill.
• www.rsna.org/education/shortcourses

AUGUST 28

PowerRAD 2004, RSNA Education Center, RSNA Headquarters, Oak Brook, Ill. • www.rsna.org/education/shortcourses

NOVEMBER 28–DECEMBER 3

RSNA 2004, 90th Scientific Assembly and Annual Meeting, McCormick Place, Chicago • www.rsna.org

RSNANews

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