

RSNA News™

October-November 2011 Volume 21, Numbers 10 & 11

DOUBLE ISSUE



Annual Meeting Preview and Restaurant Guide

ALSO INSIDE:

Battling Burnout: Radiologists Seek
Career Renewal

Study Refuting CAD Effectiveness in
Mammography Sparks Debate

U.S. Still Vulnerable to Isotope Shortage

New Tool Mines Patient Record for
CIN Risk Factors

RSNA 2011
November 27–December 2

Final Advance Registration
Ends November 4

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November 27 – December 2

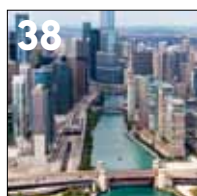
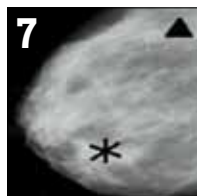
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RSNA News™

For more than 20 years, *RSNA News* has provided high-quality, timely coverage of radiology research and education and critical issues facing the specialty, along with comprehensive information about RSNA programs, products and other member benefits.

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Message from the Editor

MEETING PREVIEW EXPANDED THIS YEAR

Enjoy this expanded, October-November 2011 meeting preview issue of *RSNA News*. In it you will find everything you need to prepare for the world's premier medical meeting—previews of presentations in every subspecialty, a guide to the technology that will help you navigate the meeting, even a list of McCormick Place dining choices and options out in the city.

Watch your mailbox in late November for your next issue of *RSNA News*. The December 2011 issue will feature our perennially popular radiology salaries feature as well as a first look at the redesign of RSNA's Medical Imaging Resource Center (MIRC) teaching and clinical trials software.

As always, your feedback is appreciated. Email us anytime at tellus@rsna.org.

DAVID M. HOVSEPIAN, M.D., is the editor of *RSNA News*. He is a professor of radiology and chief quality and safety officer for the Department of Radiology at Stanford University in California. Dr. Hovsepian also serves on the RSNA Quality Improvement Committee, the Structured Reporting Subcommittee of the RSNA Radiology Informatics Committee, the Public Information Committee and the Public Information Advisors Network.



Free Manual on Radiography and Ultrasound Specs for Developing Countries

"Diagnostic Imaging in the Community: A Manual for Clinics and Small Hospitals," by Philip E.S. Palmer, M.D., and Gerald P. Hanson, Ph.D., is now available. Access the manual at www.dicsh.info.

The manual is a revision of one first published by Dr. Palmer in 1978, and revised by Drs. Palmer and Hanson in 1993. "A vast amount of technical information is available on the Internet and in many excellent publications, but it is not always easy for the non-expert to find all the essential needs or even to understand the details," they write in the 2011 edition. "This revised and illustrated manual should provide straightforward answers to the many of the questions which will face anyone, physician or administrator, who is considering the imaging needs of one or more small hospitals or clinics."

Dr. Palmer was an adviser to the World Health Organization (WHO)

headquarters in Geneva for more than 25 years and is a former chair of the RSNA Committee on International Relations and Education.

Dr. Hanson is former chief of the section of radiation medicine at WHO headquarters and a former regional advisor in radiological health for the Pan American Health Organization (PAHO).

The manual covers common questions in such areas as room size, building materials, costs and choice of equipment. It was edited by Janice Honeyman-Buck, Ph.D., editor-in-chief of the *Journal of Digital Imaging*, and supported by PAHO and the Rotary Club of Park Ridge, Ill.



COMING IN DECEMBER

Wondering how 2010 compensation in radiology compares to the year before? Or how salaries compare to those of other specialties?

In next month's annual salary survey, RSNA News analyzes 2010 data from the American Medical Group Association (AMGA) 23rd Annual Medical Group Compensation and Financial Survey and asks the experts what radiologists can expect in the coming year.

Take the Image Wisely™ Pledge at RSNA 2011

Once again, RSNA offers attendees the chance to join the Image Wisely Campaign to increase awareness about adult radiation protection.

RSNA is among the campaign's charter members, which also include the American College of Radiology (ACR), the American Society of Radiologic Technologists (ASRT) and the American Association of Physicists in Medicine (AAPM). Stop by any of the booths below to learn more, take the pledge and pick up your "I pledged to Image Wisely" ribbon.

- (ACR) Booth 4623, South Building, Hall A
- (ASRT) Booth 3425, South Building Hall A
- (AAPM) Booth 200, Lakeside Center, Hall D
- *RadiologyInfo.org* Booth, RSNA Services.



Joint Commission Urges Greater Attention to Radiation Exposure Risks

A recent Sentinel Event Alert issued by The Joint Commission urges healthcare organizations to pay greater attention to the risk of long-term damage and cumulative harm that can occur if a patient is given repeated doses of diagnostic radiation.

In a release about the alert distributed to the news media, The Joint Commission notes that the U.S. population's total exposure to ionizing radiation has nearly doubled over the past two decades with the increased use of diagnostic imaging in hospitals, imaging centers, physician and dental offices. The Joint Commission also points to recent studies that raise concerns about the risk of cancer from diagnostic imaging.

The alert suggests that healthcare organizations reduce risks by raising awareness among staff and patients and by providing the right test and the right dose through effective processes, safe technology and a culture of safety. The alert also recommends

annual or biannual review of dosing protocols by radiologists and expansion of the radiation safety officer's role to explicitly include patient safety as it relates to radiation and dosing.

Information and guidance provided in alerts issued by The Joint Commission are drawn from the organization's Sentinel Event Database, a voluntary reporting system for serious adverse events in healthcare. The database includes detailed information about both adverse events and their underlying causes. All Sentinel Event Alerts can be found on The Joint Commission website, www.jointcommission.org.

St. Louis University Names Brown Radiology Chair

Jeffrey J. Brown, M.D., has been named chair of the Department of Radiology at St. Louis University. Dr. Brown was previously a professor of radiology at Washington University School of Medicine and director of clinical research and co-chief of MR Imaging at Mallinckrodt Institute of Radiology, both in St. Louis. Dr. Brown is a member of the RSNA Public Information Advisors Network and has served on the *Radiology* Editorial Board.



Stack Named Chair of Radiology at Stamford

Rand Stack, M.D., has been named the chair of the Department of Radiology at Connecticut's Stamford Hospital. Prior to joining Stamford Hospital, Dr. Stack served as section chief of breast imaging at St. Luke's-Roosevelt Hospital in New York. He also served as section chief of breast imaging at White Plains Hospital Center.





Lawton Kavanagh Martel

ASTRO Announces 2012 Officers

The American Society for Radiation Oncology (ASTRO) elected new officers whose terms began at the society's annual meeting in October:

- President-elect: **Colleen A. Lawton, M.D.**, a professor and clinical director of radiation oncology, Medical College of Wisconsin, Milwaukee.
- Health Policy vice-chair: **Brian Kavanagh, M.D.**, a radiation oncologist at the University of Colorado Denver, Aurora.
- Research Council vice-chair: **Mary K. Martel, Ph.D.**, a professor and deputy chief of clinical services in the Department of Radiation Physics, Division of Radiation Oncology, The University of Texas MD Anderson Cancer Center, Houston.

Bisset Named Honorary Member of German, Austrian Societies

RSNA 2012 President-elect **George S. Bisset III, M.D.**, was selected as a 2011 honorary member of the German and Austrian Radiological Societies for his outstanding contributions to radiology.

Dr. Bisset received the award at the 92nd German Congress of Radiology in Hamburg, and presented a speech on the state-of-the-art pediatric radiology practices incorporated at Texas Children's Hospital, Houston, where he serves as chief of pediatric radiology. Dr. Bisset is also a professor of radiology and Edward B. Singleton Chair of Pediatric Radiology at Baylor College of Medicine in Houston.



Dr. Bisset was one of four people in the world to receive this annual honor. The other honorees: **Albert de Roos, M.D.**, a professor of radiology at the University Hospital Leiden in the Netherlands and a deputy editor of *Radiology*; **Rolf W. Günther, M.D.**, a professor and chair of the Department of Diagnostic Radiology at Aachen University in Germany and a 1996 RSNA Honorary Member; and **Ulrich Mödler, M.D.**, director of the Institute of Diagnostic Radiology at the Heinrich-Heine-Universität in Düsseldorf.

Schatz Awarded ASHNR Gold Medal

The American Society of Head and Neck Radiology (ASHNR) awarded its 2011 Gold Medal to **Charles J. Schatz, M.D.**, during the society's recent annual meeting in San Diego. Dr. Schatz is a clinical professor of radiology and otolaryngology at the University of Southern California (USC) School of Medicine in Los Angeles and is a past-president of ASHNR, the Los Angeles Radiologic Society and the Society of Graduate Radiologists and Faculty at LA County/USC Medical Center.



Numbers in the News

1.6

Number, in millions, of mammograms analyzed by the Breast Cancer Surveillance Consortium (BCSC) in what may be the largest study of real-world use of CAD mammography. **Turn to Page 7 to learn how the conclusion drawn by the BCSC researchers—that CAD appears to increase recall rates with little or no impact on cancer detection rates—is stirring controversy.**

30

Estimated percentage of physicians who experience career burnout. **Read about the numerous factors that contribute to workplace stress—and more importantly, what can be done to alleviate it—on Page 5.**

2,810

Downloads of the new RSNA News Tablet Edition. Experience it for yourself:

- Android Market: android.com/details?id=air.org.rsna.rsnaNews
- App Store: itunes.apple.com/us/app/rsna-news/id444083170?mt=8&ls=1

3,442

Residents who attended RSNA 2010. **See Page 42 for a list of activities tailored to residents at this year's annual meeting.**

My Turn

Changes to *Daily Bulletin* Bring New Choices this Year

As I write this, the temperature in Houston is 90 degrees and my mind wanders to cooler temperatures to come, and even colder ones after that—in Chicago at the RSNA Annual Meeting—which naturally leads me to the *Daily Bulletin* that is now under my care as editor.

Working on the *Daily Bulletin* is both a privilege and a pleasure for me, since I have been a regular reader since I attended my first RSNA annual meeting in 1990. The *Daily Bulletin* is the official newspaper of the RSNA annual meeting, greeting attendees from Sunday through Thursday. I have found the *Daily Bulletin* to be a principal meeting guide for what is happening when—both previewing and later reviewing important presentations, which is particularly important when I

have been unable to attend a session.

This year, the *Daily Bulletin* will feature two major improvements: more pages in the Tuesday edition for more in-depth coverage, and also a new electronic version. The latter not only gives meeting attendees a choice as to how to get their information, but the new HTML version will also allow us to provide additional content, including information about the technical exhibits, as well as access to content for members who are otherwise unable to attend all or part of the annual meeting.

As we approach the 2011 RSNA annual meeting, the editorial board and staff of the *Daily Bulletin* are excited about the changes in store. We would like your feedback, especially regarding the new

electronic version. Please let us know what worked and what did not work for you. We want to hear it all: good, bad, or in between. Please contact us at dailybulletin@rsna.org.

Gary J. Whitman, M.D., chairs the *Daily Bulletin* Editorial Board. He is a professor of radiology and radiation oncology and a radiologist in the Department of Diagnostic Radiology, Division of Diagnostic Imaging, at The University of Texas MD Anderson Cancer Center in Houston. Dr. Whitman also serves on the RSNA News Editorial Board, the Public Information Committee, and the Public Information Advisors Network.



RSNA, ASTRO Cancer Symposium Offers Multidisciplinary Approach

The inaugural 2011 Cancer Imaging and Radiation Therapy Symposium sponsored by RSNA and the American Society for Radiation Oncology (ASTRO) drew more than 360 attendees and marked a new convergence between radiation oncologists and radiologists in the 21st century.

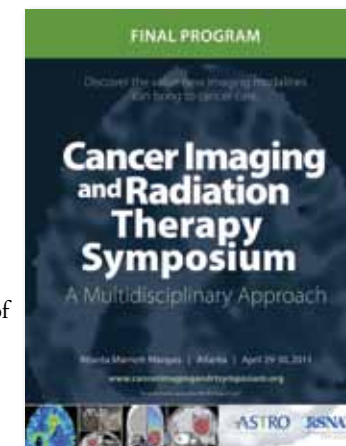
Held in April 2011 in Atlanta, the two-day multidisciplinary symposium provided educationally driven sessions on topics including oncology techniques, matching pathology with imaging, novel biomarkers for prediction and imaging treatment delivery.

Breakout sessions concentrated on the central nervous system, prostate, breast and thoracic

cancer. Keynote sessions were presented by Brian Ross, Ph.D., a professor of biological chemistry at the University of Michigan in Ann Arbor and David Jaffray, Ph.D., head of the Radiation Physics Department at Princess Margaret Hospital in Toronto.

Symposium faculty consisted of 46 experts in radiation oncology, radiology and physics. The 140 accepted abstracts were published in the final program and are available on the symposium website at cancerimagingandrt.com/index.htm.

In addition, the 2011 Cancer Imaging and Radiation Therapy Symposium is accessible as a virtual meeting through the ASTRO website, www.astro.org.



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Battling Burnout: Radiologists Seek Career Renewal

About six years ago, a 44-year-old interventional radiologist working on a five-person staff in an academic setting suddenly found himself the sole staff member within the interventional radiology division.

FEELING OVERWORKED and undersupported, the four other staff members left the institution during the course of 18 months, leaving a huge vacuum in the department. The radiologist, whose name is being withheld to protect his privacy, struggled to maintain a workload that increased from 70 to more than 100 hours per week. Department supervisors delayed and eventually threatened to canceled a planned sabbatical.

“The situation created a lot of stress and I felt so helpless,” the radiologist said. “I didn’t want to be the last guy clinging to the Titanic as it went under, but that’s what I was. I needed help in deciding what I should do with my career.”

He is not alone. In recent years, career burnout has become a troubling trend among U.S. physicians in general and radiologists in particular.

Numerous Factors are to Blame

Major changes in healthcare delivery have resulted in longer hours, increasing clinical load and reduced compensation. Hospital-based radiologists are experiencing an explosion in cross-sectional imaging utilization, greater complexity of cases, and more evening, night and weekend clinical volume.

The resulting stress contributes to burnout, medical errors, disruptive behavior and career dissatisfaction among radiologists, according to Peter Moskowitz, M.D., a pediatric radiologist at the Stanford University School of Medicine and a certified life and career coach. Dr. Moskowitz is the executive director of the Center for Professional and Personal Renewal, a life and career coaching center for physicians in Palo Alto, Calif.

In researching radiologists’ career satisfaction for more than a decade, Dr. Moskowitz has noted a trend toward lower satisfaction and increased stress and burnout over time. The problem is aggravated by the fact that many radiologists have poor stress-management tools, he added.

In a national survey reported by Dr. Moskowitz in a 2001 issue of *Diagnostic Imaging* magazine, he found that radiologists who admitted using unhealthy stress coping strategies such as overeating, excessive use of alcohol, withdrawal from spouse and family and unwillingness to discuss their problem(s) had a statistically higher incidence of burnout and negative career outlook. “Avoiding these traps is the key to preventing burnout,” he said.

Even worse, Dr. Moskowitz says, radiologists must often focus on demanding professional matters that may detract from their personal time, time



Moskowitz



Linzer

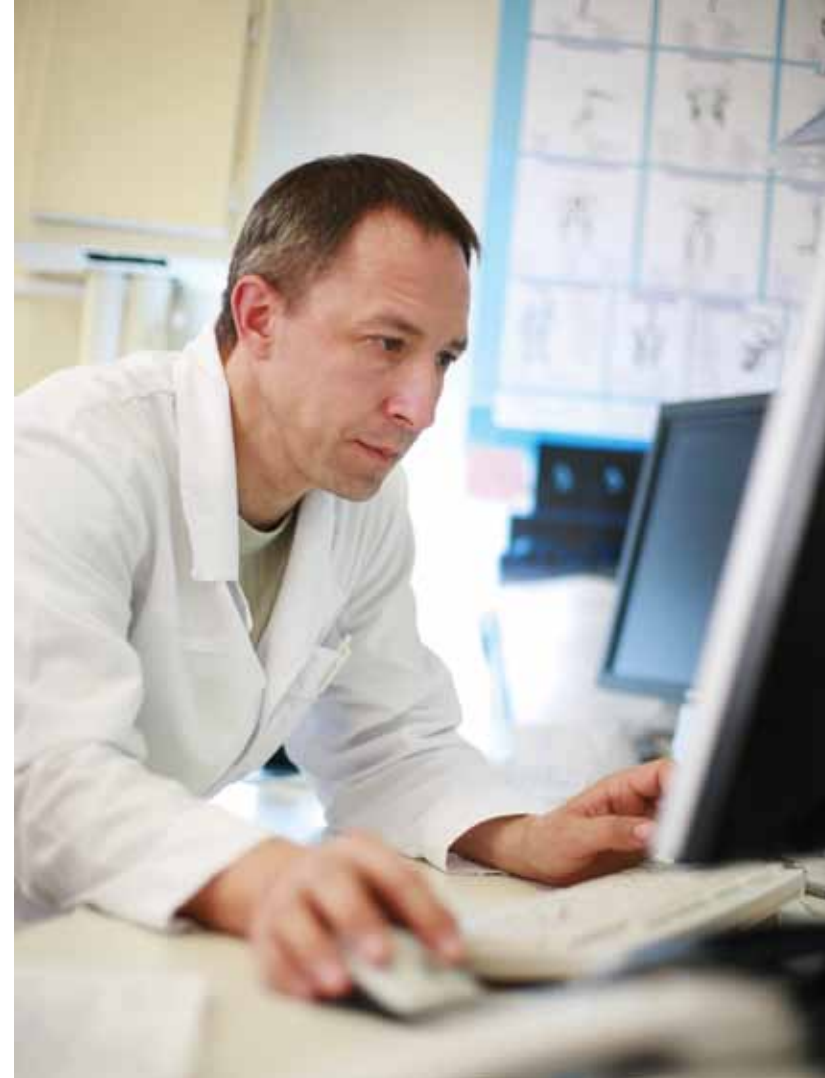
with family and friends and hobbies. “Practice stress spills over into private lives, disrupts work-life balance, and threatens emotional health, marriages and family life.”

Because none of these important issues—or skills for coping with them—are included in the current curriculum of most radiology training programs, Dr. Moskowitz advises radiologists-in-training, as well as those in clinical practice, to be more proactive in seeking solutions.

To help fill the education gap, Dr. Moskowitz has organized a four-hour workshop, “Career Renewal for Radiologists,” at RSNA 2011. The workshop—which covers factors that can affect life/career satisfaction and strategies for improving work/life balance—reached its 50-person limit soon after opening for registration, an indication that radiologists are seeking help in this area.

“Practice stress spills over into private lives, disrupts work-life balance, and threatens emotional health, marriages and family life.”

Peter Moskowitz, M.D.



In recent years, career burnout has become a troubling trend among U.S. physicians, including radiologists who are often overwhelmed by the demands and pace of the practice. Experts emphasize the importance of achieving a work-life balance in diffusing stress and burnout.

Achieving Work-Life Balance is Critical

Although gauging the extent of professional burnout among radiologists is difficult, several prior studies of nonradiologists have suggested an incidence as high as 40 percent. “Due to the culture of medicine, in which physicians are taught not to ask for help or show vulnerability, attempts to survey physicians about burnout symptoms undoubtedly underestimate the true incidence,” Dr. Moskowitz adds. “Even if they are feeling burned out, many physicians are unwilling to admit that in a questionnaire.”

To reduce stress and avoid burnout, the answer is to maintain work-life balance, which Dr. Moskowitz frames in terms of six domains: physical, emotional, spiritual, community, relationship and work/career. “Supplement those balancing activities with values-based management of your time and money, and you will insulate yourself from burnout,” he says.

One in Three Physicians Experience Burnout

One expert who has spent more than a decade investigating the issue has discovered that the prevalence of burnout has remained consistent over the years.

“We have found that the rate of burnout among physicians has remained between 25 and 30 percent,” said Mark Linzer, M.D., a professor of medicine at the University of Minnesota and the director of the division of general internal medicine at Hennepin County Medical Center in Minneapolis. “Still, I’ve always found 30 percent to be a remarkable number—to think that one-third of the doctors in this country are burned out.”

About a decade ago, Dr. Linzer completed a Robert Wood Johnson Foundation-sponsored investigation, “Physician Work Life Study,” measuring physician satisfaction, stress and burnout. In a national survey

of 5,000 physicians, Dr. Linzer and colleagues discovered that time pressure was the single most important source of dissatisfaction among all groups and that women physicians are 60 percent more likely to experience burnout than men.

During that study, Dr. Linzer and colleagues developed an Office and Work Life (OWL) tool to measure work satisfaction and patient outcomes in order to provide “a snapshot of a clinic, showing what the physicians and staff are experiencing and the patients in the waiting room are experiencing,” Dr. Linzer said.

Dr. Linzer’s current research, the Healthy Workplace Study funded by the Agency for Healthcare Research and Quality, uses the OWL tool to evaluate a randomized array of medical practices. Clinics can use those data to incorporate changes designed to reduce stress and solve related problems.

Leaders Key to Diffusing Stress

While there are many resources available to help an individual cope with stress (see sidebar), Dr. Linzer said he believes the solution is rooted in workplace leadership.

“The real way to turn this problem around is for organizations—at the division level, the department level, the office practice level—to make it one of their values,” he said. “Workplace leaders need to talk to every person at the annual review and ask what can be done to minimize stress. In many ways it’s a leadership challenge.”

Dr. Moskowitz is encouraged that industry leaders are beginning to take notice of the career management issues facing radiologists.

“The very fact that the RSNA Board of Directors gave the green light to my workshop—and to other recent presentations relating to stress relief—is a reflection of their growing awareness that radiology professional organizations must support not only the scientific progress of our discipline, but also the career and life management concerns of radiologists,” Dr. Moskowitz said. “From my perspective as a career coach, both are inextricably linked.” □

WEB EXTRAS

☑ To access the research cited in this article, go to rsnanews.org.

☑ For more information on The Center for Professional and Personal Renewal, go to www.cppr.com. The site provides links to articles and interviews by Peter Moskowitz, M.D.

Other resources include:

☑ American College of Physicians-Internal Medicine, physician leadership & management resources, www.acpe.org.

☑ National Institute for Occupational Safety and Health, Stress Web Resources, www.cdc.gov/niosh/topics/workorg/tools/niosh.html.

☑ American Medical Association: A Physician’s Guide to Personal Health, Physician Resources, www.ama-assn.org.

☑ The Life Curriculum, Learning to Address Impairment and Fatigue to Enhance Patient Safety, www.lifecurriculum.info.

☑ SAFER: Sleep Alertness and Fatigue Education in Residency, aasmnet.org.

Study Refuting CAD Effectiveness in Mammography Sparks Debate

New research published in the Journal of the National Cancer Institute (JNCI) is stirring debate over the effectiveness of computer-aided detection (CAD) in screening mammography.

IN WHAT MAY BE the largest study of real-world use of CAD mammography, Breast Cancer Surveillance Consortium (BCSC) researchers analyzed 1.6 million mammograms from 684,956 women in 90 facilities in seven states between 1998 and 2006. Led by Joshua J. Fenton, M.D., of the University of California-Davis, Sacramento, researchers determined that CAD used during film-screening mammography decreases specificity and positive predictive values (PPV) and does not improve detection of invasive breast cancer. The research, published in the July 2011 issue of *JNCI*, also indicated that CAD appears to increase recall rates with little or no impact on cancer detection rates.

The study offers new insight into the effectiveness of CAD in community mammography practice, according to Dr. Fenton, who stressed that CAD was approved by the U.S. Food and Drug Administration (FDA) in 1998 based on its performance in smaller efficacy studies.

"This study assesses the effectiveness of CAD in everyday practice conditions, in which radiologists with variable experience and expertise may use CAD in a nonstandardized, idiosyncratic fashion," Dr. Fenton said.

Other Researchers Dispute Conclusions

The study has renewed debate on the benefits of the still evolving but widely accepted technology that is applied on nearly 75 percent of screening mammography studies performed on American women.

In response to Dr. Fenton's research, a group of University of Chicago (UC) researchers offer a different interpretation of the results and stress the need for scrutiny of the methodology used to evaluate and interpret CAD effectiveness.

"The Fenton paper presents a snapshot of the effect of CAD at a still-evolving stage in the introduction of the technology," said lead author Robert M. Nishikawa, Ph.D., an associate professor in the department of radiology and director of the Carl J. Vyborny Translational Laboratory for Breast Imaging Research at UC. "Techniques used to evaluate screening mammography do not necessarily translate to evaluating CAD. This is because CAD is an adjunct to screening, not a replacement."

Dr. Fenton and UC researchers agreed the need exists to evaluate the radiologists' role in using CAD to its maximum effectiveness. "Our study suggests that the benefits of CAD are not being realized in



Fenton



Nishikawa

practice right now," Dr. Fenton said. "It is important for us to figure out why. Is it a limitation of the technology, or is it not being used as it was designed, or is it a combination of both of these factors?"

New Study Reinforces Earlier Findings

This new research builds on a smaller, 2007 *New England Journal of Medicine* study by Dr. Fenton comprising 43 facilities, including seven that used CAD, that was conducted between 1998 and 2002. Results showed that CAD was associated with reduced accuracy in interpreting screening mammograms and not with improved detection of invasive breast cancer.

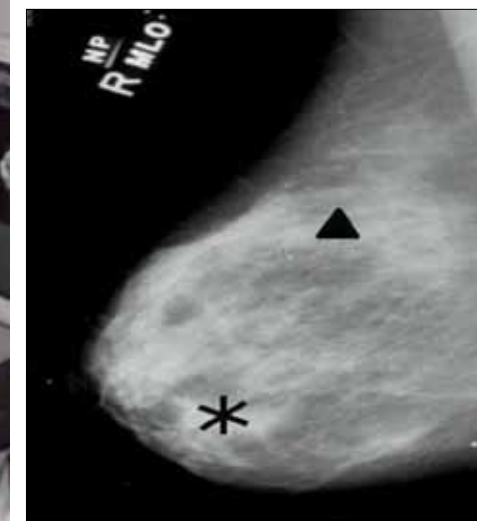
Dr. Fenton's latest research compares interpretation of film mammography from 90 imaging centers—

“CAD was not associated with higher breast cancer detection rates or more favorable stage, size, or lymph node status of invasive breast cancer.”

Joshua J. Fenton, M.D.



Although the effectiveness of the still-evolving technology is being debated, some researchers believe computer-aided detection (CAD) in screening mammography could be a particularly helpful adjunct in lower-volume radiology or as an alternative to double-reading. **Above:** A radiologist reviews CAD marks on a screening mammogram.



An example of a CAD-marked mediolateral oblique view mammogram. The asterisk marks findings that could be associated with a suspicious mass, while the triangle marks a calcification.

Images courtesy of Joshua J. Fenton, M.D.

25 of which used CAD technology to analyze digitized film images. Film mammograms were scanned and digitally analyzed using CAD software.

At facilities that implemented CAD, specificity decreased statistically significantly from 91.9 to 91.4 percent while the recall rate increased from 8.4 to 8.9 percent. Sensitivity increased from 79.7 to 81.1 percent—not a statistically significant difference. PPV decreased statistically significantly from 4.3 to 3.6 percent after the transition to CAD.

The non-statistically significant increase in sensitivity with CAD was associated with greater detection of ductal carcinoma in situ (DCIS), though sensitivity for invasive cancer was similar with or without CAD, Dr. Fenton and colleagues write.

Dr. Fenton and his team estimated that for every 200 women screened with CAD who have a second mammography exam, one additional woman is called back unnecessarily for further testing. "CAD was not associated with higher breast cancer detection rates or more favorable stage, size, or lymph node status of invasive breast cancer," Dr. Fenton said.

Risk-Benefit Question Divides Researchers

Dr. Nishikawa and colleagues dispute the implication of Dr. Fenton's research that an increase sensitivity to DCIS will invariably lead to a compounding of overdiagnosis.

Use of CAD will not lead to more overdiagnosis, but instead to earlier detection, Dr. Nishikawa said. "Detection of DCIS by CAD is not the same as mammographic detection of DCIS," according to Dr. Nishikawa and colleagues. "All cancers detected by CAD are mammographically detectable. As a result, if the radiologist does not detect DCIS—with or without using CAD—it will be eventually detected at a future screening exam."

Although some patients with DCIS will eventually develop invasive breast cancer, others will not. The

risk/benefit question is at the heart of the issue, researchers agreed.

"We know that the incremental cancers found by mammography are biologically different from symptomatic cancers and not just because of a stage shift," writes Donald A. Berry, Ph.D., in an accompanying editorial in the July issue of *JNCI*. "The problem is that we do not yet understand the biology of cancer well enough to know which cancers are important to find early and which can be ignored."

Radiologists Need Proper CAD Training

CAD use is not likely to decrease anytime soon—primarily for financial reasons. Medicare began reimbursing for CAD shortly after it received FDA approval and the technology is built into most digital mammography equipment. As research continues, experts stress, so does the need for radiologists to receive proper training in the use of CAD technology.

"It's important for radiologists to use CAD according to its design and not to rely on it too heavily," Dr. Fenton said.

Concurred Dr. Nishikawa: "We believe the most important limitation of CAD is not the technology itself, but the design of the computer-human interface and the proper training of radiologists that are needed to maximize the benefit of using CAD clinically."

In the meantime, Dr. Berry, a professor and chair of the Department of Biostatistics at MD Anderson Cancer Center in Houston, questions the impact of current CAD technology on perhaps the most important element of the human-computer interface: patients.

"Researchers and developers should work to make CAD software even better," he writes in his editorial. "But this should happen in an experimental setting and not while exposing millions of women to a technology that may be more harmful than it is beneficial." □

WEB EXTRAS

For more information on the research cited in this study, go to rsnanews.RSNA.org.

U.S. Still Vulnerable to Isotope Shortage

While the global medical isotope shortage has been eased by the restarting of the world's two major nuclear reactors, experts say North America—and the world—remains vulnerable to a future shortfall of molybdenum-99 (Mo-99).

"I'M A LITTLE MORE CONFIDENT today than I was a year ago that we will at least be able to weather the situation," says Robert Atcher, Ph.D., M.B.A., director of the National Isotope Development Center in the Office of Nuclear Physics at the U.S. Department of Energy (DOE) and past-president of the nuclear medicine society SNM. "We've gone back to what our supply has historically been of Mo-99, and we haven't experienced any big disruption as we initially expected. Nevertheless, we should not be complacent. There is an extended outage coming for the reactor in Canada in 2012."

The shortage caused by the shutdown in 2009 of the National Research Universal (NRU) reactor in Chalk River, Ontario, and the Petten reactor in the Netherlands, was replenished when the reactors went back online in the summer of 2010. NRU and Petten supply about two-thirds of the world demand for Mo-99, the parent isotope of technetium-99m (Tc-99m), which is used in at least 80 percent of the nearly 20 million nuclear medicine procedures each year in the U.S.

Shortage-driven Changes Still in Place

In fact, the shutdown of those reactors prompted significant changes in the nuclear medicine community that are still in place, Dr. Atcher said.

"First, we became more efficient at how we operate generators and compound radiopharmaceuticals," Dr. Atcher said. "Second, we saw a substantial change in nuclear cardiology. An increasing number of practices adopted an imaging protocol that eliminates a second myocardial perfusion imaging study at rest if the initial post-stress images are normal. This enabled us to stretch supplies further and lower radiation dose to patients."

Another important factor was the return of thallium-201 for some myocardial studies.

"People have rediscovered thallium as an imaging agent," Dr. Atcher said. "The new instrumentation is superior, so they're getting better images from thallium than they did before. However, the use of thallium results in an increased radiation exposure to patients that must be taken into consideration."

In addition, the U.S. began fostering new sources of Mo-99 at home and abroad and exploring alternatives to reactors. Experts agree that the U.S. remains in dire need of a domestic source of Mo-99 production—especially considering the precarious future of the world's two major reactors—each nearly 50 years old—and three other aging reactors in Belgium, France and South Africa.

Governments around the world are working to phase out such reactors because of concerns about



Atcher



Guérin

their age and that the highly radioactive material used in the process could be diverted to make nuclear weapons.

Planned Reactor Retirements Spur Search for Alternatives

Since going back online, the NRU and Petten reactors have been running without incident. NRU has been operating on a 28-day cycle with regularly scheduled five-day periods of downtime. A required, one-month planned outage was held this year while another one-month outage is planned for 2012.

"Within six months after restarting the reactor, inspectors conducted a planned shutdown and comprehensive review," Dr. Atcher said. "To date, nothing has been found to indicate that it's unsafe to operate."

Yet there are no long-term plans for the NRU and Petten reactors, both which are approaching operational retirement.

Fortunately, alternate solutions are under development.

“We’ve gone back to what our supply has historically been of Mo-99, and there hasn’t really been as big of a disruption as we initially expected. Nevertheless, we should not be complacent.”

Robert Atcher, Ph.D., M.B.A.



Because the world's two major nuclear reactors are located outside the U.S., a domestic source of molybdenum-99 (Mo-99) production is critical, according to experts. Above: A new, enhanced fleet of shipping containers for molybdenum-99 (Mo-99) (left) and the current fleet of containers (right) at Nordion, Inc., headquartered in Ottawa, Canada.

While funding has not yet been secured, the Dutch have approved construction of PALLAS, a new reactor to be constructed adjacent to the Petten site, expected to be operational in 2020. Also, the U.S. has been fostering new supply sources abroad.

With support from the U.S. Department of Energy's National Nuclear Security Administration (NNSA), NTP Radioisotopes of South Africa is producing low-enriched uranium products that support worldwide nonproliferation efforts. The first shipment arrived in the U.S. in December 2010.

Lawmakers are working toward a domestic solution through the American Medical Isotopes Act, which aims to promote Mo-99 production in the U.S. and phase out the import of highly enriched uranium for producing medical isotopes. While the bill passed the House in 2009, it died in Congress in 2010. A new version of the measure, the American Medical Isotope Production Act of 2011, is now in process.

"We've had discussions about getting something done when the next session of Congress convenes," Dr. Atcher said.

In the meantime, a number of private sector projects and public-private partnerships are underway. In March 2011, NorthStar Medical Radioisotopes in Madison, Wis., signed an agreement with the University of Missouri Research Reactor in Columbia, Mo., to supply NorthStar with Mo-99. Production is expected to begin this year with shipments to pharmacies shortly thereafter.

The NNSA has signed agreements with Babcock & Wilcox of Charlotte, N.C., and GE Hitachi Nuclear Energy of Wilmington, N.C., to explore the development of a reliable domestic supply of Mo-99 from low-enriched uranium. The technology has the potential to meet at least half of the projected supply for Tc-99m in the U.S.

Cyclotrons an Alternative to Reactors

In Canada, researchers are investigating particle-accelerating cyclotrons as a way to avoid future shortages. A study presented at the 2010 SNM annual meeting in Salt Lake City demonstrated that cyclotron-produced Tc-99m was comparable to the generator-produced variety.

"Cyclotron-based production of medical isotopes is a very flexible approach," said Brigitte Guérin, Ph.D., of the Université de Sherbrooke in Québec. "As the Canadian demand for Tc-99m increases, more sites can be added and production can be increased at the proposed sites."

Additional research is needed before full-scale production can get underway.

"Commercial production of Tc-99m could begin between 2012 and 2014, depending primarily on results of research and development and health regulatory issues," Dr. Guérin said.

Cyclotron-based production of Tc-99m has limited potential in the U.S., according to Dr. Atcher, because most U.S. cyclotrons installed for PET isotope production don't have enough energy to produce the isotope and new construction is unlikely because of costs.

"Canada has a single-payer system where the government is willing to underwrite costs," he said. "In the U.S., we have Medicare and Medicaid and third-party payers. There's no guarantee those payers would be willing to pay for this technology." □

WEB EXTRAS

To download an audio recording of the webinar, "Mo-99: Where are We Going From Here?" sponsored by SNM and Covidien, a global healthcare products manufacturer headquartered in Dublin, Ireland, go to rsnanews.org.



Nordion employees prepare molybdenum-99 (Mo-99) in its shielding container for shipment.

Images courtesy of Nordion, Inc.

New Tool Mines Patient Record for CIN Risk Factors

Although contrast-media induced nephropathy (CIN) has always been a serious patient safety issue, until now only qualitative tools have been available to aid physicians in predicting a patient's risk. Interested in a better alternative to current methods, researcher Garry Choy, M.D., M.S., set out to develop a quantitative tool for stratifying risk—specifically a prediction score—that could aid in the triage of patients needing a contrast-enhanced CT.

IN 2008, DURING HIS radiology residency at Massachusetts General Hospital (MGH) in Boston, Dr. Choy parlayed a \$30,000 RSNA Research & Education Foundation Grant (see sidebar) into a search-engine based informatics platform that has since been integrated into the hospital's IT/RIS system.

"This clinical decision support tool acts as a safety net and assists physicians by automatically mining the data in the medical record in real-time, seeking to identify risk factors and preventing the performance of a contrast-enhanced scan when there is the potential for harm to a patient," Dr. Choy said.

Tool Addresses Leading Cause of Hospital-acquired Renal Failure

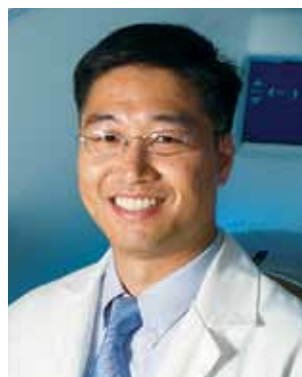
CIN is the leading cause of hospital-acquired renal failure—accounting for up to 12 percent of all cases—and leads to longer hospital stays, higher mortality rates, and increased medical costs. Most troubling of all: there is no available treatment to reverse or even mediate the condition, Dr. Choy said. Identifying at-risk patients is critical for physicians to determine the best course of action, whether to administer contrast at all, reduce the dose and/or implement prophylactic strategies, he said.

Data points currently used in the qualitative screening for patients at risk of CIN include serum creatinine, estimated glomerular filtration rate and conditions such as pre-existing renal insufficiency, diabetes, congestive heart failure, dehydration, advanced age, multiple myeloma and malignancy affecting the kidneys, ureters or bladder.

Drawing on his background in operations management and engineering, Dr. Choy created a program capable of searching the MGH electronic medical record (EMR) for keywords and targeted concepts relevant to identifying factors and data within the EMR to determine if a particular patient is at risk for CIN.

Dr. Choy, along with Michael Zalis, M.D., and Mitch Harris, Ph.D., developed the project with scientific advisor G. Scott Gazelle, M.D., Ph.D., M.P.H., a professor of radiology at MGH and Harvard Medical School and a professor in the Department of Health Policy and Management at the Harvard School of Public Health.

The team also retrospectively analyzed the records of more than 13,000 patients who had undergone CT scanning at MGH between 2005 and 2007 in



Choy



Gazelle

an attempt to correlate the development of CIN with certain risk factors. "We performed statistical analysis to quantify the effect of various risk factors on the development of contrast nephropathy," Dr. Choy said. "The analysis was used to develop a risk prediction score—a number—that indicated the potential CIN risk."

The first version of their Queried Patient Inference Dossier (QPID) module was tested in a group of 100 patients—22 of whom developed contrast nephropathy—during a pulmonary embolism CT scan. The QPID module performed at a sensitivity of 81 percent—18 of the 22 patients were correctly identified—and a specificity of 43 percent.

“This clinical decision support tool acts as a safety net and assists physicians by automatically mining the data in the medical record in real-time, seeking to identify risk factors and preventing the performance of a contrast-enhanced scan when there is the potential for harm to a patient.”

Garry Choy, M.D.



Through an RSNA research grant, Garry Choy, M.D., created a clinical prediction tool to stratify the risk for contrast-media induced nephropathy (CIN)—the leading cause of hospital-acquired renal failure. The computer program searches electronic medical records (EMR) for keywords and targeted concepts relevant to identifying factors and data within the EMR to determine if a particular patient is at risk for CIN.

At-risk Patients Could be Flagged During Radiology Order Entry

Currently, Dr. Choy and colleagues are analyzing a larger cohort of patients for further validation of their risk prediction model. They are also modifying their radiology order entry system so that orders for contrast-enhanced CT scans will be flagged when patients are at risk for contrast nephropathy.

"Dr. Choy's research is highly innovative and of great potential significance," Dr. Gazelle said. "Contrast-induced nephropathy continues to be an important problem in radiology and a better means of identifying and stratifying patients at risk for this condition is urgently needed."

Dr. Choy and colleagues plan to publish their RSNA-funded research and hope to secure further funding to continue to work

on decision-support tools to improve quality and safety in other areas of radiology, as well as other areas in clinical medicine.

"The RSNA research grant has given me the opportunity to pursue my passion for informatics in the development of decision-support tools that will aid the clinician," Dr. Choy said. "I hope to continue a career focused on innovation in radiology and medical informatics." □

GRANTS IN ACTION

NAME:

Garry Choy, M.D.

GRANT RECEIVED:

\$30,000 RSNA Research Resident

STUDY:

"Development of a Multi-variable Risk Prediction Score for Contrast Media-Induced Nephropathy: A Tool for Prevention, Prognostication, and Decision Making."

CAREER IMPACT:

As a result of the RSNA Resident Research Grant, Dr. Choy has confirmed his aspirations to pursue academic radiology, actively working in research focused on improving quality and patient safety in radiology. "I received excellent mentorship and support from my residency program in order to have dedicated research time," Dr. Choy said.

CLINICAL IMPLICATIONS:

Developing and validating a clinical prediction rule to stratify the risk of contrast media-induced nephropathy (CIN) based on known risk factors in order to aid in decision making to prevent the condition. The research also provides the framework for developing risk stratification tools for other patient safety issues in radiology including the prevention of nephrogenic systemic fibrosis.

For more information on all R&E Foundation grant programs, go to RSNA.org/Foundation or contact Scott Walter, M.S., Assistant Director, Grant Administration at 1-630-571-7816 or walter@rsna.org.

RSNA R&E Foundation Announces Recipients of the 2011 Roentgen Resident/Fellow Research Award

The RSNA Research & Education (R&E) Foundation presented the 2011 Roentgen Resident/Fellow Research Award to 160 residents and fellows throughout North America. This prestigious and competitive award recognizes trainees who have made significant contributions to their departments' research efforts as evidenced by:

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

Every resident/fellow in an Accreditation Council for Graduate Medical Education (ACGME)-approved program of radiology, radiation oncology or nuclear medicine is eligible. Nominations made by program directors or department chairs are limited to one per department per year. Nominations must be made by **April 1**.

For more information, go to RSNA.org/Foundation/Roentgen.cfm.



Garcia-Rojas



Allen



Gupta



Bag

Amir Abdelmalik, M.D. Saint Louis University	Ilene Burach, M.D. Hahnemann University Hospital - Drexel University College of Medicine	Shadpour Demehri, M.D. Brigham and Women's Hospital, Harvard Medical School	Amer Hanano, M.D. SUNY Downstate Medical Center
Asif Abdullah, M.D. University of Toledo Medical Center	Alissa J. Burge, M.D. North Shore University Hospital	Robert Benjamin Den, M.D. Thomas Jefferson University & Hospitals	Robert F. Hanna, M.D. Columbia University Medical Center
Bryan G. Allen, M.D. University of Iowa Hospitals and Clinics	Mark Burshteyn, M.D. Temple University Hospital	Matthew D. Dobbs, M.D. Vanderbilt University Medical Center	Matthew Hardee, M.D., Ph.D. New York University
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Hebert Alberto Vargas Alvarez, M.D. Memorial Sloan-Kettering Cancer Center	William Chen, M.D. University Hospitals Seidman Cancer Center	Carl Flink, M.D. Allegheny General Hospital	Robert G. Hayter, M.D. Hospital of Saint Raphael
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Healthcare System

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Beth Israel Medical Center

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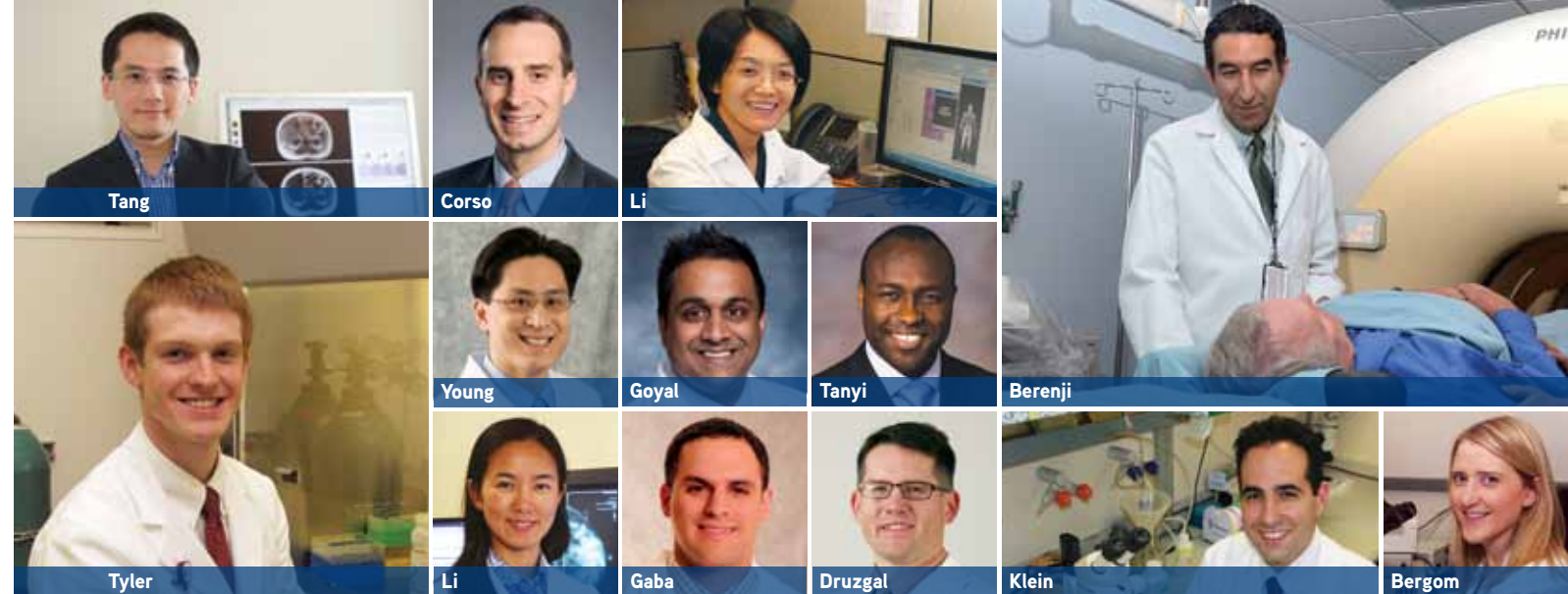
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Vincent Timpone, M.D.
David Grant USAF Medical
Center

Continued on Page 18

RSNA R&E Foundation Announces 2011 Grant Recipients

The RSNA Research & Education Foundation funded 72 new and continuing grant projects for the 2011-2012 academic year, totaling more than \$2.5 million. Abstracts for these projects will be on display at RSNA 2011 in the R&E Foundation Booth in RSNA Services, Level 3, Lakeside Center. The Foundation's Board of Trustees thanks the Vanguard companies, individuals and private practices whose generous contributions have made the following grants possible.



RESEARCH SCHOLAR GRANT

Hersh Chandarana, M.D.
New York University School of Medicine
Evaluation and Prediction of Treatment Response in Liver Metastasis Undergoing Chemotherapy with Use of Dual Energy CT Iodine Quantification Technique



Jonathan R. Dillman, M.D.
University of Michigan Health System
Comparative Effectiveness of MR Enterography, Enteric Ultrasound, and Ultrasound Elastography Imaging in the Evaluation of Pediatric Small Bowel Crohn Disease



Qian Dong, M.D.
University of Michigan Hospitals and Health Centers
Quantitative Imaging in Soft Tissue Sarcomas: Use of MRI Diffusion and MRI Perfusion Biomarkers to Predict Early Response to Neoadjuvant Chemotherapy



Jason Druzgal, M.D., Ph.D.
University of Virginia
Machine Learning Classification of Resting State Functional MRI Data in Autism Spectrum Disorders

Michael S. Gee, M.D., Ph.D.
Massachusetts General Hospital
Evaluation of Diagnostic Magnetic Resonance (DMR) Technology for Molecular Characterization of Cancer Cells from Percutaneous Image-Guided Biopsy Specimens



Daniel Hamstra, M.D., Ph.D.
University of Michigan Medical Center
*RSNA Research Scholar Grant
Molecular Dissection of the Role of Tumor Vasculature in Radiation Sensitivity*

Moritz Kircher, M.D., Ph.D.
Memorial Sloan-Kettering Cancer Center
A Dual-Modality MRI-SERS Nanoparticle for Molecular Imaging of Brain Tumors



Chan Hong Moon, Ph.D.
University of Pittsburgh
Sodium/Proton MR Imaging of Knee Cartilage in Osteoarthritis



Mark Shiroishi, M.D.
Keck School of Medicine, University of Southern California
Assessing the Value of Perfusion and Permeability MR Imaging to Characterize Pseudoprogression and Pseudoresponse in Patients with High-Grade Glioma



James A. Tanyi, Ph.D.
Knight Cancer Institute, Oregon Health & Science University
Incorporating the Effects of Transcytolemmal Water Exchange in Pharmacokinetic Analysis of DCE-MRI Data in the Prediction of Head and Neck Cancer Response to Chemoradiation

Zhen Jane Wang, M.D.
University of California San Francisco Medical Center
Noninvasive Assessment of Renal Tumor Aggressiveness Using Hyperpolarized [1-13C] Magnetic Resonance Spectroscopic Imaging: a Pilot Study



David Woodrum, M.D., Ph.D.
Mayo Clinic
Influence of Differential Cellular Heat Shock (Stress) Protein Expression on Cellular Death from Focal Laser Ablation

RESEARCH SEED GRANT

Gholam R. Berenji, M.D.
VA Greater Los Angeles Healthcare System
DICOM Structured Report to Track Patient's Radiation Dose to Organs from Abdominal CT Exams



sense and simplicity

Vikram S. Dogra, M.D.
University of Rochester
Photoacoustic Imaging and Spectroscopy of Prostate



Leading Innovation >>>

Vinay Duddalwar, M.D., F.R.C.R.
University of Southern California
Assessing the Role of Contrast Enhanced Ultrasound in the Evaluation and Management of Renal Masses in Patients with Poor Renal Function



Inspire the Next

Ron C. Gaba, M.D.
University of Illinois at Chicago
Polymeric Iohexol Nanoconjugates for Targeted Transcatheter Drug Delivery: Quantitative CT Analysis of Spatial Distribution in a Rabbit VX2 Liver Tumor Model



sense and simplicity

Puneeth Iyengar, M.D., Ph.D.
University of Texas Southwestern Medical Center - Dallas
Use of an Inducible Cancer Cachexia Mouse Model to Study Inflammatory Effects on Lung Cancer Radiation Response

Friedrich Knollmann, M.D., Ph.D.
University of Pittsburgh
Computed Tomography Perfusion Imaging of Lung Cancer

An Tang, M.D.
University of Montreal
Randomized Trial of Liraglutide and Insulin Therapy on Hepatic Steatosis as Measured by MRI and MRS in Metformin-treated Patients with Type 2 Diabetes: an Open Pilot Study



Leading Innovation >>>

Drew A. Torigian, M.D., M.A.
University of Pennsylvania School of Medicine
Utility of DTP FDG-PET/CT and Advanced Image Analysis to Quantify In Vivo Tumor Biology, Predict Clinical Outcome, and Improve Disease Staging in Lung Cancer



sense and simplicity

Robert J. Young, M.D.
Memorial Sloan-Kettering Cancer Center
Using Functional MRI and Diffusion Tensor Imaging of the Language Pathway to Optimize Brain Tumor Resection



RESEARCH FELLOW GRANT

Jeremy Burt, M.D.
The Johns Hopkins University School of Medicine
*Silver Anniversary Campaign Pacesetters Research Fellow Grant
Diagnosis of Arrhythmogenic Right Ventricular Dysplasia using T1 Mapping for Identification of Myocardial Fibrofatty Infiltration*

Daniel J. Durand, M.D.
The Johns Hopkins University School of Medicine
Molecular Imaging of Choline Metabolism in Musculoskeletal Soft Tissue Masses by C-11 Choline PET/CT and MR Spectroscopy

Alessandro Furlan, M.D.
University of Pittsburgh
Assessment of Transplanted Kidney using Quantitative Sodium MR Imaging



Randall J. Kimple, M.D., Ph.D.
University of Wisconsin-Madison
Molecular Mechanisms of Radiation Response Modulation by Human Papillomavirus in Head and Neck Squamous Cell Carcinoma

Bela Kis, M.D., Ph.D.
Brigham & Women's Hospital
Effects of Focused Ultrasound on Cerebral Microvascular Endothelial Cells and Pericytes - Investigating the Molecular Mechanisms of Focused Ultrasound-Induced Blood-Brain Barrier Opening

Aaron So, Ph.D.
St. Joseph's Healthcare London
Validation of Quantitative CT Myocardial Perfusion Measurement with Dual Energy CT Scanning

RESEARCH RESIDENT GRANT

Carmen Bergom, M.D., Ph.D.
Medical College of Wisconsin
SmgGDS and Altered Small GTPase Prenylation as Novel Radiosensitization Targets in Breast Cancer

Candice A. Bookwalter, M.D., Ph.D.
University Hospitals Case Medical Center/ Case Western Reserve University
*Peggy J. Fritzsche, M.D., Research Resident Grant
Motion Artifact Removal by Retrospective Resolution Reduction for Applications in Body Imaging*

Scott Bratman, M.D., Ph.D.
Stanford University Medical Center
Stromal Contributions to Self-renewal and Radiation Resistance of Breast Cancer Stem Cells



sense and simplicity

Albert Chang, M.D., Ph.D.
Washington University School of Medicine/ Barnes Jewish Hospital
64Cu-Radiolabeled Somatostatin Analogs for Targeted Imaging and Therapy of Medulloblastoma



James Hansen, M.D.
Yale-New Haven Hospital
Targeting Cancer with a Cell-Penetrating Anti-DNA Antibody

Mai-Lan Ho, M.D.
Beth Israel Deaconess Medical Center
Sodium-23 MRI for Seizure Focus Localization in Epileptic Patients



Thomas J. Klein, M.D., Ph.D.
Yale-New Haven Hospital
Genetic Analysis of the Tissue-Wide Response to Ionizing Radiation

Xiang Li, Ph.D.
Duke University
*RSNA Presidents Circle Research Resident Grant
Patient-Specific Dosimetry in Pediatric and Adult Computed Tomography*



Brendan McCullough, M.D., Ph.D.
University of Washington
Mortality, Major Medical Complications, and Costs Associated with Percutaneous Vertebroplasty versus Conservative Therapy for the Treatment of Osteoporotic Vertebral Fractures



Cullen Taniguchi, M.D., Ph.D.
Stanford University
Investigating the Radioprotective Effect of PH.D.2 in Colorectal Epithelium Through a Novel Mouse Model

Continued from Page 16

Sina Tavakoli, M.D.
University of Texas Health Science Center at San Antonio
In Vivo Imaging of Vascular Remodeling Using a Novel Dual-Modality Matrix Metalloproteinase-2 Activatable Folate Receptor-beta Targeting Delivery System

RESEARCH MEDICAL STUDENT GRANT

Henry Andoh, B.A.
Dartmouth Medical School
Magnetic Resonance Imaging Features that Predict the Biologic Behavior of Head and Neck Cancer



Sanjay Aneja, B.S.
Yale School of Medicine
The Role of County-Level Radiology and Radiation Oncology Services in the Management of Breast Cancer

W. Chad Armstrong, B.A.
University of Mississippi Medical Center
Differentiating Benign From Malignant Lung Nodules Using Nodule Enhancement on Multiphase Contrast-enhanced CT and Early Volumetric Size Changes

Katelyn Atkins, B.S.
Oregon Health & Science University
The Role of PACS-2 in Radiation-Induced Gastrointestinal Syndrome

Ryan Baker, B.S.
Moffitt Cancer Center
(Ryan is enrolled at the University of South Florida College of Medicine)
Stereotactic Radiotherapy (SBRT) to the Lung: Quantifying the Risk of Radiation Pneumonitis

Alec Block, B.S., B.A.
Loyola University Medical Center Stritch School of Medicine
Patient Specific Imaging Dose Assessment for IGRT

Christopher D. Corso, Ph.D.
Emory University School of Medicine
Evaluation of the Heat Shock Protein 90 Inhibitor Ganetespib as a Radiosensitizing Agent in Human Breast Cancer Models in Vitro

Danny Costantini, Ph.D.
Hospital for Sick Children, University of Toronto
Imaging Cell Proliferation with FLT PET: A Pilot Study in Pediatric Lymphoma Patients with Equivocal FDG PET Findings



Ryan Cotter, B.A.
Mount Sinai School of Medicine
Comparison of MR Imaging and PET/CT in Head and Neck Cancers: Developing a Clinical Rationale for Combined PET/MR Imaging



Carl DeSelm, Ph.D.
Washington University School of Medicine
The Role of PIKE in Cervical Cancer: a Potential Novel Therapeutic Target

Caleb Graham, B.S.
University of Mississippi Medical Center
Identifying CT Imaging Biomarkers and Criteria to Predict Disease Outcome in Locally Advanced Squamous Cell Cancers of the Head and Neck

Bradley Hunter, M.P.H.
University of Rochester School of Medicine and Dentistry
The Staging and Treatment of Extranodal Hodgkin's and Non-Hodgkin's Lymphoma

Ankaj Khosla, B.A.
Mayo Clinic
Impact of Trans-endplate Cement Leakage on Vertebroplasty Outcomes



Matthew Knecht, B.S.
Loma Linda University School of Medicine
Stereotactic Localization Accuracy in Intracranial Radiosurgery Applications

Marina Mityul, B.S.
Washington University School of Medicine
Examining Biomarkers of Pre-Clinical Alzheimer's Disease using MRI and PET

Kazim Narsinh, B.A.
Stanford University School of Medicine
Longitudinal Imaging of Induced Pluripotent Stem Cell-derived Cardiomyocytes in a Large Animal Model

Tan B. Nguyen, B.S.
University of California, Los Angeles, David Geffen School of Medicine
Comparison of Functional Diffusion Map (fDM) Characteristics Between Different Molecular Signatures in Human Glioblastoma

Anthony Rizzo, B.A.
Cleveland Clinic Lerner College of Medicine of Case Western Reserve University
Construction of an Atlas for Automatic Contouring of Stem Cell Niches in the Human Brain for Retrospective Analyses of GBM Survival

Stephanie Soriano, B.S., M.A.
University of Washington
Radiofrequency-Enhanced Gene Therapy of Cholangiocarcinoma: Towards Intrabiliary MRI-Guided/RF-Enhanced Local Gene Therapy

Kevin Spitzer, Ph.D.
University of California, Los Angeles, David Geffen School of Medicine
Detecting White Matter Viability in Cervical Spondylotic Myelopathy: Prospective Analysis of Diffusion Tensor Imaging for Identification of Surgical Candidates

Marshall Strother, B.A.
Washington University School of Medicine
Testing the Effectiveness of the CT Dose Check Initiative

Evan Thomas, M.S.
University of Alabama at Birmingham
Utilization of Dual Energy CT for Treatment Planning Scans in Patients with Metal Artifact

Allison Tillack, M.A.
University of Colorado Denver
(Allison is enrolled at the University of California, San Francisco)
An Evaluation of the Impact of Clinically Embedded Reading Rooms on Radiologist-Clinician Communication



Patrick Tyler, B.S.
Northwestern University Feinberg School of Medicine
MRI-Guided Nanoembolization for Liver Cancer

EDUCATION SCHOLAR GRANT

Stephen Brown, M.D.
Children's Hospital Boston and Harvard Medical School
Program to Enhance Relational and Communication Skills for Radiologists (PERCS-Radiology)



Julia Fielding, M.D., and Alfred D. Llave, M.D.
University of North Carolina at Chapel Hill
Meeting the Challenges of Radiology Resident Education in the 21st Century: Redefining the Radiology Classroom through RAD-SHARE, Radiology (See, Hear And Respond Education) - A Collaborative Pilot Endeavor

Sharad Goyal, M.D.
UMDNJ/Robert Wood Johnson Medical School, UMDNJ/New Jersey Medical School and The Cancer Institute of New Jersey
COntouring in Radiation Oncology Education (CORE) - A Self-Assessment Module (SAM) for Radiation Oncologists

Mannudeep K. Kalra, M.D.
Massachusetts General Hospital
CT Virtual Autopsy for Radiation Dose Reduction and Radiological-Pathological Correlation Training Programs



Jie Li, M.D.
Beijing Cancer Hospital & Beijing Institute for Cancer Research, Peking University School of Oncology and **Elizabeth A. Morris, M.D.**, Memorial Sloan-Kettering Cancer Center
Derek Harwood-Nash/RSNA Education Scholar Grant
Developing an Educational Program on Breast Imaging for the Chinese Radiology Society with International Cooperation



Lonie R. Salkowski, M.D.
University of Wisconsin-Madison School of Medicine and Public Health
A Paradigm Shift in Teaching Anatomy: Development of New Educational Methods for Health Care Professionals to Learn Anatomy through Radiology Correlation



Xiaoming Yang, M.D., Ph.D.
University of Washington School of Medicine
Toward Clinical Translation of Interventional Molecular Imaging: An Educational Program for New Generations of Interventional Radiologists

RSNA/AUR/APDR/SCARD RADIOLOGY EDUCATION RESEARCH DEVELOPMENT GRANT

Joshua Dowell, M.D., Ph.D.
Northwestern University Feinberg School of Medicine
A Pharmacopeia iPhone/iPad Mobile Communication Application for the Interventional Radiologist

Supriya Gupta, M.B.B.S., M.D.
Massachusetts General Hospital
Education in International Radiology Outreach: Development of Multi-language Web-based Modules and Providing Training for Diagnosing Acute Clinical Conditions Using Ultrasound

Carolyn Wang, M.D.
University of Washington
Prospective Randomized Study of Contrast Reaction Management Curricula: High-Fidelity Hands-on Simulation Versus Computer-based Interactive Simulation

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RSNA R&E Foundation Announces Recipients of the 2011 Roentgen Resident/Fellow Research Award

Mitesh Trivedi, M.D.
Christiana Care Health System

Venu Vadlamudi, M.D.
MSU Flint Area Medical Education

Vladimir Valakh, M.D.
Allegheny General Hospital

Kalyani Vallurupalli, M.D.
Southern Illinois University School of Medicine

Artur Velcani, M.D.
St. Vincent's Medical Center

Franco Verde, M.D.
Geisinger Medical Center

Nicholas L. Walle, M.D.
Rhode Island Hospital, Brown Medical School

Danny Wang, M.D.
Albany Medical Center

Tony J. Wang, M.D.
Columbia University Medical Center

Rodney Wegner, M.D.
University of Pittsburgh Medical Center

Terence Williams, M.D., Ph.D.
University of Michigan Health Systems

DEADLINES FOR 2012 GRANT APPLICATIONS

The application process for 2012 R&E Foundation grants opens this month.

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



Posters outlining R&E Foundation research and education grant programs, as well as programs for which international RSNA members are eligible, will be mailed this month to department chairs and are available for download at RSNA.org/Foundation/GrantPosters.cfm. Posters will also be available at RSNA 2011 in the R&E Foundation Pavilion in RSNA Services. Learn more about applying for R&E grants at RSNA.org/Foundation.

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Journal Highlights

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

Delayed Contrast Enhancement on MR Images of Myocardium: Past, Present, Future

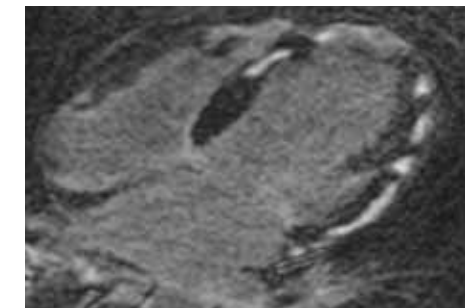
DURING THE PAST DECADE, delayed gadolinium-enhanced MR imaging of ischemic and nonischemic myocardial disease has become an important application of cardiovascular MR imaging. At many sites where cardiac MR is performed, myocardial disease is one of the most frequent clinical indications.

In a State-of-the-Art review in the November issue of *Radiology*, Karen G. Ordovas, M.D., and Charles B. Higgins, M.D., of the University of San Francisco Medical Center, discuss the development of imaging techniques, physiologic mechanisms, clinical applications for diagnosis and prognosis and future perspectives on the use of delayed-enhancement imaging. Specifically, the authors discuss:

- Experimental basis and physiologic mechanism of delayed gadolinium

enhancement of myocardial infarction

- Clinical application in ischemic heart disease
 - Clinical application in nonischemic acquired heart disease
 - Rare myocardial diseases with delayed gadolinium enhancement
 - Postoperative congenital heart disease
- “Delayed-enhancement MR imaging can be used to identify and precisely quantify the peripheral zone of myocardial infarction, and patients with a larger peripheral zone have increased risk for both all causes and cardiovascular mortality, likely due to an increased substrate of viable myocyte ‘islands’ in the peripheral zone that increases the risk for cardiac arrhythmia,” the authors write.



Delayed-enhancement inversion-recovery gradient-echo MR image (repetition time msec/echo time msec/inversion time msec, 5/2.3/280 in horizontal long-axis plane acquired 15 minutes after injection of a gadolinium chelate in a patient with viral myocarditis. Note enhancement in midwall of septum, subepicardial layer of lateral left ventricular wall, and apex of the right ventricle.

(*Radiology* 2011;261:2:358–374) ©RSNA, 2011. All rights reserved. Printed with permission.

Genetics and Imaging of Hepatocellular Adenomas: 2011 Update

HEPATOCELLULAR ADENOMAS are rare benign hepatic tumors that commonly occur in women who have been receiving oral contraceptives for more than two years. Recent studies indicate that hepatocellular adenoma is not a single disease but a heterogeneous group of tumors characterized by specific genetic and pathologic abnormalities and tumor biology.

In an article in the October monograph issue of *RadioGraphics* (RSNA.org/RadioGraphics), Venkata S. Katabathina, M.D., of the University of Texas Health Science Center at San Antonio, and colleagues present the genetic abnormalities, oncogenesis and imaging characteristics of specific subtypes of hepatocellular adenoma and discuss management implications.

The authors discuss the characterization of the subtypes of hepatic adenoma along with the role of MR imaging. The authors discuss three distinct subtypes:

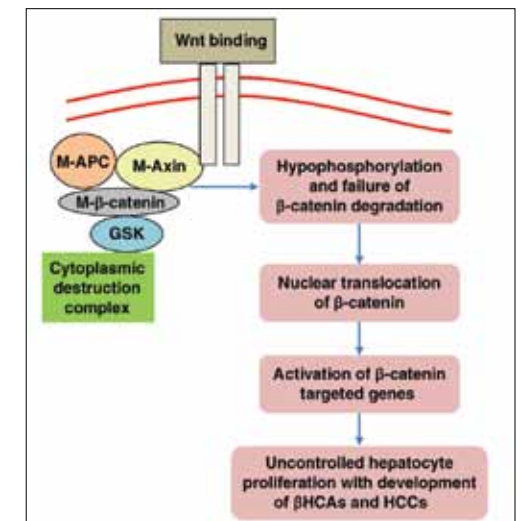
- Inflammatory hepatocellular adenoma
- Hepatocyte nuclear factor 1 α -mutated hepatocellular adenomas

- β -catenin–mutated hepatocellular adenoma, unclassified hepatocellular adenoma, and hepatic adenomatosis

Different subtypes show variable clinical behavior, imaging findings and natural history, and thus options for treatment and surveillance may vary, the authors write.

“Cross-sectional imaging plays an important role in the diagnosis, subtype characterization, identification of complications and surveillance of hepatocellular adenomas,” the authors write. “New schemas for genotype-phenotype classification of hepatic adenomas, as well as management triage of patients with specific subtypes of adenomas, are being proposed in an attempt to improve clinical outcomes.”

The article includes an invited commentary by Pablo R. Ros, M.D., M.P.H., of the University Hospitals Case Medical Center/Case Western Reserve University in Cleveland, and Zachary D. Goodman, M.D., Ph.D., of Fairfax Hospital in Falls Church, Va.



Flowchart relating to β -catenin–mutated hepatocellular adenoma (bHCA). Pathogenesis of β -catenin–mutated hepatocellular adenomas and hepatocellular carcinomas (HCCs) via the Wnt/ β -catenin pathway, secondary to mutations of the APC, β -catenin, and Axin genes and abnormal binding of Wnt protein. APC = adenomatous polyposis coli, GSK = glycogen synthase kinase, M- = mutated gene.

(*RadioGraphics* 2011;30:1529–1545) ©RSNA, 2011. All rights reserved. Printed with permission.

This article meets the criteria for 1.0 AMA PRA Category 1 Credit™. CME is available in print and online.

Radiology in Public Focus

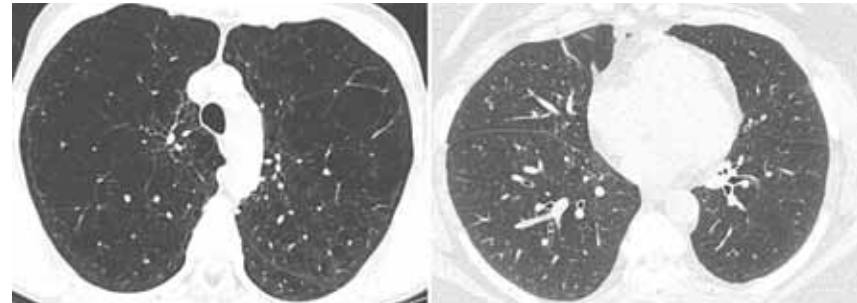
Press releases were sent to the medical news media for the following articles appearing in the latest issue of *Radiology*.

Chronic Obstructive Pulmonary Disease Exacerbations in the COPD Gene Study: Associated Radiologic Phenotypes

QUANTITATIVE CT can help identify subgroups of patients with chronic obstructive pulmonary disease (COPD) who experience exacerbations for targeted research and therapy development for individual phenotypes, new research shows.

In an ongoing, multicenter study sponsored by the National Heart, Lung and Blood Institute, MeiLan K. Han, M.D., M.S., of the University of Michigan Health System in Ann Arbor, and colleagues analyzed 2,500 patients enrolled in the COPD Gene Study who met Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria for COPD with quantitative CT analysis.

Researchers measured total lung emphysema percentage using the attenuation mask technique with a 2 950-HU threshold and an automated program to measure the mean wall thickness and mean wall area percentage in six segmental bronchi. Frequency of COPD exacerbation in



Axial CT scans in two subjects with different chronic obstructive pulmonary disease (COPD) phenotypes: emphysema-predominant COPD ($\geq 35\%$ emphysema, < 1.75 -mm segmental bronchial wall thickness) (left) and airway-predominant COPD (< 35 percent emphysema, ≥ 1.75 -mm segmental bronchial wall thickness) (right).

(*Radiology* 2011;261;1:274-282) RSNA, 2011. All rights reserved. Printed with permission.

the prior year was determined by using a questionnaire.

In a multivariate analysis adjusted for lung function, bronchial wall thickness and total lung emphysema percentage were associated with COPD exacerbation frequency, results showed.

“Radiologic characterization of COPD patients has prognostic value in the selection of more homogeneous subgroups for clinical trials and possibly for identifying patients at risk of frequent exacerbations for targeted medical therapies,” researchers concluded.

Hippocampal Dysfunction in Gulf War Veterans: Investigation with ASL Perfusion MR Imaging and Physostigmine Challenge

CHRONIC HIPPOCAMPAL PERFUSION DYSFUNCTION persists or worsens in veterans with certain Gulf War syndromes, which affect an estimated 25 percent of the 700,000 military personnel who were deployed to serve in the 1991 war.

In a semi-blinded retrospective study conducted by Xiufeng Li, Ph.D., of the University of Texas Southwestern Medical Center in Dallas, and colleagues, veterans in three Gulf War illness groups—1 (impaired cognition), 2 (confusion-ataxia) and 3 (central neuropathic pain)—and a control group received intravenous infusions of saline in an initial session and physostigmine 48 hours later. Each infusion was followed by measurement of hippocampal regional cerebral blood flow (rCBF) with pulsed arterial spin labeling (ASL) perfusion MR imaging.

Abnormal hippocampal blood flow in ill Gulf War veterans at baseline and after cholinergic challenge persisted or worsened 11 years after initial testing and nearly 20 years after the 1991 Gulf War, suggesting chronic alteration of hippocampal blood flow, researchers concluded.

“Baseline and physostigmine challenge-related hippocampal perfusion measured by using ASL perfusion MR imaging can help differentiate among the three major variants of Gulf War syndrome,” researchers concluded.

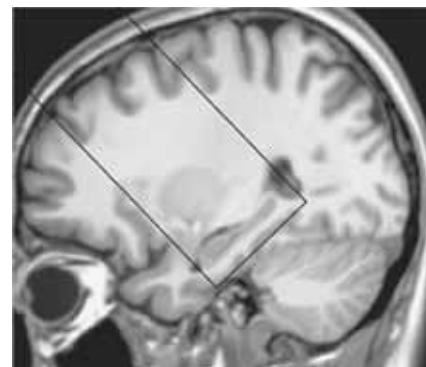


Image shows arterial spin labeling (ASL) perfusion imaging slab position. The oblique coronal ASL imaging sections were positioned to cover the head of the hippocampus, with the inferior edge of the imaging slab parallel to the longitudinal anteroposterior axis of the hippocampus and tangent to the gyrus of the temporal lobe, by using T1-weighted high-resolution anatomic images for accurate reference.

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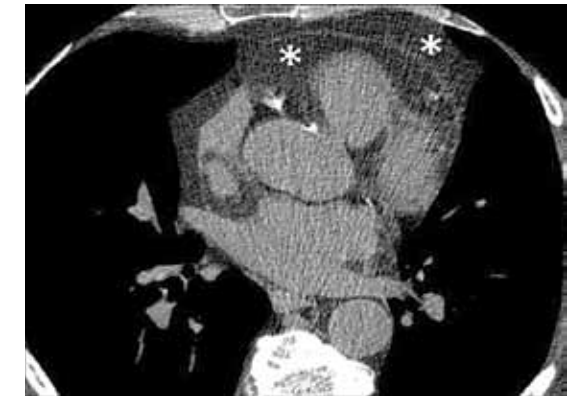
The Association of Pericardial Fat with Coronary Artery Plaque Index at MR Imaging: The Multi-Ethnic Study of Atherosclerosis (MESA)

Pericardial fat volume—rather than body mass index and waist circumference—is more strongly related to plaque eccentricity as a measure of coronary atherosclerotic plaque burden, new research shows.

In an institutional review board-approved study of 183 participants (89 women, 94 men; mean age, 61 years) from the community-based Multi-Ethnic Study of Atherosclerosis (MESA), Cuilian Miao, M.D., of Northwestern University Medical School in Chicago, and colleagues used MR imaging to measure coronary artery eccentricity (ratio of maximal to minimal artery wall thickness) as a measure of early-stage atherosclerosis and CT to determine pericardial fat volume.

Results showed that pericardial fat volume correlated significantly with the degree of plaque eccentricity in both men and women. This relationship was stronger in men than in women, possibly because of the greater atherosclerotic disease burden in men.

“Coronary wall MR imaging and pericardial fat assessment may be useful in risk assessment for CAD burden,” researchers concluded.



Axial cardiac CT image in 70-year-old man shows large amount of pericardial fat (*); pericardial fat volume is 248.6 cm³. Cross-sectional coronary artery wall MR image in same patient shows high degree of plaque eccentricity, with average eccentricity index of 9.8. Insets in bottom right corner show magnified views of vessels.

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Media Coverage of RSNA

In August 2011, media outlets carried 522 RSNA-related news stories. These stories reached an estimated 412 million people.

August print and broadcast coverage included *Chicago Tribune*, *Crain's Chicago Business*, *Hartford Courant*, WGN-TV (Chicago), WJBK-TV (Detroit), WNYW-TV (New York), WTVT-TV (Tampa), WSAZ-TV (Charleston, W.Va.) and WBRC-TV (Birmingham, Ala.).

Online coverage included Yahoo! News, *The Huffington Post*, *TIME* – Online, *Wall Street Journal* – Online, *USNews.com*, *Los Angeles Times* – Online, *DallasNews.com*, *IndiaTimes.com*, *Science Daily*, *Reuters.com*, *iVillage.com*, and WebMD.



October, November Public Information Activities Focused on Breast and Lung Cancer Awareness

To highlight National Breast Cancer Awareness Month in October and National Lung Cancer Awareness Month in November, RSNA distributed public service announcements (PSAs) focusing on the importance of regular screening mammography and the symptoms, risk factors and possible treatment options related to lung cancer.

RSNA ADDS NEW POSITION STATEMENTS

RSNA has added new position statements to *myRSNA*:

- Lung Cancer Screening
- Colon Cancer Screening
- TSA Airport Scanners
- Radiation from a Nuclear Accident

The position statements are formatted as talking points to help members when they speak to the media or the public about these topics.

The statements were drafted by RSNA's Board of Directors and Public Information Committee with assistance from Public Information Advisors Network members and other radiology societies.

To access RSNA's position statements, log onto myRSNA.RSNA.org, click AddStuff on the top right-hand corner of the screen, scroll to RSNA Position Statements and click Add. The statements will appear on the main screen of your *myRSNA* home page each time you log in.

Members can also access previous RSNA position statements on screening mammography, medical imaging errors, radiation dose and appropriate utilization of medical imaging.

Education and Funding Opportunities

Writing a Competitive Grant Proposal

REGISTRATION IS BEING ACCEPTED for the RSNA Writing a Competitive Grant Proposal workshop designed for researchers in radiology, radiation oncology, nuclear medicine and related sciences who are interested in actively pursuing federal funding.

February 3-4, 2012
RSNA Headquarters
Oak Brook, Ill.
Application Deadline
December 16

A limited number of slots are available for this 1½-day intermediate-level program that combines didactic and small group interactive sessions designed to help radiologic researchers understand and apply the key components of writing a competitive grant proposal. Topics to be covered are the NIH grant review process, developing specific aims and funding opportunities.

Guided by a faculty of leading researchers with extensive experience in all aspects of grant applications and funding, the program will focus on developing realistic expectations and provide tools for getting started. Faculty includes: G. Scott Gazelle, M.D., Ph.D., M.P.H., of Massachusetts General Hospital in Boston, Ruth Carlos, M.D., of the University of Michigan Health System in Ann Arbor, and Elizabeth Burnside, M.D., M.P.H., of the University of Wisconsin in Madison. The course fee is \$175. Registration forms can be found at RSNA.org/CGP. Contact Fiona Miller at 1-630-590-7741 or fmiller@rsna.org for further information.

For Your Benefit

RSNA 2011 Expands on Resident Experience

Attending her first RSNA annual meeting last year left radiology resident Aparna Annam, D.O., revved up to expand on her RSNA experience at future meetings.

"Last year, I was eager to see what RSNA had in store for its newest members and I was not disappointed," Dr. Annam said. "I am thrilled to see they are dedicating even more support to residents in 2011."

From the Residents Reception and Lounge to a lineup of educational and technical offerings, RSNA features a wide range of resources designed with the needs and interests of residents and fellows in mind. (For more information on RSNA 2011 Residents and Fellows activities, see Page 42).

"The seminars were not only a great way to reinforce basic radiology fundamentals, but also to learn about the latest technology and techniques in practice," said Dr. Annam, a member of the RSNA Resident and Fellow Committee (RFC). "The technical exhibits were sensational and I would encourage all residents to

check them out."

Dr. Annam offers another hint to residents: "Check out the booksellers. The publisher discounts are great for board review material!"

The Value of Membership

Because jobs are always a hot topic for residents, Dr. Annam—a board-certified pediatrician in her last year of diagnostic radiology training at Baylor—is anxious to tap into RSNA's all-new Residents and Fellows Program addressing when and where to look for radiology jobs, among other issues. The RFC members recommended content for the new program.

"Life after residency is full of unknowns," Dr. Annam said. "As a member of RFC, I believe it is our responsibility to provide trainees with a comprehensive picture of what they will face in the real world. With this program we can help alleviate some of that uncertainty."

Because it offers exposure to multiple aspects of the profession—from grant writing to the latest imaging modalities—Dr. Annam says the RSNA annual

Medical Meetings

December 2011-February 2012

DECEMBER 8-9, 2011

The National Academies, 2011 Gilbert W. Beebe Symposium, Tracking Radiation Exposure from Medical Diagnostic Procedures, The National Academies Keck Center, Washington, D.C.

• www.nationalacademies.org

JANUARY 9-14, 2012

Integrating the Healthcare Enterprise (IHE®) North American Connectathon, Hyatt Regency Chicago

• www.ihe.net/Connectathon

JANUARY 28-31, 2012

Indian Radiological & Imaging Association (IRIA), 65th Annual Congress, Hyderabad International Convention Centre, Hyderabad, India

• www.iria.in/index.php

JANUARY 26-29, 2012

Society of Nuclear Medicine (SNM), 2012 Mid-winter Meeting, Hilton & Holiday Inn, Orlando, Fla.

• www.snm.org

FEBRUARY 16-18, 2012

American Society of Spine Radiology (ASSR), Annual Symposium, Eden Roc Renaissance Hotel, Miami Beach, Fla.

• www.theassr.org

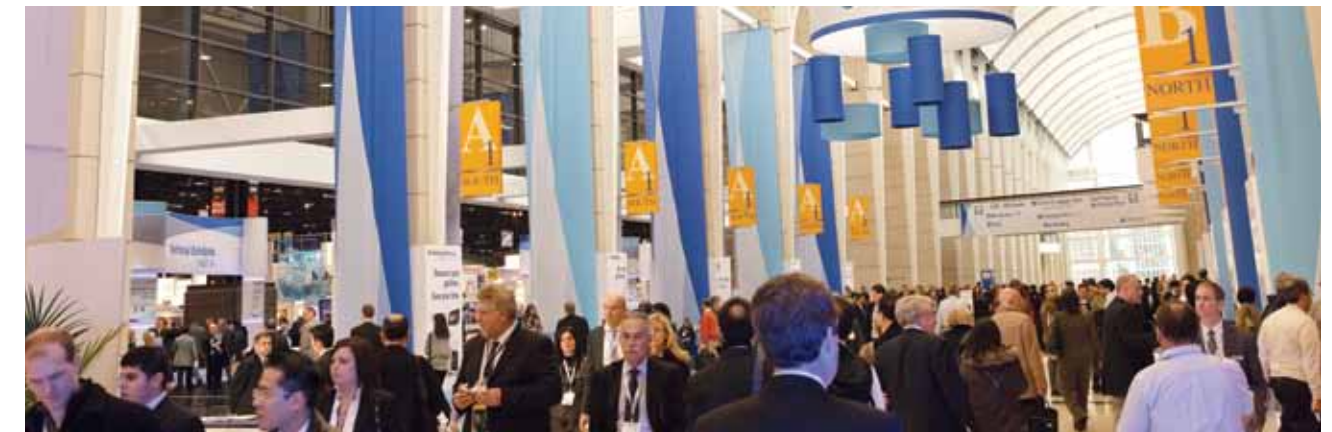
FEBRUARY 20-24, 2012

Healthcare Information and Management Systems Society (HIMSS), Annual Conference and Exhibition, Venetian-Palazzo Sands Expo Center, Las Vegas

• www.himssconference.org

Learning Opportunities

From lectures and special sessions focused on the specialty's hottest topics to presentations of cutting-edge research and the latest in radiology informatics, learning opportunities in every subspecialty abound at RSNA 2011. With full participation in the meeting, each physician can earn up to 92.75 AMA PRA Category 1 Credits™.



Scientific, Education Programs Expand Global Focus at RSNA 2011

Paralleling RSNA's commitment to advance radiology research and education around the world, RSNA's scientific and educational programs are becoming increasingly global in reach, with chairs of RSNA's science and education committees reporting upward trends in international submissions.

Committee chairs also noted an increase in abstract submissions overall, giving RSNA 2011 attendees a richer selection of education exhibits and scientific presentations, refresher courses, self-assessment modules (SAMs), applied science, integrated science and practice (ISP) sessions and workshops encompassing every subspecialty. Adding to RSNA's expanding list of technical offerings, attendees can benefit from interactive programs that use the RSNA Audience Response System to engage the audience and provide feedback.

"Refresher courses will build upon the success of previous years, with emphasis on reviews and updates of information related to the technical and interpretative aspects of imaging and intervention," said Valerie P. Jackson, M.D., RSNA Refresher Course Committee Chair.

The RSNA 2011 program will offer a wide spectrum of courses for all levels of radiologists, radiation oncologists, medical physicists and other healthcare professionals, Dr. Jackson said. RSNA 2011 features multiple SAMs for maintenance of

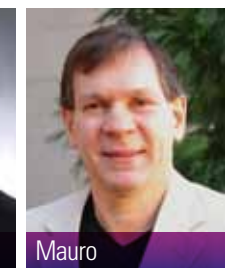
certification (MOC) and an innovative new refresher course track on leadership and management in radiology, Dr. Jackson said.

RSNA 2011 attendees will continue to see growth in the quality and number of education exhibits offered, according to Claire E. Bender, M.D., Education Exhibits Program Committee Chair.

"We are pleased to continue to offer both the traditional poster setting as well as the electronic educational exhibits," Dr. Bender said. "Attendees can visit the Lakeside Learning Center and continue to learn at their own pace, network with colleagues and earn CME by reviewing specific exhibits and correctly answering Cases of the Day. We are also excited to provide informal noontime sessions (see Bistro RSNA topic tables, Page 36) where radiology experts will discuss contemporary issues, from the American Board of Radiology and Resident



Jackson



Mauro



Bender

Review Committees, to a variety of topics in interventional oncology."

The 2011 scientific program integrates new and current science while giving attendees a glimpse of what radiology holds in the future, said Matthew A. Mauro, M.D., Scientific Program Committee Chair.

"Series offerings have been expanded and will be composed of refresher course material presented along with the cutting edge of scientific presentations in the same area," Dr. Mauro said. "The ISP sessions will also feature short, focused practice presentations juxtaposed with the corresponding scientific papers. Hot Topic

Continued on next page

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sessions feature nine presentations, which will describe emerging techniques in CT, MR, PET, radiography and interventional radiology, giving attendees a look into the future of our field. All participants will find excitement within this year's scientific program."

This year, RSNA received 12,474 abstract submissions—734 more than last year. Of those, 2,124 were accepted for education exhibits and 3,019 were accepted for formal and informal scientific presentations.

BREAST IMAGING

This year's hot topic is correlating breast imaging with genomic biomarkers and prognostic indicators, said Robyn L. Birdwell, M.D., Scientific Program Breast Subcommittee Chair. Strong categories are digital applications—present and advanced—MR interpretation and advanced applications, emerging technologies and ultrasound. Attendees will find provocative presentations in genetic determinants for breast tissue volume, elastography, 9.4T evaluation of human tissue specimens and ultrasound data from the American College of Radiology Imaging Network (ACRIN) 6666 screening trial, Dr. Birdwell said.

Hiroyuki Abe, M.D., Education Exhibit Breast Subcommittee Chair, notes a great increase in submissions in the current issues in breast imaging, including imaging of reconstructed breasts, management of high-risk lesions and imaging workup of nipple discharge. There is also emphasis on lymph node imaging and automated breast ultrasound, Dr. Abe said.



"Attendees can expect to see a variety of educational images of newer modalities, such as tomosynthesis, elastography, cone beam CT and positron emission mammography."

CARDIAC RADIOLOGY

Along with a rise in international submissions, attendees can expect many presentations on iterative reconstruction and methods to reduce ionizing radiation dose, said Arthur E. Stillman, M.D., Ph.D., Scientific Program Cardiac Subcommittee Chair.

Linda Haramati, M.D., Education Exhibits Cardiac Subcommittee Chair, encourages attendees of all specialties to visit the cardiac exhibits. "They're not esoteric—they cover a range of topics useful to hone the skills of radiologists at all levels of expertise, including residents, radiologists in general practice and cardiac imagers, in order to refine the care of our patients."

Exhibits this year will highlight the roles of cardiac CT and MR in determining patient prognosis, accurately diagnosing rare and common heart diseases, guiding medical and surgical treatments and imaging treatment complications, Dr. Haramati said.

CHEST RADIOLOGY

The trend toward correlation with other specialties—surgical techniques, staging and correlating CT with clinical scores—continues this year, said Sanjeev Bhalla, M.D., Scientific Program Chest Subcommittee Chair. Jane Ko, M.D., Education Exhibits Chest Subcommittee Chair,

announced a new category for abstracts pertaining to radiation dose. "With 62 abstracts, it was the largest category other than lung nodule," Dr. Ko said.

"Abstracts continue to be directed towards quantitative imaging, with continued interest in quantitative evaluation of chronic obstructive pulmonary disease (COPD) and airway disease," Dr. Ko said. "There has been an increasing interest in tumor markers, which may continue to increase in the future. Asian countries submitted the largest number of abstracts, followed by Europe and the U.S."

Exciting offerings include ISP sessions focusing on COPD and airways, functional lung imaging and radiation dose reduction, Dr. Ko continued. "Interesting abstracts will be included within an additional vertical course on pulmonary embolism and pulmonary arterial hypertension this year, in addition to the return of the vertical course on lung nodules," she said.

EMERGENCY RADIOLOGY

An overall increase in the number and quality of trauma submissions—mostly in abdominal and chest trauma—was noted by Jorge Soto, M.D., Scientific Program Emergency Subcommittee Chair. "There was increased interest in low radiation dose techniques and noise reduction software applications for CT in trauma and non-trauma applications," Dr. Soto added. "We received multiple excellent-quality submissions on the use of CT for evaluation of acute chest pain and other thoracic emergencies," he said.

GASTROINTESTINAL RADIOLOGY

"CT dose reduction and improved imaging of liver disease are the main focus of this year's abstracts," said Benjamin Yeh, M.D., Scientific Program Gastrointestinal Subcommittee Chair. "In particular, we are seeing validations of iterative reconstruction or low kVp CT imaging for abdominopelvic applications."

Imaging refinements in both focal and diffuse liver disease are being explored—primarily for MR imaging and hepatobiliary contrast material—but also for a wide range of modalities, Dr. Yeh said. Further studies interrogate the potential value of dynamic contrast-enhanced imaging for assessing treatment response and organ function in

the abdomen. Other hot research areas include dual and multi-energy CT imaging and imaging of focal intervention of liver lesions.

Education Exhibits Gastrointestinal Subcommittee Chair William C. Small, M.D., Ph.D., identified a number of high-interest areas including applications of dual-energy CT, benefits of newer MR contrast agents in liver imaging, diffusion and functional MR imaging, MR evaluation and staging of rectal cancer, CT and MR enterography—particularly for evaluating inflammatory bowel disease and fistulas—and imaging of bariatric surgery complications.

GENITOURINARY RADIOLOGY/ URO RADIOLOGY

Abstract submissions were nearly 11 percent higher in urology this year, said Aytekin Oto, M.D., Education Exhibits Genitourinary Subcommittee Chair, adding that popular subcategories are kidney neoplasms, prostate neoplasms and scrotum. "As a continuation of last year's trend, there was an increase in prostate exhibits, including two describing novel prostate imaging. Also notable is that we received numerous international submissions from two or three institutions," said Dr. Oto.

Submissions further refining prostate MR imaging and imaging-guided intervention were plentiful this year, said Erick M. Remer, M.D., Scientific Program Genitourinary Subcommittee Chair. Presentations evaluate important clinical questions such as "Can multiparametric MR imaging stratify prostate cancer patients who are eligible for active surveillance?" and explore the utility of MR imaging-guided biopsy with transrectal ultrasound-guided biopsy with MR fusion. "Existing MR techniques such as diffusion-tensor imaging and elastography have now been used to study the prostate," Dr. Remer said.

The program also features presentations evaluating gynecological diseases and pregnancy, especially from Europe and Asia, Dr. Remer added. "The popular series course, interweaving plenary material and abstract presentations on gynecological imaging, will be repeated, focusing on emergency imaging, the pregnant woman and benign and malignant diseases," he said.

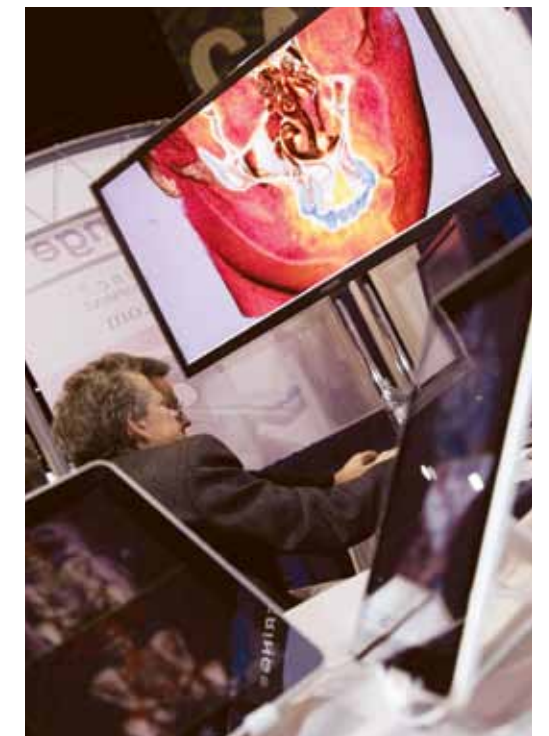
"CT for urinary stone disease continues to undergo extensive study; work this year focuses on low-dose scanning, stone characterization and dual-energy imaging. The blockbuster abdominal incidentaloma series course, in conjunction with the gastrointestinal (GI) section, will focus on practical solutions to everyday dilemmas." Interest is also strong in renal masses, including CT perfusion imaging and dual-energy evaluation of renal tumors and post-therapy evaluation of renal cell carcinoma, Dr. Remer said.

INFORMATICS

Mobile computing and decision support remain among the most popular informatics topics, said David S. Hirschorn, M.D., Scientific Program Informatics Subcommittee Chair. "For the first time, RSNA is offering a series course on mobile computing, which combines scientific papers with didactic lectures on platforms, security, applications and display quality," Dr. Hirschorn said.

"Given that many more people are using smartphones and tablets these days, it is a very timely topic," Dr. Hirschorn continued. "Other hot topics include a radiation dose index registry, impact of outside image import on repeat imaging and Web services to deliver appropriateness criteria." As always, there are a number of "cool" informatics presentations that may draw attention, such as a "virtual childbirth" program that determines whether the baby can fit naturally through the birth canal. "Also new this year, two more scientific sessions were added to devote more time to the previously combined topics of image analysis, image management and workflow so that each topic can have its own session," said Dr. Hirschorn.

Informatics submissions have increased in number and quality over the past year, said Katherine P. Andriole, Ph.D., Education Exhibits Informatics Subcommittee Chair. Offerings include clinical imaging decision support, electronic medical records and enterprise imaging along with educational technologies such as the RSNA Medical Imaging Research Center (MIRC) Clinical Trials and Teaching Files software tools, featuring a new, "one-click" installation process. Other topics include research and application development for image manipulation and analysis, PACS and image



management technologies, radiology departmental processes and workflow tools, reporting and critical test result communication applications, the use of information technologies for quality and safety activities and new technologies—particularly mobile devices for radiology, Dr. Andriole said.

"A broad spectrum of research activities is represented, from technology-focused projects to translational research to clinical and applied science," she added.

MOLECULAR IMAGING

"One significant trend in the molecular imaging section is an increasing number of multimodal and multitracer imaging studies," said Satoshi Minoshima, M.D., Ph.D., Scientific Program and Education Exhibits Molecular Imaging Subcommittee Chair. "Many investigators use different types of imaging modalities and tracers to address their research questions."

Presentations in neuroscience applications also increased this year, Dr. Minoshima said. These studies often involve multimodal imaging such as PET and MR, he said.

"Probe developments for molecular imaging remain strong this year," Dr. Minoshima continued. "Various probes—small and large

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molecules—are proposed, for various imaging modalities. This development is a critical element in molecular imaging.”

ISP sessions concerning multimodal imaging and imaging probes should be of great interest, Dr. Minoshima said. “Molecular imaging education exhibits also offer ample opportunities for those who are interested in learning the state of the art in molecular imaging technologies and applications.”

Attendees should note an increase in translational research in which the technologies have already been applied to humans, Dr. Minoshima noted. “This will give us perspectives of future radiology practices,” he said.

MUSCULOSKELETAL RADIOLOGY

Michelle S. Barr, M.D., Scientific Program Musculoskeletal Subcommittee Chair, noted a 12 percent increase in international submissions this year as well as an increased interest in distal extremity nerves, such as those surrounding the Achilles tendon, and the natural course of degenerative changes over time. “Therapeutic injections into tendons do seem to promote healing,” Dr. Barr said. “They seem to stimulate some angiogenesis and to promote fibrosis, making tendons stronger.”

Quantitative imaging is also taking off in the musculoskeletal subspecialty, Dr. Barr said. Areas of interest include elastography of tendons and whole-body tumor imaging in multiple myeloma.

Education Exhibit Musculoskeletal Subcommittee Chair Suzanne E. Anderson, Ph.D.,

B.Med., reported an increase in the number of submissions and in overall quality this year. “It’s also great to see an increase in international submissions,” Dr. Anderson said.

“The team noted novel increasing use of single-photon emission computed tomography (SPECT)/CT in orthopedic evaluations—for instance, in musculoskeletal trauma—in the hip to evaluate potential arthroplasty complications and in the foot to help localize therapeutic injection sites for post-traumatic or overuse foot pain,” Dr. Anderson said.

Supporting the 100-year anniversary of women in medicine, there is a notable abstract on musculoskeletal complications in pregnant mothers, an often under-reported public health area, Dr. Anderson added.

Dr. Anderson noted an increase in the use of reporting templates for standardized reporting, “with a good rash of knee exhibits on standardizing nomenclature for reporting of meniscal tears.”

“Trends include a healthy number of abstracts on 3T-MR neurography for peripheral nerves, both for clinical use and on technique and development,” Dr. Anderson said. “Most exciting is the new use of evaluation of blood perfusion of nerve graft contrast-enhanced ultrasound and the intriguing use of optical imaging compared to MR for rheumatological disorders.”

Attendees can expect a number of exhibits on advanced MR and the potential use of

diffusion MR in the feet of diabetics, Dr. Anderson continued. “It will be interesting to see if this adds anything to the old conundrum of neuropathy versus infection,” she said.

Dr. Anderson added, “Musculoskeletal interventional team members were intrigued by the use of ultrasound-guided injections of marrow stem cells for improving osteogenesis in Ilizarov lengthening.”

NEURORADIOLOGY/HEAD AND NECK

Presentations offer a heavy emphasis on stroke, aneurysms and tumor, said Scientific Program Neuroradiology Subcommittee Chair David Hackney, M.D. Notable topics include diffusion for distinguishing malignant from benign head and neck nodes—a controversial issue—as well as elastography for characterization of thyroid nodules and subtraction for noninvasive cerebral angiography, Dr. Hackney said.

NUCLEAR MEDICINE

Fluorodeoxyglucose imaging dominates this year’s presentations, said Homer A. Macapinlac, M.D., Scientific Program Nuclear Medicine Subcommittee Chair. There are a number of international pilot studies for PET/MR—and of a novel technique for performing both studies in a single “washer/dryer” procedure, Dr. Macapinlac said. The technique involves placing the patient in a sleeve—“almost like a burrito, and ‘shooting’ the patient from one modality to another,” Dr. Macapinlac said.

Continued on Page 29

New Virtual Meeting Takes RSNA Experience to a New Dimension

New for RSNA 2011 is the Virtual Meeting—a fascinating 2D/3D environment, available via the Internet, offering education opportunities, the RSNA Services area and Vendor Showcases.

“For those who can’t make it to Chicago this year—including international RSNA members and non-members—the Virtual Meeting is an exciting new way to participate in RSNA 2011 from your home or office,” said 2011 RSNA President Burton P. Drayer, M.D. “Those who are attending RSNA 2011 can maximize their experience by participating in the Virtual Meeting as well.”

Virtual Meeting attendees can create a custom avatar to explore a 3D world or participate in 2D via a Web portal. Both scenarios offer the option of live voice and text chat with colleagues and the opportunity to earn up to 41.75 AMA PRA Category 1 Credits™.

Sign up and a tutorial will be offered starting Thursday, October 27 at RSNA2011.RSNA.org/virtual. From then until the opening of RSNA 2011 on Sunday, November 27, access this pre-meeting content:

- RSNA 2010 Case of the Day study for each subspecialty
- RSNA 2010 Digital Presentation System content (scientific papers and posters, education exhibits)
- RSNA 2010 recorded Scientific Sessions, presented within a classroom
- RSNA Services
- Vendor Showcase Areas*
- Training Modules
- Welcome Videos

The Virtual Event opens Sunday, November 27 and runs through Friday, December 2. Access this content during the Virtual Event:

- Cases of the Day, complete with expert discussion
- Vendor Showcases and Auditorium Presentations**
- Scientific posters, scientific papers and education exhibits

Tuesday, November 29, is Live Event Day, with the opportunity to participate in real time in:

- Six Refresher Courses
- Two Scientific Paper Sessions
- Plenary Session
- Presentation of Gold Medals
- Annual Oration in Diagnostic Radiology
- Special Lecture



“The RSNA 2011 Virtual Meeting is a new way to experience the world’s premier medical imaging event from anywhere,” Dr. Drayer said. “With your custom avatar, you can explore this virtual environment with radiologists from across the globe.”

“This year, the RSNA annual meeting doesn’t stop at McCormick Place,” Dr. Drayer continued. “We’re excited to help you experience it in a whole new dimension.”

*Virtual Vendor Showcases:

- Philips Healthcare
- GE Healthcare
- McKesson Provider Technologies
- Konica Minolta Medical Imaging

**Virtual Vendor Presentation:

- Ziosoft

Free for RSNA 2011 registered attendees and RSNA members—sign-up and tutorial begin October 27 at RSNA2011.RSNA.org/virtual

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Education Exhibit Nuclear Medicine Subcommittee Chair Laurie E. Gianturco, M.D., noted growth in molecular imaging/PET exhibits, reflecting the direction of the field. "There are a number of exhibits focusing on new procedures and clinical applications of newer radiopharmaceuticals for a wide variety of neurologic, skeletal and oncologic conditions," Dr. Gianturco said. "There is an exciting exhibit regarding the initiative to qualify imaging biomarkers in oncology using PET/CT in lymphoma. A number of the PET/ molecular imaging exhibits will address the assessment of treatment and the new PET Response Criteria in Solid Tumors (PERCIST) system for monitoring tumor response to therapy."

A group of exhibits cover the value of the associated anatomic imaging with PET/CT and SPECT/CT, she said. Also featured is a display on radiation safety, reflecting an awareness of the Image Wisely campaign, as well education regarding radiation accidents such as the nuclear reactor explosions in Japan, Dr. Gianturco said.

OBSTETRIC/GYNECOLOGIC RADIOLOGY

Education Exhibit Obstetric/Gynecology Subcommittee Chair Robert D. Harris, M.D., M.P.H., reports an increase in abstracts on MR imaging of fetuses and ovarian masses with diffusion/perfusion. Attendees should look for basic reviews on placenta pathology, fetal anomalies and distinguishing benign from malignant ovarian masses.

Dr. Harris noted an increase in exhibits from Asia, particularly Korea. "An exciting topic is elastography of the cervix and cervical cancer," he said. "Attendees might like to pay attention to any pelvic MR

education exhibits with diffusion/perfusion imaging and areas of 3D ultrasound."

PEDIATRIC RADIOLOGY

"There continues to be considerable interest in radiation protection, measurement and dose reduction techniques this year," said Marvin D. Nelson Jr., M.D., Ph.D., Scientific Program Pediatric Subcommittee Chair. New topics include voxel-based morphometry and PET to study abnormal brain protein synthesis in developmental disorders. "There were more abstracts submitted from outside the U.S. than last year," Dr. Nelson added. Also of note is the new Pediatric Campus for RSNA 2011, which offers pediatric radiology refresher courses and scientific paper sessions in one area. The Pediatric Campus is located in Room S101AB. (See Page 37)

PHYSICS

Scientific Program Physics Subcommittee Chair Xiaochuan Pan, M.D., noted the continued strength of presentation quality with trends in iterative algorithm reconstruction for CT. Some notable topics include CT imaging dose, image-guided radiation therapy and multi-energy CT, Dr. Pan said.

RADIATION ONCOLOGY AND RADIOBIOLOGY

This year's Bolstering Oncoradiologic and Oncoradiotherapeutic Skills for Tomorrow (BOOST) program "is a longitudinal imaging and oncologic presentation, a unique program offered by RSNA with related scientific presentations in head and neck, prostate, gastrointestinal, lymphoma and central nervous system topics," said Chung T. Chung, M.D., Scientific Program Radiation Oncology Subcommittee Chair. "There has been increased interest among radiologists and radiation oncologists."

This year's programs also focus on basic biology, gynecology, lung, breast, benign tumor and quality of life and outcomes, Dr. Chung said. "Hot topics are target definition using molecular imaging, MR and CT as

well as stereotactic body radiation therapy for various organs.

"This year, as in the past couple of years, there has been a surge in interest in utilizing the entire spectrum of imaging modalities—particularly, functional imaging datasets from MR, MRS, and PET—for accurate delineation of tumors during treatment planning," said Sunil Krishnan, M.D., Education Exhibits Radiation Oncology Subcommittee Chair. "In parallel with this increased sophistication in defining a tumor and/or surrounding normal tissues more accurately, there has been a renewed focus on image-guided radiation therapy," Dr. Krishnan said. "Lastly, this year's exhibits highlight a greater understanding of the challenges faced with appropriate clinical incorporation of these technological advances and the need for greater cooperation between radiation oncologists and their diagnostic imaging colleagues."

VASCULAR/INTERVENTIONAL RADIOLOGY

Scott O. Trerotola, M.D., Scientific Program Vascular/Interventional Subcommittee Chair, points to strong interest in contrast issues, particularly concerning renal insufficiency. "Because we can't give gadolinium for MR angiography, there's been a surge of interest in non-contrast applications, especially for higher field strengths," Dr. Trerotola said.

"The second big trend was dose reduction, both for contrast and radiation," Dr. Trerotola continued. "There were quite a few abstracts examining dose reduction, not only in CT, but also within interventional radiology procedures."

Like his fellow chairs, Dr. Trerotola noted increased international submissions this year, especially from the Far East—China in particular.

"Most of the best abstracts came from interventional oncology—everything from chemoembolization to radioembolization and ablation," Dr. Trerotola said. "There were a few basic science studies in animal models."

For more information on the presentations and exhibits described here, see the online RSNA Meeting Program at RSNA2011.RSNA.org.



Plenary Lectures

RSNA 2011 will feature plenary session lectures on a spectrum of healthcare topics. All lectures will be presented in the Arie Crown Theater.

OPENING SESSION

Multimodality Imaging of Atherosclerosis

Sunday, November 27 • 8:30 a.m.

Bleeding Edge Imaging and Therapy in Vascular Disease

Atherosclerosis-related diseases cost the U.S. more than \$500 billion in 2010. The majority of life-threatening consequences of atherosclerosis result from acute thrombus formation on the surface of a plaque. **Zahi A. Fayad, Ph.D.**, will discuss the imaging techniques—including ultrasound imaging of carotid intima-media thickness and intravascular ultrasound of the coronary arteries, as well as MR imaging, PET and CT—he has helped develop to provide information on both the composition and function of the plaques. Dr. Fayad will detail the advantages and limitations of plaque molecular imaging as well as novel methods for plaque treatment using nanomedicine.



Fayad

A professor of radiology and cardiology at the Mount Sinai School of Medicine in New York, Dr. Fayad is the director of the Translational and Molecular Imaging Institute, director and founder of the Eva and Morris Feld Imaging Science Laboratories and director of Cardiovascular Imaging Research at the Mount Sinai School of Medicine and Mount Sinai Medical Center.

Dr. Fayad holds 12 U.S. and worldwide patents in imaging and is currently principal investigator (PI) for four federal grants funded by the National Institutes of Health's

National Heart, Lung and Blood Institute (NHLBI) and National Institute of Biomedical Imaging and Bioengineering. One recent award from NHLBI supports the program of excellence in nanotechnology.

CT Angiography: 20 Years Old and All Grown Up

Remarkable advances in multidetector CT during the last five years—faster gantry rotations, wide-area detectors, dual-source scanners, spectral or multienergy techniques, iterative reconstruction—have brought coronary CT angiography (CTA) into the mainstream of clinical practice and opened new possibilities such as measurement of tissue perfusion, material decomposition, flow mapping, and sub-millisievert CTA. **Geoffrey D. Rubin, M.D.**, will discuss the rapid development of CTA from its humble beginnings on single-row spiral CT and detail the considerable opportunities and challenges that CTA faces on the cusp of its third decade.



Rubin

The George Barth Geller Professor for Research in Cardiovascular Disease and chair of the Department of Radiology at Duke University in Durham, N.C., Dr. Rubin pioneered the use of spiral CT and multidetector-row CT for imaging the cardiovascular system and has personally performed and interpreted more than 10,000 CT angiograms. He has served as PI of two NIH grants focused on imaging and analysis of cardiovascular and pulmonary diseases.

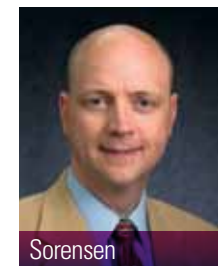
Dr. Rubin co-founded the Stanford 3D Medical Imaging Laboratory and the section of cardiovascular imaging in the Department of Radiology at Stanford University and served at the head of both institutions until last year. The 3D lab assessed the role of computer graphics and vision applications in analyzing medical imaging data, eventually processing more than 10,000 clinical examinations annually.

EUGENE P. PENDERGRASS NEW HORIZONS LECTURE

Mechanistic Imaging—MR-PET, 7 TESLA MRI, and Beyond

Monday, November 28 • 1:30 p.m.

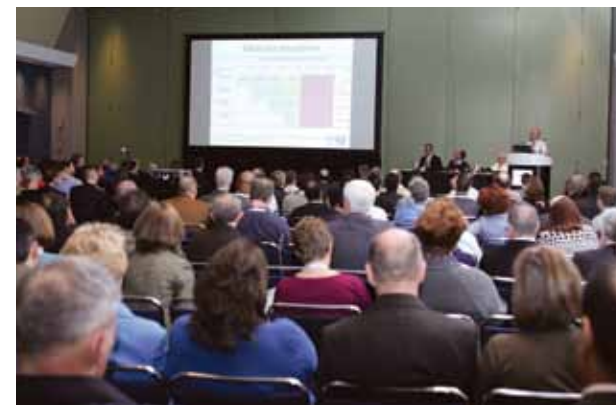
Radiology is confronted by both unprecedented scientific opportunity and tremendous societal pressure to justify sophisticated imaging methods, according to **A. Gregory Sorensen, M.D.** He will explore cutting-edge scientific advances in imaging technology—including 7.0 T MR and combined MR-PET scanning—that are enabling visualization of structure, function and pathophysiology at a new level, and highlight how these new tools can help address critical and unmet medical needs.



Sorensen

Dr. Sorensen is a world-renowned neuroradiologist and translational researcher who in June 2011 became CEO of Siemens Healthcare. As co-director of the Martinos Center for Biomedical Imaging at Massachusetts General Hospital, Dr. Sorensen has led groundbreaking research on acute stroke

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and glioblastoma. He and his team defined a new syndrome, called “transient symptoms with ischemia,” or TSI, that is the equivalent in stroke to unstable angina in the heart. The team also used advanced MR techniques to demonstrate that a window of vascular normalization occurs in human recurrent malignant gliomas upon treatment, and explored the phenomenon with the world’s first MR-PET camera used to image patients.

Dr. Sorensen is a professor of radiology and health sciences and technology at Harvard Medical School and at the Massachusetts Institute of Technology and is a visiting professor of neuroradiology at Oxford University.

SPECIAL LECTURE

Year Two of Health System Reform: Where Are We Now?

Monday, November 28 • 1:30 p.m.

A year and a half after the Affordable Care Act was passed, tremendous strides have been made toward reforming America’s health care system; however, serious challenges remain, says **Peter W. Carmel, M.D.** In the wake of the controversy over the nation’s debt ceiling, Congress has been tasked with passing \$1.2 to \$1.5 trillion in deficit reduction measures by December 23—should Congress fail, then \$1.2 trillion in automatic spending cuts will go into effect. From a nearly 30 percent cut to Medicare physician payment to funding for imaging, economics advisors have warned that “everything is on the table.” Dr. Carmel, president of the American Medical Association (AMA), will outline the AMA’s aggressive campaign to protect patients and physicians.



Carmel

Dr. Carmel, a pediatric neurosurgeon who practices in Newark, N.J., has been a member of the AMA Board of Trustees since 2002 and House of Delegates since 1985. He has chaired the AMA’s Specialty and Service Society and Council on Long Range Planning and Development and also served as president of the AMA Foundation. He is chairman of the Department of

Neurological Surgery at the New Jersey Medical School and co-medical director of the Neurological Institute of New Jersey. Dr. Carmel previously chaired the National Coalition for Research in Neurological Disease and Stroke and National Foundation for Brain Research.

ANNUAL ORATION IN DIAGNOSTIC RADIOLOGY

Neuroimaging and the Search for a Cure for Alzheimer’s Disease

Tuesday, November 29 • 1:30 p.m.

An ever-evolving combination of structural, molecular and functional imaging techniques has illuminated the etiology of Alzheimer Disease (AD) and other neurodegenerative diseases and could catapult diagnostic radiology to front-stage and center in clinical trials of new therapeutic agents for AD, says **Jeffrey R. Petrella, M.D.** By taking a mechanistic imaging approach—matching imaging methodology with therapeutic mechanism—neuroimaging biomarkers have the potential to increase the power of clinical trials through greater effect sizes, says Dr. Petrella, who will detail various developments that could revolutionize radiology’s role in the care of patients with AD, including in vivo imaging probes targeted to amyloid beta protein and volumetric imaging measures to quantitate cerebral volume loss in a variety of critical brain structures.



Petrella

Currently an associate professor of radiology and director of the Alzheimer Imaging Research Laboratory at Duke University Medical Center, Dr. Petrella came to Duke after three years in the Imaging Sciences Training Program at the National Institutes of Health, where he studied applications of dynamic susceptibility perfusion MR and bold functional MR. His work applying functional MR to aging and dementia has earned many awards, including a \$1.8 million grant from the National Institute on Aging. Dr. Petrella currently co-chairs the fMRI subcommittee of the RSNA Quantitative Imaging Biomarker Alliance.

SPECIAL LECTURE

Memory and the Aging Brain

Tuesday, November 29 • 1:30 p.m.

While people live longer as a result of advances in medical technology, they don’t necessarily live better, says **Gary W. Small, M.D.**, adding that neuroimaging and other biomarkers that identify structural and functional brain changes years before dementia symptoms emerge may eventually lead to a “brain check” that allows physicians to identify candidates for prevention treatments. These treatments, he says, paired with lifestyle habits associated with better cognitive health and longer life expectancy, would improve brain health and delay neurodegeneration long enough for people to avoid experiencing dementia symptoms in their lifetime. Dr. Small will review the latest in early detection and prevention of AD and other forms of age-related memory loss and describe strategies for improving memory performance and protecting brain health.



Small

Dr. Small is a professor of psychiatry, the Parlow-Solomon Professor on Aging at the David Geffen School of Medicine at the University of California, Los Angeles (UCLA), director of the UCLA Longevity Center and director of the Geriatric Psychiatry Division at the Semel Institute for Neuroscience & Human Behavior. His team has developed technologies that have improved the early diagnosis of AD and have led to expanded Medicare coverage for brain PET. Dr. Small’s popular books include the *New York Times* bestseller “The Memory Bible.”

ANNUAL ORATION IN RADIATION ONCOLOGY

Proton Beam Therapy: Applications and Future

Wednesday, November 30 • 1:30 p.m.

Proton therapy, says **Stephen M. Hahn, M.D.**, has attracted significant interest as a way to improve the therapeutic index of radiation treatments through dose escalation to tumors, reduction in dose to normal tissues, altered fractionation schedules and combination of protons with

radiation sensitizers. Dr. Hahn will address the rigorous clinical trials needed to demonstrate the benefits of proton therapy and describe studies including proton therapy in combination with chemotherapy, a clinical situation where the therapeutic index is narrow and new approaches are needed to reduce toxicity and improve efficacy.



Hahn

Dr. Hahn is the Henry K. Pancoast Professor and chair in the Department of Radiation Oncology at the University of Pennsylvania. His research includes photodynamic therapy and farnesyltransferase inhibitors used for the treatment of lung, head and neck and pancreatic cancers. He is also part of a program to bring the hypoxia-detecting agent EF5 into clinical trials.

Dr. Hahn’s education included a medical oncology fellowship and a radiation oncology residency at the National Cancer Institute (NCI). He also served six years as an NCI commander with the U.S. Public Health Service. He has served as PI on a number of grants, including one from the NCI to study IMRT and proton therapy for prostate cancer.

SPECIAL LECTURE

Risk in Medical Imaging: Separating Fact from Fantasy

Wednesday, November 30 • 1:30 p.m.

While thousands of cancers and cancer deaths induced in the U.S. population annually by radiation from medical imaging make eye-catching headlines in the scientific literature and popular press, these numbers are presented without any of the substantial uncertainties underlying their generation, says **William R. Hendee, Ph.D.** These uncertainties include application of the linear no-threshold model of radiation injury to doses of a few mSv, adoption of the idea of effective dose for imaging procedures and use of the concept of Lifetime Attributable Risk, with its broad statistical variability,



Hendee

as a firm quantitative estimate of risk. Also questionable is the practice of multiplying large population numbers by very small risk estimates to yield hypothetical numbers of individuals at risk. Collectively, he says, these uncertainties raise serious doubts about the validity of quantitative estimates of cancers and cancer deaths caused by medical imaging.

Dr. Hendee is a distinguished professor of radiology, radiation oncology, biophysics and bioethics at the Medical College of Wisconsin (MCW) in Milwaukee, where he served as president of the MCW Research Foundation, senior associate dean for research, dean of the Graduate School of Biomedical Sciences, vice-chair of radiology and interim dean of the medical school. Dr. Hendee was a founding member of the National Patient Safety Foundation and principal investigator on a project to create a Web-based patient safety education curriculum for physicians, nurses and patients.

RSNA/AAPM SYMPOSIUM

Thursday, December 1 • 1:30 p.m.

Lessons Learned from Fukushima: Implications for U.S. Nuclear Energy Programs and Radiologic Health

Lessons learned from the accident at Japan’s Fukushima Daiichi nuclear power plant following the historic earthquake and tsunami last March can inform U.S. programs for assessing radiological effects from nuclear accidents, says **Marvin S. Fertel**, who will detail the implications of the accident on the radiological safety of the 104 operating plants in the U.S. and on deployment of new plants.



Fertel

Fertel is president and CEO of the Nuclear Energy Institute (NEI). He has 35 years of experience consulting for electric utilities on issues related to designing, siting, licensing and managing both fossil and nuclear plants. With NEI since 1994, he has been responsible for leading NEI programs related to ensuring an effective and safety-focused regulatory process and directing industry efforts to ensure

adequate security is provided at nuclear power plants and address generic technical issues related to commercial nuclear facilities. He also has led NEI activities related to the long-term management of used nuclear fuel, including achieving success in the U.S. government’s program for the storage and ultimate disposal of used nuclear fuel.

CT 2020

The current generation of CT scanners has its strengths and limitations, as well as opportunities for significant improvements, according to **Norbert J. Pelc, Sc.D.** He will discuss CT technologies poised to be developed and implemented in the next decade, as well as advances that may become a reality in the near future.



Pelc

Dr. Pelc is a professor of radiology and associate chair for research of the Department of Radiology at Stanford University. From 1978 until 1990 he worked at GE Medical Systems in the Applied Sciences Laboratory as a senior physicist and manager, conducting research and advanced development in all medical imaging modalities with a particular concentration on CT, digital X-ray imaging, and MR. Dr. Pelc then moved to Stanford, where he is also involved in biophysics and bioengineering. He has 62 U.S. issued patents.

Other Plenary Sessions

More information about these sessions is available at RSNA2011.RSNA.org.

SUNDAY

8:30–10:15 a.m.

President’s Address

10:45 a.m.–12:15 p.m.

Oncodiagnosis Panel

4–4:10 p.m.

Report of the RSNA Research & Education Foundation

4–5:45 p.m.

Image Interpretation Session

FRIDAY

12:45–3:15 p.m.

Friday Imaging Symposium

Special Interest, Controversies/Game and Hot Topic Sessions

These sessions, offered throughout the week, address important radiology-related topics that are late breaking or particularly controversial, or require in-depth analysis. Scheduled this year:

CONTROVERSIES/GAME

MONDAY

7:15–8:15 a.m.

- Radiation Risk: Linear versus Dose Threshold for Cancer Risk

TUESDAY

7:15–8:15 a.m.

- Controversies in Lung Cancer Screening

WEDNESDAY

7:15–8:15 a.m.

- Is Oral Contrast Material a Waste of Time in Abdominal and Pelvic CT? (Pro and Con) (An Interactive Session)

4:30–6:30 p.m.

- Are We Training Too Many Radiologists?
- Can We Reduce Work-ups for Incidental Findings? Reporting, Cost, and Medicolegal Issues
- Multiple Sclerosis: Diagnosis and Management Controversies
- US vs. MR Imaging for Musculoskeletal Radiology
- Breast Imaging Jeopardy

THURSDAY

7:15–8:15 a.m.

- Thyroid Carcinoma: US vs. CT

HOT TOPICS

MONDAY

7:15–8:15 a.m.

- Tendinosis: Steroid Injection, Tendon Fenestration, or Platelet-Rich Plasma Injection?

TUESDAY

7:15–8:15 a.m.

- Dual-Energy CT

WEDNESDAY

7:15–8:15 a.m.

- Hybrid Imaging with MR/PET
- Irreversible Electroporation: A Really “Hot” Topic

THURSDAY

7:15–8:15 a.m.

- Applications of Liver-specific MR Contrast Agents: Point/Counterpoint

3–4 p.m.

- MR Elastography and Quantitative US Elastography: Emerging Applications
- PET Imaging in Breast Cancer
- Body Diffusion Imaging: Emerging Concepts
- Digital Tomosynthesis in Chest Imaging

SPECIAL INTEREST

MONDAY

4:30–6 p.m.

- Health Care Reform: What Does It Mean for Radiology
- Image Wisely™
- Comparative Effectiveness Research for Radiology: Reports from the Field
- Quantitative Imaging Biomarkers for Clinical Care and Research
- Quality in Action
- Screening for Breast Cancer: Where Do We Stand?

Scientific Paper Sessions

Scientific sessions reveal new science. Sessions are offered over nine time slots during the week and will include 1,831 papers in a range of subspecialties.

INDIA PRESENTS

India is the latest country to be spotlighted as part of the “Presents” sessions at the RSNA annual meeting. The India Presents session is scheduled for Monday, 10:30 a.m.–12 p.m. and offered in conjunction with the Indian Radiological & Imaging Association.

“There has been a sea change in Indian radiology in the last two decades,” said Hemant Patel, M.D., D.N.B., D.M.R.E., coordinator of the session. Dr. Patel, a consultant radiologist and professor at the Gujarat Imaging Centre Postgraduate Institute of Radiology in Ahmedabad, India,

is coordinator of the India Presents session. “In the past, radiology was considered a non-clinical and supporting branch of medicine. However, advancements in ultrasound, MR, CT, PET/CT and other imaging modalities, as well as radiobiology, radiomedicine, molecular imaging and interventional radiology, have made radiology a core medical specialty.”

At the same time, Dr. Patel said, Indian radiologists are raising their international profile—many are publishing articles in peer-reviewed journals, presenting papers and invited lectures in international forums and helping conduct phase 3 radiology-related research trials in India.

To be covered in the session:

- Imaging Spectrum of Typical and Atypical Neurotuberculosis
- Intervention in Hemoptysis: A Practical Approach
- MR-PET Fusion: A New Door is Open
- PET/CT in Oncology: An Indian Scenario
- MR-guided High-Frequency US (HIFU): An Innovative Patient-friendly Treatment
- Antenatal MR Imaging in India—Clinical Practice & Research
- MR Spectroscopy in Intracranial Cystic Masses

Refresher and Multisession Courses

RSNA 2011 offers more than 300 refresher courses covering traditional and cutting-edge topics in each subspecialty. Multisession courses are scheduled for time blocks ranging from several hours to several days, to allow intensive study of various topics.

DIAGNOSIS LIVE!: THE AUDIENCE PARTICIPATION GAME

Don’t miss what promise to be some of the most exciting sessions at RSNA 2011. Attendees can use their personal digital devices to submit diagnoses for a series of interactive case studies and discuss responses with colleagues in a fast-paced game format. Monday’s session from 4:30 to 6 p.m. will feature chest and abdomen cases; Thursday’s session from 3 to 4 p.m. features neuroradiology and musculoskeletal cases.



QUALITY COMPLETION CERTIFICATE

Among the multisession courses offered at RSNA 2011 is the Quality Improvement Symposium on Tuesday. RSNA will award a certificate of completion to attendees who successfully participate in a quality improvement session, offered as the third session of the symposium. Participants who achieve a score of 80 percent or higher on the SAM test questions will be eligible to receive the certificate.

Lakeside Learning Center

The Lakeside Learning Center is home to education exhibits and scientific informal (posters) presentations. This year 2,124 education exhibits and 1,188 scientific posters will be available for viewing, grouped according to subspecialty (with the exception of pediatric radiology—see Pediatric Campus, next page). Many authors of posters and education exhibits are scheduled to give lunchtime presentations of their work; see the *RSNA Meeting Program in Brief* for days and times.

QUANTITATIVE IMAGING

Also located in the Lakeside Learning Center is the Quantitative Imaging Reading Room, an educational showcase highlighting products and applications that integrate quantitative analysis and structured reporting into the image interpretation and reporting process.

At the Quantitative Imaging and Biomarkers Alliance (QIBA) kiosk, see the latest efforts of the RSNA-directed technical committees that aim to improve the value and practicality of quantitative imaging biomarkers by reducing variability across devices, patients and time.

BISTRO RSNA TOPIC TABLES

Special tables at the Lakeside Learning Center Bistro RSNA are reserved as “topic tables” where attendees can participate in discussions with American Board of Radiology representatives or in various subspecialties. Facilitators will be present at Bistro tables Monday through Wednesday from 12:15 p.m. to 1:15 p.m. to guide discussions on these topics:

Monday

- ABR: Maintenance of Certification
- Breast: Molecular Medicine/Molecular Imaging
- Gastrointestinal: Emerging Techniques
- Informatics: PACS and RIS Migration
- Interventional Oncology: Lung
- Interventional Radiology: Female Pelvis
- Musculoskeletal: Intervention
- Pediatric Radiology: Fetal Imaging
- Residency Review Committee

Tuesday

- ABR: Maintenance of Certification
- Breast: Emerging Technologies
- Chest: Lung Nodules/Lung Cancer
- Emergency Radiology: 24/7 Coverage
- Informatics: Structured Reporting/RadLex
- Interventional Oncology: Liver/Bone
- Molecular Imaging: Cardiovascular Imaging
- MR: Interventional Update
- Neuroradiology: Brain Tumors

Wednesday

- ABR: Maintenance of Certification
- Cardiac: Heart Failure, Multimodality
- Genitourinary: Abdominal Incidentalomas
- Informatics: Meaningful Use

- Musculoskeletal: Sports Injuries
- Neuroradiology: Stroke Imaging
- Physics: CT Dose Reduction
- Radiation Oncology: Image-guided Radiation Therapy (IGRT)
- Vascular: MR Angiography

Radiology Informatics

IHE® IMAGE SHARING DEMONSTRATION

Making medical images and related data available securely and conveniently will significantly improve clinical care, research and education. The Image Sharing Demonstration presented by the Integrating the Healthcare Enterprise (IHE®) initiative showcases state-of-the-art methods being deployed today to achieve this goal.

Visit the demonstration to learn how radiology centers can share images and reports with patients and healthcare providers through image-enabled personal health record (PHR) accounts, how dose reports can be used to monitor patient radiation exposure and how clinical image data can be processed and shared for use in clinical trials and teaching files. The demonstration will feature systems developed for the RSNA Image Share network, a pilot funded by the National Institute of Biomedical Imaging and Bioengineering, and others from vendors and research organizations.

Demonstrations will take place regularly throughout exhibit hours in the South Building, Hall A, Booth 2851.

NEW RSNA INFORMATICS OVERVIEW COURSE

Among the many informatics-related courses offered this year is the new “Decoding the Alphabet Soup (IHE®, MIRC®, RadLex®, Reporting): Whirlwind Tour of RSNA Informatics Projects”—designed for those who want to learn more, or who are just beginning to use RSNA informatics products. The course is scheduled for Monday, Nov. 28, 12:30–2 p.m.

Presenters David Mendelson, M.D., Adam Flanders, M.D., Daniel Rubin, M.D., Curtis Langlotz, M.D., Ph.D., and Charles Kahn, M.D., M.S., will articulate the main objectives and practical problems

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addressed by each of these RSNA-sponsored projects:

- **Integrating the Healthcare Enterprise (IHE)**
- **The Medical Imaging Resource Center (MIRC)**
- **RadLex comprehensive lexicon**
- **Reporting**

INFORMATICS AREA—LAKESIDE LEARNING CENTER

Visit the Informatics area in the Lakeside Learning Center to take guided tours of IHE, MIRC, RadLex and Reporting. Learn more about RSNA Informatics programs and annual meeting activities by visiting RSNA2011.RSNA.org/attendees/informatics.cfm.

RSNA Education

SAMs CREDIT

Thirty in-person self-assessment modules (SAMs) courses covering a range of subspecialty topics will be offered at RSNA 2011, allowing participants to obtain both continuing medical education (CME) and SAMs credit for each course attended.

One new SAMs course, "Quality Improvement in Practice," addresses the recent focus of the American Board of Radiology (ABR) on quality in radiology practices. All SAMs courses are qualified by ABR in meeting self-assessment criteria toward fulfilling ABR Maintenance of Certification Program requirements.

Participants earn 1 SAMs credit per course attended. In addition, each course has been

approved for *AMA PRA Category 1 Credit™*, allowing participants the additional benefit of earning CME credit for attending SAMs courses. Members attend RSNA 2011 SAMs courses free; non-members pay a fee of \$50.

CD REFRESHER COURSES, NEW COLLECTIONS FOR SALE

Stop by the RSNA Store at RSNA 2011 to check out our newest educational offerings for meeting continuing medical education (CME) requirements. The RSNA Education Center will offer 20 new refresher courses for purchase on CD at the store.

Recorded at RSNA 2010, the CDs include topics such as "Malpractice Issues in Radiology," "Obesity: A Challenge for Imaging" and "What Diagnostic Radiologists Need to Know about Radiation Oncology." Most courses, though, focus on specific imaging challenges and cover a broad range of subspecialty topic areas, from emergency neuroimaging to CT colonography, from "Mammography Review" to "Pancreatic Imaging." Individual CDs are \$55 for members and \$80 for non-members.

The RSNA Store will also feature four new CD collections: Emergency Radiology, Pulmonary, Renal and Oncologic Imaging each contain a set of refresher course CDs pertaining to that subspecialty. For example, the Emergency Radiology collection contains three CDs focusing on emergency radiology and offers a total of 4.50 *AMA PRA Category 1 Credits™*.

Collections are priced based on the number of CDs per collection but generally range from \$80-\$175 per collection.

Radiology at Baylor College of Medicine in Houston. "We're pilot testing the concept at RSNA 2011 with pediatric radiology. Hopefully, this will facilitate more opportunities for peer networking."

PLEASE NOTE: Lunchtime presentations of scientific posters and education exhibits in the pediatric subspecialty will take place in the Pediatric Campus in Room S101AB.

Associated Sciences

Associated sciences offerings at RSNA 2011 are tailored to the various disciplines that function within the radiology department. Visit the Associated Sciences booth in the Lakeside Center, Hall D.

RADIOLOGIST ASSISTANTS REFRESHER COURSES

Four refresher courses on Sunday designed to meet the educational needs of the radiologist assistant (RA) as defined by ARRT®.

ASSOCIATED SCIENCES SYMPOSIUM

This set of 10 refresher courses over 2½ days begins Monday morning with "Implications of the Changing Face of Health Care."

ASRT @ RSNA 2011

This 10-session course, held Wednesday and Thursday, offers continuing education credits for radiologic technologists. ASRT @ RSNA 2011 is offered in collaboration with the American Society of Radiologic Technologists.

Professionalism and Communications

A wide range of practical issues, from interacting with your patients and professional peers to communicating medical errors, are covered in various RSNA 2011 refresher courses. Here are a few courses:

- "Disclosure of Medical Error in Radiology," (RC216)
- "What the Referring Physician Needs to Know," (RC316)
- "CSI: Radiology Conversations between the Radiologist and Forensic Pathologist," (RC324)
- "Patient-centered Radiology: It's Good Business," (RC416)
- "Creating a Professional Culture in Your Department: What to Do, What to Avoid," (RC616)

For session information, go to RSNA2011.RSNA.org.

McCormick Place & Chicago

Getting around McCormick Place and the RSNA annual meeting is easier than ever thanks to an easy-to-follow, intuitive floorplan and technological offerings to aid you every step of the way. Along with the latest technology, bustling technical exhibit halls and a broad spectrum of RSNA services and dining options, RSNA also offers resources to help you get the most out of your trip to the Windy City.

Technology

Take advantage of these digital tools to learn more about specific sessions, get general information and find your way around RSNA 2011 and McCormick Place.

RSNA 2011 WEBSITE

The official annual meeting website is your source for the very latest, up-to-date information on the annual meeting program, including course and exhibitor listings, maps and more:

- **RSNA Meeting Program**

Go to RSNA2011.RSNA.org/search for the online *RSNA Meeting Program*, offering easy-to-search, detailed information about each of the hundreds of presentations happening at RSNA 2011. Along with searching for courses by title and name of presenter, users can search the online program by day, area and subspecialty, and sort findings from earliest to latest. The program will remain online after the meeting.

- **Online Help Center**

Whether you're wondering where to pick up your badge, how to make travel arrangements, how to access the RSNA 2011 Meeting Program or what the weather is like in Chicago, RSNA's all-new Online Help Center has all your answers to RSNA 2011-related questions. The center is divided into three categories covering a wide range of information:

Before You Go helps you plan your RSNA 2011 experience with useful information about courses, travel, housing and exploring Chicago.

While You're Here keeps you connected to all things meeting-related with answers to questions on everything from CME to navigating the meeting to finding the best dining option.



After the Meeting helps you find information about your earned CME, revisit select courses and start planning your RSNA 2012 experience.

FROM YOUR DEVICE

- **Mobile RSNA**

Smartphone users can easily browse the mobile version of the RSNA 2011 website at m.rsna.org.

- **Scan QR Codes for Quick Info**

Look for the QR codes accompanying scientific sessions and multisession and refresher courses listed in the printed *RSNA Meeting Program in Brief*. Use your smartphone to scan the code and automatically download abstract information for the session or course. Information can also be downloaded using the codes on signs outside meeting rooms at McCormick Place.

Look also for QR codes in areas of RSNA Services—get information without having to pick up and carry multiple brochures.

- **Text 36263 for Meeting and Shuttle Help**

No matter where you are at McCormick Place, help is nearby—just text "RSNA" followed by your meeting question for a prompt answer.

Wondering where to pick up a shuttle or which one to take? Text "SHUTTLE" followed by your inquiry.

Standard messaging rates apply.

- **Tweet Your RSNA 2011 Experience**

Access Twitter to follow live feeds about RSNA 2011 and contribute Tweets of your own. RSNA staff members will be Tweeting live buzz and information at @RSNA and invite you to join in the discussion. Tweet about your experience and interact with others using the hashtag #RSNA11.

- **Point Inside**

This year, RSNA will be utilizing Point Inside, a tool that can assist RSNA attendees residing in the U.S. and Canada from the

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time they leave home throughout their entire trip to Chicago and McCormick Place. Point Inside helps attendees use their mobile devices to pinpoint their locations with interactive maps of airports, shopping malls, convention centers including McCormick Place and other points of interest. Available for Apple and Android devices, Point Inside will help make travel and navigation of RSNA 2011 easier and more efficient. Visit pointinside.com to learn more.

INSIDE MCCORMICK PLACE

• Digital Navigators

Use one of the Digital Navigators located throughout McCormick Place to find your destination. Let the touchscreens guide you with visual cues to technical exhibit booths, education sessions, facility services and more. The Digital Navigator will also be integrated into RSNA Mobile at m.rsna.org.

• Internet Zones

Computers will be available at Internet Zones throughout McCormick Place for use in accessing the RSNA 2011 website for the most current meeting and exhibitor information.

• WiFi

Get connected with wireless connectivity, using 802.11 b/g WiFi protocol, available throughout McCormick Place. These wireless networks are not secure and should not be used for sending sensitive information. These connections will use

DHCP service to automatically supply IP addresses and Internet access.

• Charging Stations

Charge your laptop, cellular phone or other device at one of the Charging Stations located throughout McCormick Place.

RSNA Services

This year, RSNA widens its international reach with its all-new RSNA Global Connection, while continuing its commitment to familiar Society services. As always, RSNA staff will demonstrate resources, provide information and answer questions. Anchored by the RSNA Plaza, RSNA Services on Level 3 of the Lakeside Center offers:

RSNA Global Connection: Learn about training programs, grants and fellowships that are open to international applicants, as well as free and discounted resources for international institutions, online education opportunities, journals, international membership and more. Staff will answer questions about opportunities offered by the RSNA Committee on International Relations and Education and the RSNA Research & Education (R&E) Foundation.

Career Connect: Individuals can search positions and post résumés while companies can post job opportunities and search for potential candidates. A monitor will continuously feature job openings during the meeting. Meeting attendees

can post job openings and résumés free of charge.

Journals, News & RadiologyInfo.org:

Check out RSNA's print, online and mobile publications and news including *Radiology*, *RadioGraphics*, *Radiology* Legacy Collection and *RSNA News*. RSNA staff will help with subscriptions, demonstrate mobile and online publications, and show you *RadiologyInfo.org*, the RSNA-American College of Radiology public information website. Visitors to *RadiologyInfo.org* can enter a drawing to win an Apple iPod Touch and can also pledge to "Image Wisely."

Membership: Visit this booth for answers to questions about membership, dues payment or making the most of your benefits.

myRSNA: Interactive demonstrations of RSNA's s customizable collection of online radiology resources—including enhanced searching, file sharing, book marking and CME management—are offered throughout the week.

Research & Education (R&E) Foundation:

Learn more about the R&E grant process in this booth featuring current grant and award recipients as well as individual, private practice and corporate donors. A Donor Wall lists all individuals who have contributed to the Foundation during the giving year. Donations are accepted onsite.

The R&E Donor Lounge: Offers computers, coat racks and comfortable furniture for relaxation and refreshments for those who have received a donor ribbon as well as those who have contributed at least \$250 onsite. Contributors to the R&E Foundation wear distinctive ribbons.

RSNA Store: Along with the latest educational offerings, shop for RSNA-branded apparel and merchandise including golf accessories, Chicago souvenirs, travel mugs and water bottles. As always, the store features select refresher courses, topics collections offered at significant savings and free demos of RSNA's peer-reviewed education materials. (For an extensive list of education offerings, see page 37)

Help Center

Look for the "I" icon throughout McCormick Place to find help. Visit one of the RSNA Help Centers located in the Grand Concourse, Level 3, or Lakeside Center Ballroom, Level 3, where RSNA staff can assist with general information or any of the following:

- Attendance voucher replacement
- Badge replacement/correction
- Chicago tourism information
- Hotel information
- Interpretation services
- Lanyard pickup
- Replacement course tickets

Also in the Grand Concourse, visit the **RSNA Concierge Service**, where staff will assist with the following services:

- RSNA Tours & Events
- Chicago restaurant reservations
- Bistro RSNA Tickets

Ribbon Pickup

This year, RSNA will award 10,278 special recognition ribbons recognizing long-term members. Those who did not receive ribbons in advance of the meeting can pick them in the Grand Concourse, Level 3 at the Ribbon Desk.

Registration and Housing

WHAT YOU NEED TO KNOW

There are four ways to register for RSNA 2011:

1 Internet

Go to RSNA.org/register

Fastest way to register!

2 Fax (24 hours)

1-800-521-6017
1-847-996-5401

3 Telephone

(Mon.-Fri. 8:00 a.m. – 5:00 p.m. ct)
1-800-650-7018
1-847-996-5876

4 Mail

Experient/RSNA 2011
568 Atrium Drive
Vernon Hills, IL 60061 USA

North Americans who register for RSNA 2011 by November 4 will have their registration badge and materials mailed to them in advance of the annual meeting. Interna-

tional attendees will have their materials mailed to them if their registration was received by October 21. Registrations will be accepted after these dates but will be processed at the increased onsite rate. Attendees must obtain badges, tickets and other conference materials at McCormick Place.

Discounted hotel rooms are still available for RSNA attendees. To see the hotel list and rates, to RSNA2011.RSNA.org. Don't miss your chance to save. The deadline for housing reservations is November 4.

Exclusive Airline Discounts

RSNA has secured a special discount agreement with United Airlines not available to the general public. *United.com* offers a 5 percent discount on select United Airlines and United Express qualifying flights. Use promotional code **553SB** to check schedules, make reservations or learn about ticketing information at *United.com*. You can also call United (1-800-521-4041) or your personal travel agent and mention the United promotional code to be eligible for discounted fares.

International Travelers

Receive up to a 20 percent discount with the Star Alliance™ network. Simply call the reservation office of any participating Star Alliance member airline and quote the event code UA10S11. Booking office information can be found at www.staralliance.com/conventionsplus.

Gant Travel has been RSNA's official domestic travel agency for the past 11 years. Custom travel itineraries may be booked by phone and e-mail Monday-Friday, 7 a.m. to 6 p.m. CT. Additional taxes and booking fees will apply to airline ticket prices and after-hours emergency assistance.

Important Dates for RSNA 2011

October 21

International deadline to have full-conference materials mailed in advance

November 4

Final discounted North American advance registration, housing and course enrollment deadline to have full-conference materials mailed in advance

Nov. 27 – Dec. 2

RSNA 97th Scientific Assembly and Annual Meeting

ONSITE REGISTRATION

Those who registered after the mail deadline and/or who did not receive badges in advance should go to the Professional Registration, Already Registered, line in the Lakeside Center Ballroom. Those who did not register in advance and wish to obtain a badge should proceed to the New Registration line in the ballroom.

Hours of Operation

Saturday, November 26
12 p.m. – 6 p.m.

Sunday, Nov. 27 – Thursday, Dec. 1
7:30 a.m. – 5 p.m.

Friday, December 2
7:30 a.m. – 12 p.m.

For more information about registering for RSNA 2011, visit RSNA2011.RSNA.org, e-mail reginfo@rsna.org, or call 1-800-381-6660 x7862.

REGISTRATION FEES

BY NOV. 4 AFTER NOV. 4

BY NOV. 4	AFTER NOV. 4	
\$ 0	\$100	RSNA/AAPM Member
0	0	RSNA/AAPM Member Presenter
0	0	RSNA Member-in-Training, RSNA Student Member and Non-Member Student
0	0	Non-Member Presenter
165	265	Non-Member Resident/Trainee
165	265	Radiology Support Personnel
750	850	Non-Member Radiologist, Physicist or Physician
750	850	Hospital or Facility Executive, Commercial Research and Development Personnel, Healthcare Consultant and Industry Personnel
300	300	One-day registration to view only the Technical Exhibits

Continued on next page



Continued from previous page

Meeting Materials and Publications

Name Badge

A name badge is required to attend RSNA courses or events or to enter the exhibit halls. RSNA will use radiofrequency identification (RFID) badge scanning technology within the Technical Exhibit Halls. No personal information is stored in the RFID badge, only an ID number. Should you wish to "opt out" of this program, please visit either Help Center onsite located in the Grand Concourse or Lakeside Center.



ExpoCard™

ExpoCard™ is an electronically personalized business card attendees can use at the technical exhibition to request exhibitor information. The card is encoded with the holder's name, institution, address, e-mail address, phone/fax numbers and radiologic specialty. If you prefer that exhibitors contact you at a different address than is shown, provide alternate information directly to the exhibitor at the point of contact or at the RSNA Help Center.



Pocket Guide

The RSNA 2011 *Pocket Guide* is an important, easy-to-use reference guide to services at the annual meeting and McCormick Place. The index



provides an A-Z listing of resources available to attendees including information on room numbers for educational courses, dining options, transportation, emergency procedures and much more. The guide features must-have McCormick Place floors plans and dining guides, along with a fold-out RSNA 2011 Schedule at a Glance.

RSNA Meeting Program in Brief, Official Meeting Bag and Lanyard

One complimentary copy of the printed *RSNA 2011 Program in Brief*, official meeting bag and lanyard are available with the presentation of a voucher at the distribution counters located in the Lakeside Center, Level 2, Hall E (near coat check), or in the Grand Concourse, Level 3. Additional copies of the meeting program will be available for purchase at the RSNA Store.



A limited number of USB drives containing the complete program in PDF can also be purchased at the store.

Abstracts and learning objectives will not be published in the printed program but will instead be available online only along with the complete roster of special interest/controversies/hot topic sessions, multisession and refresher/informatics courses and vendor computer workshops.

The full *RSNA Meeting Program* online is available at RSNA2011.RSNA.org.

Daily Bulletin

This year's *Daily Bulletin*—the official newspaper of the annual meeting—is bigger and better than ever. Along with adding four pages to the Tuesday edition, the *Daily Bulletin* online (RSNA.org/Bulletin) is moving from a PDF to an HTML format, making the day's news easier to access from mobile devices and easier to share with colleagues.

The *Daily Bulletin* can be found in bins throughout McCormick Place. Each day's paper also includes a New Products & Services section to alert attendees to new radiologic technology and services demonstrated by technical exhibitors at the meeting.

Press Conferences

While the *Daily Bulletin* is your direct source for RSNA 2011 news, more than 170 members of the news media typically attend the annual meeting, to capture the breaking news coming out of the event. Print, broadcast and online media throughout the world carried more than 8,000 stories about RSNA 2010.

Press conferences will again be held onsite at the 2011 meeting to highlight some of the newsworthy research being presented. This year's press conferences will feature a lineup of current topics of great interest to the general public and will showcase radiology's contributions to detection, diagnosis and treatment. Topics include diabetes, obesity, heart disease, breast cancer screening, Alzheimer disease, attention deficit hyperactivity disorder, sports injuries, video games, physician self-referral and a unique application of CT to study a prized musical instrument.

Technical Exhibition

Technical Exhibits at RSNA 2011 will feature nearly 700 exhibitors in three halls: Hall A in the South Building, Hall B in the North Building, and Hall D in the Lakeside Center. A balanced mix of companies will be located in each hall.

Detailed maps of exhibit halls are available on the annual meeting website (RSNA2011.RSNA.org). Browse a comprehensive, up-to-the-minute list of the exhibitors and their products and services to map your visits to the exhibit floors. Smartphone

users can search the list with their mobile app.

Exhibitors were given the opportunity to add social media links and PDF documents to their listings. Search exhibitors by product category, keyword and more.

Attendees can also find exhibitors via the digital navigators at the entrance to each exhibit hall and kiosks placed throughout the Technical Exhibition.

New this year, exhibitors were invited to participate in the Virtual RSNA 2011 (see more information on Virtual RSNA 2011 on Page 30).

Technical Exhibition Guide

The *Technical Exhibition Guide* offers information for navigating the annual meeting. In addition to floor plans and contact information for the nearly 700 technical exhibitors, the Guide provides a detailed map of the three Technical Exhibit Halls. Distributed in bins adjacent to the *Daily Bulletin* and at exhibit hall entrances, the *Technical Exhibition Guide* is an essential navigational tool for RSNA attendees.

Technical Exhibition Hours

Hall A (South Building), Hall B (North Building) and Hall D (Lakeside Center)

Sunday–Wednesday
10 a.m. – 5 p.m.

Thursday
10 a.m. – 2 p.m.

Residents and Fellows

Several activities during the annual meeting have been designed with the needs and interests of residents and fellows in mind:

Residents/Fellows Program—New for RSNA 2011 is a program tailored specifically to radiology residents and fellows. To be held Wednesday afternoon, 1–6 p.m., the program will address when and where to look for a job and how to analyze offers in academia, clinics, and small, and large private practices, as well as legal issues and other aspects of contract negotiations.

Residents Lounge—Located in the Lakeside Learning Center, the lounge offers RSNA members-in-training and non-member residents a place to relax and network while enjoying complimentary refreshments. The



lounge is open Sunday – Thursday, 8 a.m.–6 p.m.

Residents Reception—Offered in conjunction with the American College of Radiology, the reception gives residents a chance to eat, mix and mingle with their peers as well as longtime RSNA members and RSNA leaders. The reception is held Monday, 4–5 p.m., in the Hyatt Regency McCormick Place.

RSNA Research & Education Foundation—Visit the Foundation area in RSNA Services to explore grants available to residents and fellows. Learn about the work of past grant recipients and the application process.

In addition, residents and fellows attending the meeting will want to pick up the new "Resident/Fellow" brochure listing other courses and sessions with content of interest to residents and fellows.

RSNA annual meeting registration is free for RSNA members-in-training. Go to RSNA.org/register.

Eye on Chicago

THE WINDY CITY WELCOMES YOU

Chicago is offering amazing deals on everything from restaurants and shopping to entertainment and attractions. Before you travel, check out www.choosechicago.com/rsna for information on tools like these to help plan your trip:

MyChicagoTrip Planner—create sight-seeing itineraries based on your schedule and interests. Itineraries include links to more information, including maps, and can

be downloaded and e-mailed to friends and family.

"Affordable Chicago"—learn more about Chicago attractions offering free admission, inexpensive travel options such as the "El" trains and how you can schedule a free tour of the city's highlights guided by a Windy City resident.

Sweet Deals Chicago—take advantage of Sweet Deals, Chicago and enjoy these exclusive offers when you use any American Express® Card at participating merchants.

Once you're in Chicago, look for:

Welcome Centers at O'Hare and Midway Airports providing information about the city and RSNA.

"We're Glad You're Here" banners posted in locations around the city, including O'Hare International Airport, McCormick Place and downtown streets including Michigan Avenue.

Welcome signs displayed throughout O'Hare and Midway airports, shuttle buses and participating hotels.

RSNA TOURS AND EVENTS

RSNA has teamed up with USA Hosts—Chicago and Bloomingdale's to offer you exclusive ways to experience Chicago during your stay for RSNA 2011. This year's lineup offers multiple city tours, shopping excursions, culinary experiences, museum exhibits, and theater performances. Six days of action-packed tours are offered.

The RSNA Tours & Events brochure is available at RSNA.2011.RSNA.org.

2011 Dining Guide

Whether you prefer to eat your meals at McCormick Place or catch a cab to a trendy downtown Chicago eatery, we've got a full menu of dining options for RSNA 2011. Visit the Help Desk near the Grand Concourse for restaurant recommendations, reservations and concierge services.

EAT, MEET & GREET AT BISTRO RSNA

With an extensive gourmet menu and ample seating, Bistro RSNA is an excellent option to sit down to a comfortable lunch and network with colleagues. Each technical exhibit hall, as well as the Lakeside Learning Center, houses Bistro RSNA. One low price of \$20 gets you an all-inclusive meal, including tax, beverages and dessert. Exhibitors and attendees can reserve a table of four or 10, or purchase individual meal tickets to be used at any location. Purchase tickets online before Nov. 5 and save another \$2.50.



Purchase tickets online during registration at RSNA.org/register.

WIDE RANGE OF DINING OPTIONS

A variety of dining options are offered during RSNA 2011 throughout all buildings of the convention center. Along with a food court and an organic café, offerings include Starbucks, On the Go Stations, cafes, delis, McDonald's, Connie's Pizza and much more.

Sample a Taste of Chicago

Outside of McCormick Place, Chicago offers endless dining options for every taste and price range. From chic and elegant to fun and funky, Chicago offers a wide selection of restaurants to suit every preference. Because Chicago nightlife doesn't conclude with dessert, we have included suggestions for upscale clubs and lounges to finish off the perfect evening.

NEW—Indicates a restaurant appearing on the RSNA list for the first time.

AMERICAN

676 Restaurant and Bar

676 N. Michigan; 1-312-944-6664

This Omni Chicago Hotel restaurant overlooking the Magnificent Mile boasts a moonscape mural on the ceiling. Menu highlights include flatbreads, a raw bar and "charcuterie," a selection of anti-pasti meats. *Expensive*

Avenues

108 E. Superior; 1-312-573-6754

This elegant, leather-accented restaurant in the Peninsula Hotel offers a view of Chicago's famous Water Tower along with European fish served French style. Adding to the drama, some fish are boned tableside. *Very Expensive*

NEW The Bedford

1612 W. Division; 1-773-235-8800

Dinner and cocktails are served in the vault of a former bank. The German influenced menu changes frequently to accommodate the availability of locally grown foods. Locals are streaming in to enjoy the bar scene and specialty drinks. *Moderate*

Blackbird

619 W. Randolph; 1-312-715-0708

This trendy hot spot serves contemporary American cuisine with seasonal emphasis. *Expensive*

NEW The Black Sheep

1132 W. Grand; 1-312-997-5100

The edgy interior with its mix of color textures sets the mood while offering guests a preview of what to expect on the "twisted" American menu.

Chef James Toland was the former vocalist/guitarist for punk's The Black Sheep Band. *Expensive*

Branch 27

1371 W. Chicago; 1-312-850-2700

Local residents frequent this casual bistro lodged in a brick and terra cotta building from the 1900s that once housed the area's public library. Menu items include steak, burgers and steak tartare as well as more adventurous global fare. *Moderate*

NEW Brunch

644 N. Orleans; 1-312-265-1411

The perfect stop for guests in the River North hotels, Brunch offers several choices including a breakfast bar, table service and carryout from one of the few breakfast options in the area. *Inexpensive*

Chicago Firehouse Restaurant

1401 S. Michigan; 1-312-786-1401

Escargot and vegetable strudel share the appetizer menu at this restaurant housed in a turn-of-the-century firehouse, complete with the original fire poles. Casual or formal dining is available and wines are mostly American. *Expensive*

Cité

Lake Point Tower, 505 N. Lake Shore; 1-312-644-4050

From the rooftop of Lake Point Tower, experience Chicago's sophisticated side. Offering French/Italian fare, Cité is one of the few Chicago establishments to require jackets in both restaurant and bar. *Very Expensive*

Custom House

500 S. Dearborn; 1-312-523-0200

The name of this Printers Row restaurant inside

Hotel Blake comes from the Custom House Levee District, former home of bordellos, gambling parlors and saloons. The focus is on steak and local farm-raised foods. *Expensive*

Deca

160 E. Pearson; 1-312-573-5160

Alongside the fountain in the lobby of the Ritz-Carlton, this art deco-themed brasserie presents reasonably priced entrees, a large selection of salads and even sliders in a sophisticated setting. *Moderate*

Epic

112 W. Hubbard; 1-312-222-4940

American food with a French flair is served in a setting worthy of this restaurant's name. Two kitchens serve around 200 in the split-level dining room while the Chicago skyline is showcased through the 24-foot windows. *Expensive*

NEW GT Fish & Oyster

531 N. Wells; 1-312-929-3501

The "oyster wave" that hit Chicago is readily apparent in this Cape Cod-inspired room. Although fish and oysters are a common concept, the presentations and added touches are innovative and noteworthy. *Expensive*

The Gage

24 S. Michigan; 1-312-372-4243

Housed in a 1930s hat factory across from Millennium Park, the Gage offers an atmosphere accentuated by brass, leather and subway tile. Comfort food is paired with a roster of 30 bottled beers and interesting small-batch whiskeys. *Moderate*

Gemini Bistro

2075 N. Lincoln; 1-773-525-2522

Set in a former pharmacy, classic American food

with European influences is featured on a menu offering small, medium, large and extra-large plates. *Moderate*

Gilt Bar

230 W. Kinzie; 1-312-464-9544

The gastropub menu begins with a selection of "on toast" starters that leads to small plates such as roasted bone marrow, pork meatballs, white grits with cheddar and kennebec fries. Head to the basement to sample the cash-only Curio cocktail lounge. *Moderate*

Girl & The Goat

809 W. Randolph St.; 1-312-492-6262

Make a reservation today (they fill up months out) for this unique Chicago favorite, featuring celebrity chef Stephanie Izard. She serves not just American food, but what some critics have termed "Chicago cuisine." *Moderate*

graham elliot

217 W. Huron; 1-312-624-9975

Graham Elliot Bowles left his throne at the nearby Peninsula Hotel's Avenues restaurant to open this warehouse space in River North. He makes haute cuisine accessible by providing paper menus and removing tablecloths and tuxedoed waiters. *Expensive*

Hackney's Printers Row

733 S. Dearborn; 1-312-461-1116

At this pub located in one of the oldest buildings in Printers Row—a neighborhood as famous and historic as the Hackneyburger—try the popular deep-fried onion loaf with one of the many imported tap beers. *Inexpensive*

Hearty

3819 N. Broadway; 1-773-868-9866

The Food Network's Dan Smith and Steve McDonagh (aka the Hearty Boys) present comfort food with a contemporary twist along with classic retro cocktails. Sunday brunch is available. *Moderate*

NEW Henri

18 S. Michigan; 1-312-578-0763

Named for architect Louis Henri Sullivan who designed the façade of 18 S Michigan, Henri's French-influenced American menu is wowing diners and critics alike. The restaurant décor has been described as vintage salon with velvet, mohair and silk accents. *Very Expensive*

Hub 51

51 W. Hubbard; 1-312-828-0051

The menu of this eclectic River North spot offers fare from Asia to Mexico. The high ceilings, exposed ductwork and concrete columns create a hip, urban feel for this casual restaurant. Kitchen is open until 2 a.m. *Inexpensive*

NEW Lillie's Q

1856 W. North; 1-773-772-5500

After Grandma Lillie's recipe won the Memphis in May BBQ pork shoulder competition for five years straight, grandson, Chicago chef Charlie McKenna, opened this trendy Wicker Park BBQ joint. Prepare to sip moonshine out of mason jars while waiting for a table. *Moderate*

MK, The Restaurant

868 N. Franklin; 1-312-482-9179

Creative contemporary dishes superbly offset by stylish ambiance. Exposed bricks and beams reflect the building's past as a paint factory. *Expensive*

Naha

500 N. Clark; 1-312-321-6242

This bright, minimalist restaurant is becoming a hit with its Mediterranean-influenced American offerings. *Expensive*

North Pond

2610 N. Cannon; 1-773-477-5845

Seasonal Midwestern and French dishes served in well-executed arts-and-crafts-style. A former skaters' warming station, this popular restaurant is located in the heart of Lincoln Park on a pristine lagoon with a city skyline view. *Expensive*

One Sixtyblue

1400 W. Randolph; 1-312-850-0303

Sophisticated contemporary cuisine served to a sophisticated clientele in a setting to match. *Expensive*

Park Grill

11 N. Michigan; 1-312-521-7275

Chicago's answer to New York's Tavern on the Green, Park Grill features floor-to-ceiling windows for a great view of Millennium Park. The unpretentious menu includes a double-cut pork chop with port sauce. *Expensive*

NEW Perennial Virant

1800 N. Lincoln; 1-312-981-7070

As a farm-to-table restaurant, Perennial couldn't be better positioned than its location across Clark Street from Lincoln Park's Green City Market. Watch for Chef Paul Virant's hallmark pickles. *Moderate*

Petterino's

150 N. Dearborn; 1-312-422-0150

Located in the southeast corner of the new Goodman Theatre building, Petterino's specializes in quality steaks, pastas and salads. The room and the food are substantial at this unmistakably 1940s Loop-style restaurant. *Expensive*

Prairie Fire

215 N. Clinton; 1-312-382-8300

This downtown location features many favorites from sister restaurant Prairie Grass Café in the Chicago suburbs. Local farms and seasonal ingredients are featured. *Moderate*

Province

161 N. Jefferson; 1-312-669-9900

With a menu organized by portion size, this newcomer serves up contemporary American farm cuisine accented by South American and Spanish flavors. *Moderate*

The Publican

837 W. Fulton Market; 1-312-733-9555

It's no surprise that this woody beer hall features an extensive selection of global beers, but the standout here is the menu that centers on seafood and pork and house-made charcuterie. *Inexpensive*

Rhapsody

65 E. Adams; 1-312-786-9911

Conveniently tucked inside the Symphony Center with an outside entrance on Adams Street, Rhapsody boasts a conservatory-style dining room filled with food, wine and art lovers. *Expensive*

Ria

11 E. Walton; 1-312-880-4400

The eclectic menu at this restaurant in the Elysian Hotel uses few words to describe its few items, but reviewers insist that quality trumps quantity. *Expensive*



NEW Rustic House

1967 N. Halsted; 1-312-929-3227

This pretty De Paul neighborhood restaurant is truly "rustic." The menu's main draw is the imported French rotisserie, used to prepare selections that change daily, such as Duck à l'Orange and leg of lamb. *Expensive*

NEW Ruxbin Kitchen

851 N. Ashland; 1-312-624-8509

An American bistro with "steam punk" décor using repurposed urban salvaged items, Ruxbin's menu offers memorable dishes that exhibit chef Edward Kim's training in French technique and the influences of his Korean-American palate. *Moderate*

Sable

505 N. State; 1-312-755-9704

Many items at this contemporary spot in the Hotel Palomar come in both large and small portions to allow for sharing. Coined a "gastro-lounge," the menu features a large number of vegetarian selections and focuses on pairing with an extensive cocktail selection. *Moderate*

Sepia

123 N. Jefferson; 1-312-441-1920

This restaurant in a former print shop is visually spectacular and critically acclaimed for its contemporary menu driven by seasonally available foods. Renovations include a floor-to-ceiling wine rack and Art Nouveau floor. *Moderate*

Sixteen

401 N. Wabash; 1-312-588-8030

The restaurant in Donald Trump's new Chicago building features a mammoth Swarovski crystal chandelier and two-story high windows showcasing sweeping views of the Wrigley Building, Tribune Tower and Lake Michigan. The menu promises bold flavors and top-grade ingredients. *Very Expensive*

Table Fifty-Two

52 W. Elm; 1-312-573-4000

Art Smith, chef to Oprah and best-selling cookbook author, opened this small, 35-seat restaurant. Heavier weekend menu includes fried chicken, waffles and biscuits and gravy served with chicken gumbo. *Expensive*



Viand American Bistro

155 E. Ontario; 1-312-255-8505
Contemporary American with a focus on comfort foods is a hit with shoppers as well as the after-work crowd. Order the clever “junk food cart,” a miniature shopping cart filled with sweet treats that begs a double take. *Moderate*

Zealous

419 W. Superior; 1-312-475-9112
Zealous boasts a two-story glassed-in wine tower that can hold 6,000 wine bottles and a kitchen that brilliantly combines different foods, textures and flavors. The multiple-course degustation menus are highly recommended. *Expensive*

ASIAN

ajasteak

660 N. State; 1-312-202-6050
Kobe and Wagyu beef, wasabi-buttered steaks, an extensive sake list and a sushi bar set this fashionable Japanese steakhouse apart. Located in the Dana Hotel and Spa, ajasteak is enhanced by a two-story glass wall and two fireplaces. *Expensive*

Aria

200 N. Columbus; 1-312-444-9494
The Fairmont Hotel has recreated Aria as a Pan Asian restaurant, with an emphasis on seafood. A glass-enclosed private dining room adds to Aria's flair. *Very Expensive*

Arun's Thai Restaurant

4156 N. Kedzie; 1-773-539-1909
Personalized 12-course Thai dinner designed by the chef for each table, with no menu. *Very Expensive*

Ben Pao

52 W. Illinois; 1-312-222-1888
Artistically lit black slate and red accents are juxtaposed with cascading water and still pools in this elegant Asian restaurant. Vegetarians will delight in the menu that also features seafood, duck, beef and chicken. *Moderate*

China Grill

230 N. Michigan; 1-312-334-6700
A haven for trendy city-hoppers, the new Hard Rock Hotel gave new life to the neglected Carbide and Carbon Building. Stop by for a drink at Hard Rock's Base bar or dine at the China Grill, an Asian-influenced restaurant. *Expensive*

Japonais

600 W. Chicago; 1-312-822-9600
Combining industrial and chic decor in a converted industrial building, Japonais offers traditional Japanese sushi and smoked duck topped off with the Tokyo Tower—a huge helping of ice cream, sorbets and cookies. *Expensive*

Le Colonial

937 N. Rush; 1-312-255-0088
In the heart of Rush Street, this French-Vietnamese

masterpiece vividly recaptures French colonial Southeast Asia. Sugar cane-wrapped shrimp, sea bass and filet mignon enhance the sophisticated menu. *Expensive*

NEW Vietnamese New-Saigon Sisters

567 W. Lake; 1-312-496-0090
With roots in Vietnamese cuisine, the Saigon Sisters' kitchen cranks out imaginative, tasty dishes. The small, glassy restaurant has a distinctly urban feel, situated under the El tracks in the West Loop. *Inexpensive*

Sunda

110 W. Illinois; 1-312-644-0500
Communal tables, a sushi bar and a hipster scene set the stage for a sleek new Asian experience. The “Devil's Basket” combines red chilis, toasted garlic and soft-shell crabs served up in a metal bucket. *Moderate*

Shanghai Terrace

108 E. Superior; 1-312-573-6744
The Peninsula Hotel's Asian restaurant sparkles with silver and red lacquer. The fried rice tastes just like the Hong Kong version, with more ambitious offerings such as wok-fried lobster also on the menu. *Expensive*

BELGIAN

NEW Leopold

1450 W. Chicago; 1-312-348-1028
The long, narrow room has many things to offer in the way of food and drink. The carefully selected Belgian ales are a terrific accompaniment to the gastropub's meat-heavy menu of small plates featuring sausages, mussels, steak tartare and frites. *Moderate*

CAJUN/CREOLE

Heaven on Seven on Rush

600 N. Michigan; 1-312-280-7774
Spicy Cajun and Creole dishes served steps from Michigan Avenue, up a steep escalator. “Feed me” fixed price menus, dependent on the chef's whims, are unforgettable. Sunday features a New Orleans-style brunch. *Moderate*

CUBAN

Habana Libre

1440 W. Chicago; 1-312-243-3303
It may worth practicing some Spanish for this Cuban food. Try the rellenas—ground beef encased in fried bread—as well as mashed potatoes with mango sauce and crusty empanadas with guava paste and cheese. *Inexpensive*

DUTCH

NEW Vincent

1475 W. Balmoral; 1-773-334-7168
With dark wood tables and an extensive array of ales to choose from, meals at Vincent are composed of Dutch staples such as pate, mussels and pickled herring. This Andersonville hot spot also offers an extensive gin menu and a decent listing of Belgium-style ales. *Moderate*

FRENCH

Balsan

11 E. Walton; 1-312-646-1400
The décor of Balsan, located in the European-styled Elysian Hotel, was inspired by fashion designer Coco Chanel. The trendy brasserie offers selections from the raw bar as well as house-made charcuterie and several organ meat dishes. *Expensive*

NEW Bistronomic

840 N. Wabash; 1-312-944-8400
Bistro fare with a touch of extra oomph is served alongside an excellent wine list in the heart of the Gold Coast. Burgundy walls with French photographs and mirrors set the tone for an intimate evening. *Moderate*

Chez Joel

1119 W. Taylor; 1-312-226-6479
A pretty French bistro blossoming in the middle of Little Italy. *Moderate*

Everest

440 S. LaSalle; 1-312-663-8920
Enjoy Alsatian emphasis in French cuisine served on the 40th floor with a dramatic city view. *Very Expensive*

Les Nomades

222 E. Ontario; 1-312-649-9010
Flawless French food served in a downtown mansion with a picturesque entrance is so entrancing, it is occasionally used as the setting for movie scenes. *Very Expensive*

NEW Maude's Liquor Bar

840 W. Randolph; 1-312-243-9712
Catch the ultra, urban scene at Maude's. The downstairs walks the line between restaurant and bar, where basic drinks and food are served. The surprisingly dark upstairs bar offers serious specialty cocktails and doles out whiskey bottles on the honor system. *Moderate*

Mon Ami Gabi

2300 N. Lincoln Park West; 1-773-348-8886
Mon Ami's French bistro serves steak seven ways piled high with Mon Ami's delicious frites. A clever and convenient rolling cart offers wines by the glass. *Moderate*

NEW Paris Club

59 W. Hubbard; 1-312-595-0800
Paris Club took the French out of French dining. The mostly English menu is geared for a younger generation, although many traditional, much loved French dishes are served alongside small plates at this beautiful River North jewel. *Moderate*

Tru

201 N. State; 1-312-202-0001
Considered one of the top restaurants in the city, Tru juxtaposes flashy, contemporary dishes against a stunning white dining room. This exciting, trendy experience is one block off Michigan Avenue. *Very Expensive*

FUSION

Roy's

720 N. State; 1-312-787-7599
Combining French and Asian techniques, Hawaiian fusion cuisine includes hibachi-grilled salmon, blackened tuna and barbecued baby back ribs. Watch the exhibition kitchen from the bar or dining room. *Expensive*

Vermilion

10 W. Hubbard; 1-312-527-4060
Veering far from the traditional path, Vermilion presents a Latin-Indian fusion menu that works surprisingly well. The tapas-style menu includes roasted baby eggplants, fried plantain dumplings and various curries. *Expensive*

GREEK

Taxim

1558 N. Milwaukee; 1-773-252-1558
Dine on authentic regional Greek cuisine under Byzantine brass lanterns in Wicker Park. The dishes direct from Istanbul and Cyprus will expose many diners to a new take on what they know as Greek food. An all-Greek wine line completes the experience. *Moderate*

INDIAN

India House

59 W. Grand; 1-312-645-9500
The 150-item menu offers a vast array of India's offerings, from standard fare to street fair delicacies. A glass-enclosed kitchen encourages proud chefs to perform. Specialty drinks allow the adventuresome to experiment. *Moderate*

Veerasway

844 W. Randolph; 1-312-491-0844
Indian small plates are the focus of this Warehouse District restaurant. Expect traditional Indian recipes blended with American ingredients in a modern room. *Inexpensive*

ITALIAN

312 Chicago

136 N. LaSalle; 1-312-696-2420
Situated in the heart of the Loop Theater District, the inviting and sophisticated 312 Chicago offers an Italian-influenced American menu with specialties such as artichoke and provolone tortellini and old standards. *Expensive*

437 Rush

437 N. Rush; 1-312-222-0101
This Italian steakhouse, a block off of Michigan Avenue, offers steak, lobster and regional fare in a classic setting. *Expensive*

Café Bionda

1924 S. State; 1-312-326-9800
Thick noodle Italian with traditional salumi, or cold cuts, is popular here. One half of this South Loop spot is an elegant room with the warm wood tones and original art while the other half offers a more casual sports bar. *Moderate*

Caliterra Bar & Grille

633 N. St. Clair; 1-312-274-4444
California meets Italy in this restaurant tucked away in the Wyndham Chicago Hotel. Views include the city and the open kitchen, where activity revolves around woks, brick ovens and grills. *Expensive*

Cibo Matto

201 N. State; 1-312-239-9500
A 30-foot ceiling fresco and a 2,000-bottle wine tower set the grand stage for the newest restaurant in the Wit Hotel featuring upscale Italian cuisine. *Expensive*

Coco Pazzo

300 W. Hubbard; 1-312-836-0900
Tuscan cuisine served in a fabric-draped studio, complete with a beautiful bar. *Expensive*

NEW The Florentine

JW Marriott, 151 W. Adams; 1-312-660-8866
Northern Italian cuisine is dished out in a stunning room with fantastic paintings and comfortable banquettes. The JW Marriott is located in the former Continental & Commercial National Bank building designed by famous Chicago architect Daniel H. Burnham. *Very Expensive*

Gioco

1312 S. Wabash; 1-312-939-3870
A big-portioned, contemporary Italian feast in a Prohibition-era speakeasy. In line with a trattoria, the menu offers tortellini, beef and octopus carpaccios, pizza, veal scaloppini, rabbit, mussels and seafood. *Moderate*

Osteria Via Stato

620 N. State; 1-312-642-8450
Get the feeling of dining in Italy with waiters swooping in serving course after course. Select a main course from a chalkboard menu and let the kitchen decide the rest. Seconds are available on everything but entrées. *Expensive*

Piccolo Sogno

464 N. Halsted; 1-312-421-0077
With Murano glass chandeliers, Venetian-plastered walls, an Italian marble bar and a terrazzo floor, executive chef Tony Priolo essentially transforms this Chicago eatery into his Naples home. *Moderate*

Prosecco

710 N. Wells; 1-312-951-9500
The menu at this River North restaurant provides the opportunity to sample cuisine from all 20 regions of Italy, including homemade pastas and risottos. Prosecco also offers the city's largest selection of the restaurant's namesake beverage. *Moderate*

Quartino

626 N. State; 1-312-698-5000
The Italian small-plate experience is the focus of Quartino, an old world-style restaurant. In addition to its featured cured meats and cheeses, Quartino also offers a well-known wine bar. *Inexpensive*

Riccardo Trattoria

2119 N. Clark; 1-773-549-0038
Since former Bice chef Riccardo Michi opened this small Tuscan restaurant in Lincoln Park, many have found their way to Riccardo's dining room to enjoy freshly made pasta and hearty meat dishes including tripe Florentine. *Moderate*

Rosebud Trattoria

445 N. Dearborn; 1-312-832-7700
This convenient Rosebud restaurant offers a menu of classic vats of homemade pasta and wood-fired pizzas. *Moderate*

Spiaggia

980 N. Michigan; 1-312-280-2750
Sophisticated Italian creations are appropriate for this breathtaking room filled with those desiring to see and be seen. This extremely popular destination boasts white tablecloths, large windows and first-class service. *Very Expensive*

Terzo Piano

159 E. Monroe; 1-312-443-8650
This glass-enclosed space on the top floor of the new Modern Wing of Art Institute of Chicago provides sweeping panoramic views of the Loop, Millennium Park and Grant Park. Traditional Italian fare presented with a contemporary flair. Lunch daily but dinner served only Thursdays. *Expensive*

Trattoria No. 10

10 N. Dearborn; 1-312-984-1718
Subterranean fixture in the Loop has it all. Pin lights add drama to a quiet dining room divided into intimate spaces by pillars and Italian-style archways. Chicagoans visit for amazing pastas, risottos and ravioli dishes. *Expensive*

LATIN AMERICAN

Carnivale

702 W. Fulton Market; 1-312-850-5005
The attention-grabbing décor, music and menu all contribute to a festive ambiance. Enjoy ceviches along with heartier fish and meat creations from Brazil, Colombia, Cuba and Puerto Rico. *Expensive*

Rumba

351 W. Hubbard; 1-312-222-1226
Upscale restaurant reminiscent of the Tropicana nightclub offers tastes of Cuba, Puerto Rico and South America. Thursday through Sunday, guests can tango to live music and see professional dance performances. *Expensive*

MEDITERRANEAN

The Purple Pig

500 N. Michigan Avenue; 312-464-1744
Anitpasti, charcuterie, “smears” and fried specialties share this pork-focused menu that includes Italian, Spanish and even New Orleans influences. The affordable wine list rounds out the casual experience. *Inexpensive*

Wave

644 N. Lake Shore; 1-312-255-4460
This Mediterranean restaurant specializing in seafood is appropriately situated on Lake Shore Drive. Sleek lines and vibrant colors contribute to Wave's ultimate chicness. *Expensive*

MEXICAN

Chilam Balam

3023 N. Broadway; 1-773-296-6901
Head to this small, subterranean spot in Lakeview for upscale Mexican cuisine offered in small plates for sharing. Cash only. BYOB. *Moderate*

DeCero

814 W. Randolph; 1-312-455-8114
This lively restaurant on Randolph Street's restaurant row offers regional Mexican specialties in a stylized roadhouse décor. Creative tacos featuring braised duck and sautéed salmon are excellent for sharing. *Moderate*

DeColores

1626 S. Halsted; 1-312-226-9886
This two-story restaurant in Pilsen doubles as a gallery for local artists. The menu features family recipes including the signature chicken poblano served with a six-hour mole sauce. Creative margarita and michelada mixes are available for BYOB. *Inexpensive*

Tepalco

2558 N. Halsted; 1-773-472-7419

Tepalco, named for the chef-owner's Mexican hometown, serves regional dishes with contemporary Mexican style. Chef Bahena is famous for his mole sauces. Five-course tasting menu and wine flights available. *Inexpensive*

Topolobampo

445 N. Clark; 1-312-661-1434

Complex Mexican flavors from chef Rick Bayless abound in the upscale restaurant adjacent to its sister, Frontera Grill. *Expensive*

Xoco

449 N. Clark; 1-312-334-3688

Those patient enough to wait in line and take countertop seating will be rewarded by chef Rick Bayless's Mexican street-food outpost featuring wood-baked tortas and caldos with ingredients from local farms. Save room for warm homemade churros for dessert and a hot chocolate that wins rave reviews in the Windy City. *Inexpensive*

Zapatista

1307 S. Wabash; 1-312-435-1307

Named for Mexican revolutionary Emiliano Zapata, this upscale venue offers a broad menu including grilled lobster tails and Negro Modelo marinated filet mignon. Pictures of revolutionaries accent the walls. *Moderate*

Zocalo Restaurant and Tequila Bar

358 W. Ontario; 1-312-302-9977

Mexican cuisine has become even more festive at this popular River North restaurant where marinated panela cheese with a shot of mescal is flambéed tableside. *Moderate*

MOLECULAR GASTRONOMY

Alinea

1723 N. Halsted; 1-312-867-0110

Unique food preparation, pairings and presentation highlight these 12-plus course meals served over several hours. Wine tasting progressions matched to each menu are recommended, as are reservations made well in advance.

Very Expensive

NEW iNG Restaurant

951 W. Fulton Market; 1-855-834-6464

Whether you pay by the hour for the chef's time (an actual option) or by the dish, iNG promises to be a memorable night out. Molecular gastronomy specialist, Homaro Cantu, famous for iNG's neighbor, Moto, is at it again with nano-batch beers and tableside preparations with liquid nitrogen.

Very Expensive

Moto

945 W. Fulton Market; 1-312-491-0058

Tasting menus of seven or 10 very small courses are offered. Moto leans toward raw food, which chef Homaro Cantu defines as never seeing temperatures above 108 degrees. Inventive twists accompany each course. *Very Expensive*

NEW Next

953 W. Fulton Market; 1-312-226-0858

Chicago celebrity chef Grant Achatz is selling tickets instead of reservations to his new restaurant, Next. Every quarter the restaurant changes the menu theme, which is usually a place and time. Check the Next page on Facebook for sale of same day tickets. *Very Expensive*

RUSSIAN

Russian Tea Time

77 E. Adams; 1-312-360-0000

Not just a tea house, Russian Tea Time is a full-service restaurant run by natives of the former Soviet Republic of Uzbekistan. *Expensive*

SEAFOOD

BOKA

1729 N. Halsted; 1-312-337-6070

The theme under the unique fabric-stretched ceiling is seafood. Start with seared Maine scallops with cauliflower puree, tartar of Atlantic salmon or the raw bar and add an entrée such as steak or pan-seared grouper. *Expensive*

C-House

166 E. Superior; 1-312-523-0923

Marcus Samuelsson's Chicago endeavor emphasizes seafood and raw bar selections but still offers trusty steak and chop entrees. The modern room's exposed wine cellar separates C-House from the lobby of the Affinia Chicago Hotel.

Expensive

Cape Cod Room

140 E. Walton; 1-312-932-4625

The Cape Cod Room at the venerable Drake Hotel serves fresh seafood in a comfortable, cozy setting reminiscent of a seaside saloon. *Expensive*

Devon Seafood Grill

39 E. Chicago; 1-312-440-8660

Michigan Avenue shoppers get a break from seemingly mandatory department store restaurant lunches and North Michigan Avenue hotel guests get a break from hotel bars. A wraparound bar is a local favorite. *Moderate*

Fulton's on the River

315 N. LaSalle; 1-312-822-0100

Although Fulton's can please everyone—seafood, steaks and sushi are all on the menu—this beautiful riverside restaurant has possibly the best oysters in the country. Carefully matched wines round out the offerings. *Moderate*

L20

2300 N. Lincoln Park West; 1-773-868-0002

Chef Laurent Gras's seafood-focused restaurant adds imagination and sparkle to 21st century fine dining. Choose between a four-course prix-fixe menu and a 12-course tasting menu. White leather chairs, an onyx table and ebony columns create a serene, minimalist atmosphere. *Very Expensive*

Shaw's Crab House

21 E. Hubbard; 1-312-527-2722

The Atlantic, Gulf and Pacific seafood suppliers that stock this restaurant daily are pictured on the walls of the Blue Crab Lounge, a New Orleans-themed oyster bar with blues and torch music on the sound system. *Expensive*

SPANISH

Café Ba-Ba-Reeba!

2024 N. Halsted; 1-773-935-5000

At this festive hotspot, rhythmic Spanish music greets guests before the hosts can. Café Ba-Ba-Reeba! specializes in paella, sangria and tapas. *Inexpensive*

Mercat a La Planxa

638 S. Michigan; 1-312-765-0524

This Catalan restaurant in the restored Blackstone Hotel offers grilled-to-order tapas. The giant windows in the stunning Spanish modern room offer beautiful views of Grant Park. *Moderate*

STEAK

Capital Grille

633 N. St. Clair; 1-312-337-9400

In the dark wood and leather interior, complete with oil paintings, waiters in white aprons offer robust wines, oversize steaks and side orders as large as entrées. This restaurant is one for a hearty appetite. *Expensive*

Chicago Chop House

60 W. Ontario; 1-312-787-7100

This restaurant features 1,400 photos of musicians, gangsters and every Chicago mayor. *Expensive*

NEW Chicago Cut Steakhouse

300 N. LaSalle; 1-312-329-1800

In addition to great steaks, diners are treated to sweeping views of the Chicago River and the majestic buildings along Wacker Drive which fronts Chicago's Loop. Keep an eye out for politicians including Chicago Mayor Rahm Emanuel. *Very Expensive*

David Burke's Primehouse

616 N. Rush; 1-312-660-6000

At this ultramodern steakhouse, dry-aged steaks are displayed in a special temperature and humidity-controlled salt cave and appetizers such as angry lobster share the menu with unreasonably large steaks. *Expensive*

Gene & Georgetti

500 N. Franklin; 1-312-527-3718

Thoroughly lacking in pretension, this classic steakhouse offers unadorned steaks served by waiters who appear to have worked there since its inception. This is authentic Chicago—expect to hear local accents and perhaps catch sight of a celebrity or a Chicago alderman. *Expensive*

Grillroom Chophouse and Wine Bar

33 W. Monroe; 1-312-960-0000

The specialty at this Loop/Theater District steakhouse is wet-aged certified angus beef. Location and flexibility of the service make this restaurant a good choice for a pre-theater dinner or drink. *Expensive*

The Grill on the Alley

909 N. Michigan; 1-312-255-9009

The Westin Hotel's rendition of the famous Beverly Hills Grill on the Alley serves large steaks and seafood in a clubby leather-bound atmosphere. The lounge features a nightly pianist. *Expensive*

NEW Mastro's Steakhouse

520 N. Dearborn; 1-312-521-5100

Not only have the lobster mashed potatoes and the 28-day, wet-aging tradition of the Mastro's chain been carried through to the Chicago restaurant, but see-and-be-seen glamour is alive and present. *Very Expensive*

N9NE Steakhouse

440 W. Randolph; 1-312-575-9900

A place to watch for celebrities and professional athletes, N9NE also boasts a remarkable interior. The champagne and caviar bar serves beluga by the ounce, while the upstairs Ghost bar pours a must-try specialty martini. *Expensive*

The Palm

323 E. Wacker; 1-312-616-1000

Mammoth prime steaks, lobsters and drinks grace the tables at this popular steakhouse. The Palm's personality comes walls covered with portraits of patrons—the famous as well as the unknown—and cartoons. *Expensive*

Rosebud Steakhouse

192 E. Walton; 1-312-397-1000

Located behind the Drake hotel, Rosebud has won the hearts of Chicago steak enthusiasts. Excellent Italian preparations of chicken, lamb and seafood are also available. *Expensive*

Zed 451

739 N. Clark; 1-312-266-6691

Here waiters also serve as chefs and prowl the room with skewers of assorted meats. Guests are invited to visit the harvest table for salads, side dishes, charcuterie and gourmet cheeses. The

floor plan's passageways, stairwells and balconies add drama. *Moderate*

SUSHI/JAPANESE

Mizu Yakitori and Sushi Lounge

315-317 W. North; 1-312-951-8880

Yakitori is similar to the Thai concept of satay (skewered meats), only smaller. Mizu offers small skewers of grilled meats, seafood or vegetables and multiple dipping options including soy sauces, hot mustard and spices. *Moderate*

Oysy

50 E. Grand; 1-312-670-6750

888 S. Michigan; 1-312-922-1127

Chicago fish lovers agree that Oysy means delicious. Two city locations boast creative menus offering more than 50 maki, nigiri and sushi choices as well as tempura. Hot and cold tapas-sized dishes allow experimentation. *Inexpensive*

NEW Roka Akor Sushi & Steak

111 W. Illinois; 1-312-477-7652

A perfect combination of sushi cut from fish flown in fresh daily offered alongside decent-sized steaks and meats grilled on the robata grill makes this a good Chicago choice. Specialty Japanese cocktails round out this River North sensation. *Moderate*

Tamarind

614 S. Wabash; 1-312-379-0970

Chinese, Japanese, Thai and Vietnamese dishes grace the menu at this ambitious South Loop restaurant, where sushi, rolls and sashimi selections—as well as personalized stir-fry—are local favorites. *Inexpensive*

NEW Union Sushi + Barbeque Bar

230 W. Erie; 1-312-662-4888

Expect dramatic action in the main room at Union as chefs at the sushi bar and robata grill frenetically produce their specialty dishes. The room is chic, with mixed metals decorating the multiple levels. *Inexpensive*

Clubs and Lounges

NEW Aviary

955 W. Fulton Market; 1-312-226-0868

The team responsible for "molecular cuisine" superstars Next and Alina, is now focusing on cocktails. The cocktail experience is so specialized that different cocktail menus are offered to seated patrons who have more space to interact with their concoctions than patrons standing near the "cocktail kitchen."

NEW Bangers & Lace

1670 W. Division; 1-773-252-6499

This gastropub was created for the beer-obsessed. Enjoy the more than 30 craft beers on tap as well as bottled beers from America, Britain and Europe.

Carmine's

1043 N. Rush; 1-312-988-7676

The bar in this popular restaurant is the perfect gathering place after dinner in the Rush Street area.

VEGETARIAN

Green Zebra

1460 W. Chicago; 1-312-243-7100

Vegetarians rarely have an extensive choice in fine dining but Green Zebra has turned the tables, offering upscale vegetarian dishes in a fine dining setting. Carnivores will often find chicken and fish on the menu. *Expensive*

Mana Food Bar

1742 W. Division; 1-773-342-1742

Even die-hard carnivores are pleased with this global vegetarian menu that offers your choice of small or large plates in a cozy storefront setting. Innovative sake cocktails round out the meal. *Inexpensive*

DESSERT

Chocolate Bar at the Peninsula Hotel

108 E. Superior; 1-312-337-2888

Heaven on Earth for some and certainly not an experience to be duplicated, the Peninsula Hotel offers a magnificent \$33 all-you-can-eat chocolate buffet on Friday and Saturday evenings. *Moderate*

WINE BAR

Pops for Champagne

601 N. State; 1-312-266-7677

This nationally renowned lounge located at River North's historic Tree Studios offers a raw bar and underground jazz club. Choose from 120 champagnes by the bottle and seven by the glass. *Expensive*

DOWNTOWN CHAINS

California Pizza Kitchen

52 E. Ohio St; 1-312-787-6075

The Cheesecake Factory

875 N. Michigan; 1-312-337-1101

Ed Debevic's

640 N. Wells; 1-312-664-1707

Hard Rock Café

63 W. Ontario; 1-312-943-2252

Portillo's Hot Dogs

100 W. Ontario; 1-312-587-8910

Rainforest Café

605 N. Clark; 1-312-787-1501

"Rock n Roll" McDonalds

600 N. Clark; 1-312-867-0455

Weber Grill Restaurant

539 N. State; 1-312-467-9696

BLUES CLUBS

Buddy Guy's Legends

700 S. Wabash; 1-312-427-1190

It's the real deal. In addition to experiencing real Chicago blues you may also see the legendary Buddy Guy visiting with patrons and talking with performers.

Blue Chicago

536 and 736 N. Clark; 1-312-661-0100

This is the only two-for-the-price-of-one blues in Chicago. Both clubs feature authentic Chicago blues bands fronted by well-respected female singers.

House of Blues

329 N. Dearborn; 1-312-923-2000

Check the schedule to see which nationally known bands are playing in the theater. The entertainment complex also offers several restaurants and bars.

Kingston Mines

2548 N. Halsted; 1-773-477-4646

This popular North Side venue offers two stages so patrons switch rooms instead of taking a mandatory break with the band.



RSNA 2011 Honorees

RSNA will pay tribute to a number of distinguished physicians during the 97th Scientific Assembly and Annual Meeting. All presentations will take place in the Arie Crown Theater.

Honorary Members

Presented Monday, Nov. 28 • 1:30 p.m.

Honorary Membership in RSNA is presented for significant achievements in the field of radiology. At RSNA 2011, Honorary Membership will be given to **Adrian K. Dixon, M.D.**, of Cambridge, United Kingdom; **Ricardo D. Garcia-Mónaco, M.D., Ph.D.**, of Buenos Aires, Argentina; and **Yves M. Menu, M.D.**, of Paris.

When **Adrian K. Dixon, M.D.**, was elected Master of Peterhouse in the University of Cambridge in June 2008, he became only the second medical master in the college's over 700-year history, and the first since the year 1500. The momentous achievement capped a career of significant contributions to radiologic practice, research and education.

Dr. Dixon is also a consultant radiologist at Addenbrooke's Hospital, emeritus professor

of radiology at the University of Cambridge, and editor of *European Radiology*.

Dr. Dixon has published extensively on the efficacy of abdominal and musculoskeletal CT and MR, led cost benefit studies of body CT and MR, and developed widely used practice guidelines. He came to Cambridge as a lecturer in the Department of Radiology in 1979 and in 1986 was elected a fellow of Peterhouse. He was the college's director of medical studies until 1994. From 1996 to 2002, he served as clinical director of radiology at Addenbrooke's Hospital, where he made major changes in the radiology department, including upgrades to CT and MR capacity.

As editor of *European Radiology*, Dr. Dixon has overseen a time of growth for the journal. The number of manuscripts received and published has increased and the journal has a healthy impact factor, placing *European Radiology* among the top general radiologic journals in the world.

A fellow of the U.K. Royal Colleges of Radiologists (FRCR), Physicians (FRCP) and

Surgeons (FRCS), Dr. Dixon was elected in 1998 as a founding Fellow of the U.K. Academy of Medical Sciences, one of very few radiologists to be so recognized.

Within his native Argentina, **Ricardo D. Garcia-Mónaco, M.D., Ph.D.**, has become a face of radiology, offering patients new services while also increasing collaboration with physicians in other specialties and using education to end disparities in radiologic services offered in Latin America. At the same time, he has become a powerful voice in the international radiology community.

Dr. Garcia-Mónaco is chair of the Department of Radiology and head of Interventional Radiology and Endovascular Therapy at the Hospital Italiano at the University of Buenos Aires. In the last decade he has overseen a nearly 200 percent increase in patients as his department has raised its status from a local service to a regional center receiving referrals from throughout Argentina and abroad.

As president of the Interamerican Congress of Radiology (CIR), Dr. Garcia-Mónaco helped the organization implement a biannual virtual congress and education portal. He also chairs the International Society of Radiology Education Committee and serves on the international committee of the European Congress of Radiology and the international advisory boards of RSNA and the World Federation of Interventional and Therapeutic Neuroradiology.

The global perspective came early in Dr. Garcia-Mónaco's career. After receiving his medical degree from the University of Buenos Aires, he completed his residency in radiology at the university's Hospital Italiano and fellowships in angiography and interventional radiology at Bicêtre Hospital at the University of Paris, interventional neuroradiology at New York University, neuroradiology at Toronto Western Hospital and interventional oncology at the Institut Gustave Roussy in France.

Dr. Garcia-Mónaco hosted RSNA international visiting professors in Argentina in 2004 and 2009 and chaired the "Latin America Presents" session at RSNA 2010.

Internationally renowned radiologist **Yves M. Menu, M.D.**, always wanted to become a doctor; however, his passion for radiology didn't emerge until a rapid succession of imaging advancements coincided with his first year of residency at the University of Paris.

Dr. Menu's fascination with advancements in ultrasound, CT, MR and other imaging modalities led to a lifelong career in radiology education and research, culmi-



Dixon



Garcia-Mónaco



Menu

nating in his current position as a professor and chair of the Department of Radiology at Saint Antoine Hospital in Paris, and 2011 president of the European Congress of Radiology (ECR).

After earning his medical degree in 1981, Dr. Menu became a Chef de Clinique—a combination of fellow and associate professor—at Beaujon Hospital in Clichy, rising to the position of professor and chair of the Department of Radiology at the hospital affiliated with Paris VII University. In 2003, he became a professor and chair of the Department of Radiology at Bicêtre Hospital, Le Kremlin-Bicêtre and Paris XI University, a position he held until 2008.

Dr. Menu has made it his priority to work with organized radiology on the issues and challenges facing the specialty. His extensive involvement in professional radiology associations and boards includes serving as president of the European Society of Gastrointestinal and Abdominal Radiology (ESGAR) from 2009 to 2011, on ESGAR's Executive Committee since 1997, and as chair of the Congress Committee and the Professional and Organization

Committee of the European Society of Radiology.

Dr. Menu served as editor-in-chief of the *Journal de Radiologie*, the official journal of the French Society of Radiology, from 1992 to 1996.

For expanded versions of the biographies of Drs. Dixon, Garcia-Mónaco and Menu, see the *RSNA Meeting Program in Brief* or go to RSNA2011.RSNA.org and click Meeting Program.

Also to be Honored During RSNA 2011:

William W. Olmsted, M.D.—*RadioGraphics* editor since 1989, Dr. Olmsted retires at the end of the year. His many accomplishments at the helm of RSNA's education journal will be recognized during the RSNA 2011 Opening Session.

T. Hans Newton, M.D.—The *RSNA Meeting Program* is being dedicated to the memory of Dr. Newton, a neuroradiology pioneer and influential educator who died in June 2010.

Rosalyn S. Yalow, M.D.—The New Horizons Lecture at RSNA 2011 is being dedicated to the memory of Dr. Yalow, a medical physicist who was only the second woman to receive the Nobel Prize in Medicine. Dr. Yalow died in May 2011.



Olmsted



Newton



Yalow

Gold Medalists

Presented Tuesday, Nov. 29 • 1:30 p.m.

RSNA will award three individuals its Gold Medal—RSNA’s highest honor—at the 97th Scientific Assembly and Annual Meeting. They are Robert R. Hattery, M.D., Bruce J. Hillman, M.D., and Herbert Y. Kressel, M.D.

A renowned diagnostic radiologist, educator and leader, 2006 RSNA President **Robert R. Hattery, M.D.**, is perhaps best known as a “radiologist’s radiologist” whose lifelong commitment to patients not only shaped his career trajectory but influenced the course of American radiology as we know it today.

For the duration of his more than 30-year career, Dr. Hattery, a professor of diagnostic radiology, has maintained a patient-centered philosophy, stressing in his 2006 RSNA President’s Address that “medicine can only succeed when it is wrapped up in human values.”

“Bob Hattery represents a role model for those academic radiologists who aspire to be a ‘quadruple threat’ exhibiting excellence in education, research, clinical care and administration,” said 2011 RSNA President Burton P. Drayer, M.D.

“I was encouraged to attend the RSNA annual meeting when I was a resident and member of the staff at Mayo Clinic, and I was expected to submit papers for discussion and potential publication,” Dr. Hattery recalled. “Over the course of my career I have been fortunate to participate in the activities of the annual meeting and be part of the RSNA leadership.”

Born in Phoenix, Dr. Hattery found a home for the majority of his academic career at the Mayo Clinic, Mayo Medical School, and Mayo Graduate School of Medicine in Rochester, Minn. He arrived as a resident in 1967 and by 1981 was named chair of the Department of Diagnostic Radiology, a post he held for the next five years. From 1994 to 1998, Dr. Hattery served as chair of the Mayo Clinic Board of Governors, becoming the chief executive officer for all of Mayo Clinic’s operations in Rochester. In 2002, the year he retired from the Mayo Clinic, Dr. Hattery was named Teacher of the Year—an honor he earned twice before at the institution. He is currently a professor emeritus at the Mayo Clinic.



Hattery



Hillman



Kressel

Dr. Hattery has devoted most of his career to imaging the genitourinary tract, with particular emphasis on CT, CT urography, ultrasonography and contrast agents. Dr. Hattery has also been extensively involved in quality improvement, board certification and professionalism—areas exemplified in the motto he helped choose for RSNA 2006: “Strengthening Professionalism.”

An RSNA member for more than 20 years, Dr. Hattery was elected to the RSNA Board of Directors in 1998. He served as Liaison for Publications and Educational Materials/Communications as well as a number of committees including the Publications Council and Public Information Committee. Dr. Hattery served as chairman of the Board in 2004 and president in 2006.

Dr. Hattery served as president of the Society of Computed Tomography in 1983, the Society of Uroradiology from 1986 to 1988, and the American Board of Radiology from 2000 to 2002.

Dr. Hattery has authored or coauthored more than 150 publications and served on the editorial boards of *RadioGraphics*, *Journal of Computed Body Tomography*, *Urologic Radiology* and *Abdominal Imaging*.

Dr. Hattery has received gold medals from the American Roentgen Ray Society, Society of Uroradiology and American College of Radiology and the Hartman gold medal from the Minnesota Radiological Society.

Bruce J. Hillman, M.D., is an investigator whose dedication to radiology research has extended beyond his own work to include developing and nurturing other researchers within the specialty.

Dr. Hillman is the Theodore E. Keats Professor of Radiology and Public Health Sciences at the University of Virginia in Charlottesville.

Recipient of the RSNA 2007 Outstanding Researcher Award, Dr. Hillman has received more than 20 grants as principal investigator or co-investigator, including the National Cancer Institute (NCI) \$23 million UO-1 award that led to the founding of the American College of Radiology Imaging Network (ACRIN) in 1999. The network, for which Dr. Hillman was the principal investigator and chair from 1999 to 2007, received \$192 million in grant funding and accrued more than 76,000 participants to imaging clinical trials during his tenure.

“Bruce Hillman could be awarded multiple RSNA Gold Medals for his careers as chairman, editor, author, patient-centered innovative researcher, and radiology statesman,” said 2011 RSNA President Burton P. Drayer, M.D.

“RSNA has given me numerous opportunities to serve our specialty, particularly helping to develop young researchers, that have been unusually rewarding and have greatly enriched my career,” Dr. Hillman said. “I never imagined RSNA honoring my



work with its Gold Medal—the award ceremony was something I viewed from the audience, applauding the individuals who helped to make radiology the great medical specialty it has become. Actually receiving the Gold Medal seems otherworldly, a great and humbling experience.”

Educated at Princeton University and the University of Rochester (N.Y.), the Miami Beach native began his radiology career as a resident at Peter Bent Brigham Hospital (now Brigham & Women’s Hospital) in Boston. Dr. Hillman’s training included a research fellowship at the Peter Bent Brigham-Shields Warren Research Laboratory. Dr. Hillman served as section head of genitourinary radiology and vice-chair of radiology at the University of Arizona and chair of radiology at the University of Virginia before moving into his current positions as founding editor of the *Journal of the American College of Radiology* and chief medical officer of ACR Image Matrix.

He has published more than 30 book chapters, 120 editorials and 170 peer-reviewed articles, including two defining works on the use of imaging by nonradiologists.

Regularly addressing public policy issues such as the corporatization of radiology, Dr. Hillman’s work on self-referral led to the development of federal legislation—the “Stark law”—as well as numerous state

laws and new ethics guidelines for the American Medical Association.

Dr. Hillman has served as president of five radiological societies including the Association of University Radiologists (AUR) and the Society of Uroradiology (SUR).

His extensive RSNA involvement includes serving four years with the RSNA Clinical Trials Methodology Workshop and developing the RSNA/American Roentgen Ray Society/AUR Introduction to Research Program. An RSNA member since 1981, Dr. Hillman delivered the Eugene P. Pendergrass New Horizons Lecture, “Medical Imaging in the New Millennium: Radiologists’ Response to the Scientific, Social, and Economic Changes Affecting Radiologic Practice,” at RSNA 1997.

Dr. Hillman has been honored with honorary membership or fellowship in three foreign radiologic societies, and received the AUR and SUR gold medals.

More than 25 years ago, **Herbert Y. Kressel, M.D.**, was leading the way in bringing a new modality called MR imaging into radiology practice. Now, Dr. Kressel is once again cutting new paths, using his skills as an investigator, innovator and leader to take the journal *Radiology* into the online age of the 21st century.

“Herb has been an extraordinary colleague and mentor to numerous radiologists and imaging scientists because of his great

knowledge, judgment, wit and kindness,” said 2011 RSNA President Burton P. Drayer, M.D.

Radiology editor since January 2008, Dr. Kressel is radiologist-in-chief emeritus of the Department of Radiology at the Beth Israel Hospital in Boston, Mass., and Miriam H. Stoneman Professor of Radiology at the Harvard Medical School.

“RSNA has served as a beacon of scientific and educational excellence over the many years of my professional career,” Dr. Kressel said. “I am honored to receive the RSNA Gold Medal in recognition of my contributions, and I am grateful to Drs. Alexander Margulis and Stanley Baum who have been sources of inspiration and guidance to me over years. It has been a joy to contribute to the development of new knowledge in medical imaging.”

Dr. Kressel has devoted his career to MR imaging of the abdomen and pelvis with particular attention to prostate, liver and pancreas. Dr. Kressel was among those to develop early clinical applications of fast spin echo MR and contributed significantly to the role of imaging in rectal and prostate tumor staging. He holds a U.S. patent for the externally moveable intracavity probe for MR imaging and spectroscopy.

That same sense of pioneering achievement marks Dr. Kressel’s first few years at the helm of RSNA’s science journal. Dr. Kressel has reduced the time from

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Outstanding Researcher and Educator

Presented Sunday, Nov. 27 • 8:30 a.m.

RSNA will honor two individuals at RSNA 2011 for their contributions to research and education. Bruce R. Rosen, M.D., Ph.D., of Boston, is Outstanding Researcher. James G. Smirniotopoulos, M.D., of Bethesda, Md., is Outstanding Educator.

Outstanding Researcher

At the forefront of the explosion in research on the workings of the brain for the past three decades, **Bruce R. Rosen, M.D., Ph.D.**, has developed the physiological and functional MR imaging (fMRI) techniques used by clinicians and investigators throughout the world.

Dr. Rosen—a professor of radiology at the Harvard Medical School and director of the Athinoula A. Martinos Center for Biomedical Imaging at Massachusetts General Hospital (MGH), the Massachusetts Institute of Technology (MIT) and Harvard Medical School in Boston—has developed and applied the physiological and fMRI techniques used widely in research and clinical care to evaluate patients with stroke, brain tumors, dementia and other mental illness.

The launch of Dr. Rosen's research career coincided with the development of fMRI in the late 1990s and has progressed hand-in-hand with the technique that has come to dominate brain imaging research. His studies include measuring the physiological and metabolic changes associated with brain activation and cerebrovascular insult. More recently he has focused on fusing fMRI data with information from other modalities, including very high temporal resolution signals using magnetoencephalography (MEG) and noninvasive optical imaging.

Dr. Rosen also continues his research through such efforts as the Human Connectome Project, a collaborative, multi-institutional research initiative to construct a map of the human connectome that represents the structural and functional connections in vivo within a brain and across individuals. He also serves as co-principal investigator for the Biomedical Informatics Research Network (BIRN), a national initiative to assist biomedical research through data sharing and online collaboration.



Rosen



Smirniotopoulos

Outstanding Educator

James G. Smirniotopoulos, M.D., is an internationally recognized neuroradiology expert and a pioneer in electronic and online radiologic education. His legacy of innovation—correlating radiology and pathology images, creatively using animations and drawings, and employing a unique lecture style—has helped him teach more than 22,000 residents over the past 25 years.

At the Armed Forces Institute of Pathology (AFIP), Dr. Smirniotopoulos pioneered the use of radiologic-pathologic correlation for teaching neuroradiology. He took advantage of MR imaging—beginning to emerge just as he began his AFIP career in the early 1980s—and combined it with CT scans to develop more than 25 hours of didactic lectures.

Dr. Smirniotopoulos' vision for electronic education truly began to flourish at the Uniformed Services University of the Health Sciences (USUHS), where he was professor, chair and director or co-director of various courses. He developed course websites, transformed weekly pencil-and-paper "bubble sheet" quizzes into an online quiz system and produced an electronic radiology glossary and "brain lesion locator."

Dr. Smirniotopoulos co-developed MedPix—a Web-based teaching file application that allowed cases to be shared with military physicians all over the world. He was awarded a patent in 2006 for MedPix, which now receives more than six million hits per month. Dr. Smirniotopoulos is chief editor.

He is the creator of the highly successful, long-running Washington Neuroradiology Review Course, designed for radiologists, neurologists, neurosurgeons and pathologists. Dr. Smirniotopoulos has also brought his expertise to bear as editor of the American College of Radiology Learning File, developed under a grant from the U.S. Food and Drug Administration to standardize radiologic education nationwide.

A full biography of Dr. Rosen will appear in the December 2011 issue of *Radiology*. A full biography of Dr. Smirniotopoulos will appear in the November-December 2011 issue of *RadioGraphics*.

Gold Medalists

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submission to publication and has also developed a robust online journal with monthly "Hear What We Think" podcasts, online poll questions related to journal articles and videos to accompany "How I Do It" reviews. Earlier this year, Dr. Kressel oversaw the launch of *AMA PRA Category 1 Credit™* for selected review articles published in *Radiology*.

Before assuming his current roles at Beth Israel Hospital and Harvard in 1993, Dr. Kressel was chief of the MR imaging section of the Department of Radiology at the Hospital of the University of Pennsylvania. From 1998 to 2000, he also provided

administrative and leadership expertise to Beth Israel Deaconess Medical Center, serving as chief medical officer, president and CEO.

An RSNA member since 1977, Dr. Kressel served as an editorial board member of *Radiology* from 1985 to 1991 and is currently on the editorial board of *The Journal of Magnetic Resonance Imaging*. He was also the editor of *Magnetic Resonance Annual* and *Magnetic Resonance Quarterly*. He is the author or coauthor of nearly 200 peer-reviewed scientific reports, books, book chapters and invited papers and has

published more than 60 articles in *Radiology* over the past 30 years.

Dr. Kressel's many honors include the silver medal of the International Society for Magnetic Resonance in Medicine and the Sylvia Sorkin Greenfield Award from the American Association of Physicists in Medicine.

For expanded versions of the biographies of Drs. Hattery, Hillman and Kressel, see the *RSNA Meeting Program in Brief* or go to RSNA2011.RSNA.org and click Meeting Program.

RSNA 2010 Attendees Weigh In on Annual Meeting

As we gear up for this year's annual meeting, we wanted to share some of the thoughts, feelings and opinions RSNA 2010 attendees offered about last year's annual meeting. Comments originally appeared in the *Daily Bulletin*.



"I don't think members are taking enough advantage of all the things RSNA has to offer."

Liliane Gibbs, M.D., Orange, California, 9-year member



"RSNA fosters, promotes, sponsors and encourages the intellectual advances in radiology, which leads to our ability to improve the quality of care we give our patients."

David Dershaw, M.D., New York, 25-year member



"RSNA's got excellent online education facilities. And this is an awesome meeting."

Kate Colquhoun, M.B.B.S., Hampshire, United Kingdom



"It's an amazing community, and I enjoy being able to collaborate with radiologists all across the globe."

Naim Ali Ba, Marlboro, N.J., first year member-in-training

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