

100 RSNA News™

October-November 2014 Volume 24, Issue 10 & 11 **DOUBLE ISSUE**



*A Century
of Transforming
Medicine*
100 RSNA® 2014

COMMEMORATIVE DOUBLE ISSUE:
A Historic Celebration
Exceptional Science and Education on Tap
Korea, Canada to be Honored

Chicago Restaurant Guide Starts On Page 39

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The RSNA promotes excellence in patient care and healthcare delivery through education, research and technologic innovation.



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CENTENNIAL SNAPSHOTS

During this year as RSNA celebrates its 100th annual meeting and scientific assembly, *RSNA News* takes a look back at milestones in the Society's history.

1964: 50th Anniversary of RSNA



The Society celebrated its "Golden Anniversary" meeting at the Palmer House hotel in Chicago with a total registration just shy of 4,500. "Whatever has been of concern to the specialty of radiology has been of concern to the Radiological Society of North America," noted 1938 RSNA President **Howard P. Doub, M.D.**, in a 1964 *Radiology* editorial, "The Radiological Society of North America: Fifty Years of Progress."

1974: RSNA Granted Permission to Award CME

In the next 40 years RSNA went on to award thousands upon thousands of credits to radiologists, medical physicists, radiologic technologists, and others with its annual meeting programs and offerings through its online education portal. In 2010, RSNA received a six-year accreditation renewal from the Accreditation Council for Continuing Medical Education.

1976: Erskine Lecture First Presented at Annual Meeting



The predecessor to the present-day Annual Oration in Radiation Oncology was presented in honor of the 1925 RSNA president **Arthur W. Erskine, M.D.**, as a bequest from his wife. Henry S. Kaplan, M.D., presented the first Erskine Lecture, "Hodgkin's Disease: Multidisciplinary Contributions to the Conquest of a Neoplasm."

1999: RSNA Journals Go Online

Having journals like *Radiology* and *RadioGraphics* online "will allow us to conduct need-to-know-now literature searches at our workstations, giving us an instant library and affording us the opportunity to make better consultative decisions," Luther E.



Barnhardt, M.D., a member of the former Learning Center Editorial Board, noted in a *Radiology* editorial at the time. The journals now receive a combined 5 million visits per year.

2012: First Margulis Award for Scientific Excellence Bestowed

The Margulis Award for Scientific Excellence is an annual award for the best original scientific article published in *Radiology* and is announced during the annual meeting. The award is named for **Alexander R. Margulis, M.D.**, a distinguished investigator and inspiring visionary in the science of radiology.



NEW RADIATION SAFETY CASE ADDRESSES DIGITAL RADIOGRAPHY

The fourth Image Wisely® Radiation Safety Case, Technical Errors and Image Quality in Digital Radiography, is now available to help radiologists, imaging technologists and medical physicists assess their understanding of important radiation safety concepts including dose monitoring and optimization.

"Because digital X-ray systems are so tolerant of over- and under-exposure it is critical that imaging professionals review the quality of the image in conjunction with the default settings used," said case author Charles Willis, Ph.D. "This case presents critical technical parameters to evaluate when assessing image quality and radiation dose in digital radiography."

Case content includes embedded questions that provide expert feedback as well as references and resources for further study. Technical Errors and Image Quality in Digital Radiography offers a total of *0.5 AMA PRA Category 1 Credits*™; *0.5 MPCEC credit* by the Commission on Accreditation of Medical Physics Education Programs, Inc.; and *0.5 Category A credit hours* of the American Registry of Radiologic Technologists.

For more information go to Imagewisely.org/Case. Image Wisely was developed by RSNA, the American College of Radiology, American Association of Physicists in Medicine and the American Society of Radiologic Technologists.



SNMMI Names Officers, Awards Siegel with Cassen Prize

Peter Herscovitch, M.D., director of the PET Department at the National Institutes of Health Clinical Center in Bethesda, Maryland, was named president of the Society of Nuclear Medicine and Molecular Imaging (SNMMI) during its recent annual meeting in St. Louis.



Siegel



Herscovitch



Schwarz



Jadvar

Other SNMMI officers elected for 2014-15 are **Hossein Jadvar, M.D., Ph.D., M.P.H., M.B.A.**, tenured associate professor of radiology and of biomedical engineering at the University of Southern California (USC), as president-elect, and **Sally W. Schwarz, M.S., R.Ph., B.C.N.P.**, research associate professor in radiology at Washington University School of Medicine in St. Louis, as vice president-elect.

Barry A. Siegel, M.D., known for his pioneering work in PET, was awarded the Benedict Cassen Prize, which is presented every two years by the Education and Research Foundation for Nuclear Medicine and Molecular Imaging to a living scientist or physician/scientist whose work has led to a major advance in basic or clinical nuclear medicine science. Dr. Siegel is a member of the *RSNA News* Editorial Board.

2015 R&E Grant Application Process Opens This Month

Individuals interested in obtaining RSNA Research & Education (R&E) Foundation grants for 2015 can begin submitting their applications starting in October. For more information, go to RSNA.org/Foundation or contact Scott A. Walter, M.S., Assistant Director, Grant Administration at 1-630-571-7816 or swalter@rsna.org.

EDUCATION GRANTS

Deadline—Jan. 12

- Education Scholar Grant
- RSNA/AUR/APDR/SCARD Radiology Education Research Development Grant

RESEARCH GRANTS

Deadline—Jan. 15

- Research Scholar Grant
- Research Seed Grant
- Research Resident/Fellow Grant

RESEARCH MEDICAL STUDENT GRANT

Deadline—Feb. 2

Learn about the 2014 R&E Foundation grant recipients and their projects starting on Page 11.



International Day of Radiology

RSNA, the European Society of Radiology (ESR) and the American College of Radiology (ACR), along with other participating societies around the world, will celebrate the third International Day of Radiology (IDoR) on Nov. 8, the anniversary of the discovery of X-rays by Wilhelm Conrad Roentgen, Ph.D.

IDoR is meant to build greater awareness of radiology's value and contributions to patient care and the vital role of the radiologist in the healthcare continuum.

Last year, more than 110 international societies recognized the day through various activities. The main focus of IDoR 2014 will be the important role brain imaging plays in the diagnosis and treatment of diseases and conditions of the brain.



INTERNATIONAL DAY OF RADIOLOGY
AN INITIATIVE OF THE ESR, ACR AND RSNA

Four booklets, *The Story of Radiology, Vols. I and II, Making Cancer Visible: The Role of Imaging in Oncology* and *Breathe Easy, How Radiology Helps to Find and Fight Lung Disease* are available, along with promotional materials, for download on RSNA, ACR and IDoR websites. A new brain imaging booklet has been developed for this year. Visit IDoR2014.com or RSNA.org/IDoR2014.

Host Societies Sought for International Visiting Professors

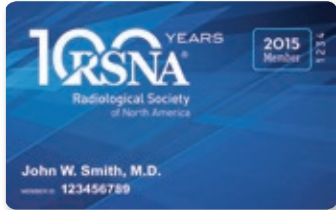
National radiology societies located in developing countries—or primarily serving those countries—are invited to apply to host an RSNA International Visiting Professor (IVP) team. The IVP team will lecture at the host's national radiology society meeting. In addition, the society will be responsible for organizing visits to institutions that have active radiology training programs with the need and potential for educational enrichment from a visiting professor team.

Host societies are expected to provide hotel accommodations and meals for the IVP team for the duration of their visit and communicate program, schedule and hospitality arrangements to IVP team members and RSNA staff. The deadline to apply for 2016 IVP visits is December 31, 2014. Find more information and an application at RSNA.org/IVP.

2015 RSNA Membership Renewal Underway

RSNA membership renewal for 2015 is underway. Renew online at RSNA.org/renew or by mail with the invoice sent in early October.

As they renew membership for 2015, members can opt for automatic membership renewal. On or about October 1 of each year (starting with renewal for 2016), RSNA will charge the designated credit card for annual membership dues based on the level of membership at the time of renewal, journal format choice, and specified donation amounts. Check the box on the payment page and fill in credit card



information when renewing online, or check the "Automatic Renewal" box when completing credit card information on the print membership invoice. For more information, contact membership@rsna.org.

Kushner Honored

David C. Kushner, M.D., was awarded the gold medal of the Society for Pediatric Radiology (SPR). Dr. Kushner is the chairman of Medical Center Radiologists, Inc. Dr. Kushner helped launch SPR's Campaign for Children. He is a member of the RSNA Public Information Advisors Network.



Kushner



Mosher

Mosher Named Chair at Penn State Medical Center

Timothy J. Mosher, M.D., has been named the Kenneth L. Miller Chair of the Department of Radiology at Penn State Milton S. Hershey Medical

Center. Dr. Mosher previously served as vice-chair and professor for radiology research, chief of the Division of Musculoskeletal Radiology and chief of the MRI Clinical Service Unit at Penn State Hershey. Dr. Mosher joined the faculty at Penn State Hershey in 1996. He was recognized by Penn State with the Distinguished Professor Award in 2010.

Dr. Mosher's research has focused on developing and applying quantitative MR imaging techniques to the study of osteoarthritis and cartilage injury. He currently serves as an associate editor for *Radiology* and *Osteoarthritis and Cartilage* and as deputy editor for *Magnetic Resonance in Medicine*. Dr. Mosher received a Carestream Health/RSNA Research Scholar Grant from the Research & Education Foundation in 1997 for research on early cartilage degeneration.

CORRECTION

1941 President W. Walter Wasson, M.D., shown here, helped create the RSNA Memorial Fund Lecture in 1956. An announcement about the lecture in the Centennial Snapshots section of the July 2014 issue of *RSNA News* was accompanied by a photo of 1928 RSNA President Edwin C. Ernst, M.D.



IN MEMORIAM

Anne C. Brower, M.D.

Anne C. Brower, M.D., an acclaimed authority on bone radiology and author of the seminal medical textbook *Arthritis in Black and White*, died Oct. 29, 2013. She was 75.

Along with being a respected physician, Dr. Brower became an ordained Episcopal priest in 2001. Born and reared in New Jersey, she graduated from Columbia University's College of Physicians and Surgeons in 1964 after earning a bachelor of science at Smith College. She taught for a decade at the Uniformed Services University of the Health Sciences in Bethesda, Maryland, and also served on the physician teams for five U.S. presidents (Richard Nixon, Gerald Ford, Jimmy Carter, Ronald Reagan and George H.W. Bush). In 1993, she was appointed chair of the radiology department at Eastern Virginia Medical School (EVMC), the first woman in the nation to hold such a position.



She remained there until 1998 when she entered the Episcopal seminary in Alexandria, Virginia. In honor of her contributions to radiology, EVMC established a perpetual endowed lectureship, "The Reverend Anne C. Brower, M.D. Lectureship in Musculoskeletal Radiology," with her permission just before her death.

Dr. Brower gained fame among skeletal radiologists, rheumatologists, emergency room personnel and medical-school professors as the co-author of *Arthritis in Black and White*, a pioneering, easy-to-use textbook treasured by medical personnel interpreting X-ray images of the body's many types of arthritis. The book, which is available in an expanded third edition, remains a vital piece of many radiology school curriculums.

In 1997, the American Association for Women Radiologists presented Dr. Brower with its Marie Curie Award.

My Turn

Celebrating Radiology's Legacy of Imaging

The RSNA Centennial provided the editorial group the opportunity to revisit the legacy of imaging research published in *Radiology* since the journal began publishing in 1923. Our offerings will be presented at the RSNA annual meeting and/or featured throughout the year in our journal. The offerings will be more fully described in a January 2015 editorial, but here are some highlights:

"Cases of the Century" is a fun interactive exhibit for annual meeting participants with classic images from old journal articles and questions regarding diagnosis and history.

For our "Golden Oldies" feature, we asked our editorial board and luminaries in imaging to choose what they felt were pivotal articles published in *Radiology*. During the centennial year, 15 of these will be highlighted with short summaries and links each month in the online journal. We will include images from past issues as "cover art" to grace the front of our journal. Looking through our history I was struck by the beauty of many classic plain film images in the Legacy Collection and some of these will be featured in an illustrated editorial in the January issue.

"*Radiology: The Evolution of Radiologic Science*" is a special issue featuring review articles, podcasts and self-assessment CME, highlighting research in our journal that show how technology has changed and dramatically improved our ability to diagnose and care for patients.

In each of these initiatives we viewed the legacy of *Radiology* and noted the development of not just imaging technology, but also our ability to report on imaging research. Early manuscripts were descriptive and often informal discourses on topics of interest. Over time, the science and statistics behind the results advanced along with the technology they describe. While developing the Centennial features required a substantial amount of time and effort, it was a labor of love, as it reacquainted us with our roots in imaging research. We look forward to sharing these highlights as we celebrate RSNA's Centennial.



Deborah Levine, M.D., is co-chief of ultrasound and director of obstetric & gynecologic ultrasound at Beth Israel Deaconess Medical Center, and associate chief for academic affairs and professor of radiology at Harvard Medical School. Dr. Levine is the senior deputy editor of *Radiology*.

Editor's Note

Talk To Us!

Did you know that RSNA now invites readers to leave comments at the end of *RSNA News* articles posted online? Our stories tell you what we know and think about the latest in radiology and RSNA programs and services; we want to know what you think, too.

Visit *RSNA News* stories online to make observations, ask questions, answer other readers' questions and/or simply let us know what you think of the topics we're selecting for *RSNA News*. We value your opinion.

THIS MONTH IN THE *RSNA NEWS* ONLINE VERSION

Get more of this month's news online at RSNA.org/News. Enjoy interactive features including video, audio, slide presentations and more. Go online to leave us a comment and easily share stories via social media as well.

As part of the *RSNA News* feature on the RSNA Centennial, readers are invited to visit RSNA.org/News to view interactive content on RSNA's Centennial website featuring an

interactive timeline including RSNA milestones, the RSNA Image Contest and the Centennial Showcase—an onsite experience that lets attendees see, hear and discover the advancements that shaped radiology.



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Korea, Canada Honored at RSNA 2014 “Country Presents” Sessions

BY MARY HENDERSON

As RSNA convenes its 100th annual meeting in an era of increasing globalization, the Society is pleased to highlight two countries as part of the international “Country Presents” series.

THIS YEAR, THE RSNA “Country Presents” sessions spotlight Canada and the Republic of Korea. Both countries are focusing on cardiovascular imaging, including cutting-edge research on the hottest topics in heart and vascular medicine. Each 90-minute scientific session—Korea on Monday, Dec. 1, and Canada on Tuesday, Dec. 2—features presentations by the country’s top researchers.

“Because our meeting has become the hub for the international exchange of medical imaging science and education, we chose to expand the ‘Country Presents’ honor to two countries,” said James P. Borgstede, M.D., RSNA Board Liaison for International Affairs. “This will help us grow our relationship with these countries and allow our attendees to learn more about radiology around the world.”

“Canada has been a longstanding partner that we wanted to honor during our 100th meeting,” said N. Reed Dunnick, M.D., 2014 RSNA President. “We chose to highlight the Republic of Korea for their consistent and growing contributions to our community.”



Borgstede



Dunnick

Republic of Korea, RSNA Continue Collaboration

The Republic of Korea has built its relationship with RSNA gradually over the years, beginning in 1956 when the only South Korean radiologists attending RSNA were residents working in U.S. hospitals.

IN THE 1990s, the country’s radiologists began presenting at the annual meeting and hundreds more were attending each year. More recently, the Republic of Korea has ranked in the top 10 for attendance and in the number of abstracts accepted to RSNA.



“RSNA offers a good chance to enjoy other researchers’

presentations and new results,” said Jongmin Lee, M.D., Ph.D., international liaison for the Korean Society of Radiology (KSR). “When we come back from the meeting, we usually have a wish list for further research as well as new knowledge and expanded networks.”

2014 is also a milestone for KSR, which is celebrating its 70th anniversary this year. Radiology and the society play a significant role in Korea’s highly ranked healthcare system, said Dr. Lee, of the Department of Radiology at Kyungpook National University Hospital in Daegu.

According to Dr. Lee, the country’s 3,465 board-certified radiologists are responding to increased demand for medical imaging—a trend he expects to continue. The increase is good news for hospitals and the KSR. “Our patients tend to require more objective evidence for their medical problems,” Dr. Lee said.

Dr. Lee credits RSNA with giving Korean radiologists an opportunity to collaborate with researchers from around the world and participate in international, multicenter research studies.

The “Korea Presents” session, “Exploring Evidence in Cardiovascular Imaging,” will explore the imaging assessment of cardiovascular risk factors in stroke, coronary CT screening angiography, and the results of a multicenter trial comparing CT stress perfusion imaging to fractional flow reserve imaging for assessing ischemic heart disease.

The program will feature two lectures, each followed by a discussion period moderated by KSR President Tae-Hwan Lim, M.D., Ph.D., and Arthur Stillman, M.D., director of cardiothoracic imaging, Department of Radiology, Emory University School of Medicine.

“As a leading international radiological society, RSNA has been a source of motivation and offers an opportunity for globalization for KSR and its members,” Dr. Lee said. □



Lee

KOREA PRESENTS: “EXPLORING EVIDENCE IN CARDIOVASCULAR IMAGING”

Monday, Dec. 1, 10:30 a.m. - 12 p.m.

- Opening Remarks: 2014 RSNA President N. Reed Dunnick, M.D., and KSR President Tae-Hwan Lim, M.D., Ph.D.
- “What are Risk Factors for Stroke? Imaging Assessment of Cardiovascular Risk in Stroke,” Jin Hur, M.D.
- “Is Screening of Coronary Heart Disease with Coronary CT Angiography (CTA) Necessary? Coronary CTA in Asymptomatic Patients,” Sang Il Choi, M.D.
- “Is CT Stress Perfusion Comparable to FFR in Assessing Ischemic Heart Disease? Multicenter Trial PERFUSE,” Byoung Wook Choi, M.D., Ph.D.
- Closing Remarks: James P. Borgstede, M.D., RSNA Board Liaison for International Affairs, and Byung-Ihn Choi, M.D., Ph.D., Korean Society of Radiology Director at Large.

Canadian Radiologists Connect with RSNA

For Jacques Levesque, M.D., president of the Canadian Association of Radiology (CAR), RSNA 2014 is the 26th consecutive RSNA annual meeting he has attended.

"I NEVER MISS [THE ANNUAL MEETING], for many reasons," said Dr. Levesque, director and general manager of University Clinics in Quebec City. "The biggest players in the industry are there and the scientific presentations are exceptional. At the end of every year, RSNA is the place to be."

Many Canadian radiologists share his sentiment. For many years, Canada has sent the largest international contingent to RSNA, with more than 1,000 Canadians attending each year. Those numbers demonstrate the strong relationship that exists between American and Canadian radiologists, Dr. Levesque said.

"We are very proud to be chosen for 'Canada Presents,' especially in RSNA's centennial year," he said. "I think it's an indication of how closely our two societies have worked together."

To identify speakers and topics for the session, moderators Bruce B. Forster, M.D., and Jonathon A. Leipsic, M.D., queried Canada's academic centers for nominations of cutting-edge, peer-reviewed research papers. "We asked for research with a practical side, so that attendees will be able to walk away from the session with ideas they can immediately use in their practices," said Dr. Forster, professor and head of the Department of Radiology at the University of British Columbia.

When several outstanding cardiovascular papers emerged

from the submissions, organizers saw an opportunity to offer a cohesive program featuring researchers from many of the country's provinces. The session, "Beyond Diagnosis: How Cardiovascular Imaging Research in Canada is Improving Clinical Outcomes," will offer six presentations followed by a group discussion.

"We hope to stimulate a highly interactive discussion amongst the speakers and the audience," Dr. Forster said. "We want this to be a two-way communication session."

Canada Presents will kick off with a professionally produced, five-minute video on what it means to be Canadian—and how being Canadian shapes the researcher's approach.

"There will be some humor to it because Canadians are known for being a little funny," Dr. Forster said.

"You can hear research presentations in any room at RSNA. The video is our way of making our session distinctive." □



Levesque

CANADA
PRESENTS

MARY HENDERSON is a writer based in Bloomington, Ind., specializing in health and medicine.

CANADA PRESENTS—"BEYOND DIAGNOSIS: HOW CARDIOVASCULAR IMAGING RESEARCH IN CANADA IS IMPROVING CLINICAL OUTCOMES"

Tuesday, Dec. 2, 10:30 a.m. - 12 p.m.

- Opening Remarks: 2014 RSNA President N. Reed Dunnick, M.D.
- "The Impact of Integration of a Multidetector CT Annulus Area Sizing Algorithm on Outcomes of Transcatheter Aortic Valve Replacement: A Prospective, Multicenter, Controlled Trial," Jonathon A. Leipsic, M.D., Vancouver
- "Refining the Phenotype of Genetic Hypertrophic Cardiomyopathy with Cardiac MRI," Andrew M. Crean, M.D., Toronto
- "A New Paradigm for Cardiac CT Imaging: Quantitative Assessment of Perfusion and Late Enhancement," Ting-Yim Lee, M.Sc., Ph.D., London
- "Modeling of Abdominal Aortic Aneurysm Before, During and After Endovascular Repair: Potential Impact on Patient Management," Gilles P. Soulez, M.D., Montreal
- "Fast and Furious: Imaging to Recanalization in Acute Stroke," Mayank Goyal, M.D., Calgary
- "Prevalence of Extracranial Venous Narrowing on Catheter Venography in People with Multiple Sclerosis, Their Siblings, and Unrelated Healthy Controls: A Blinded, Case-control Study," Darren Klass, M.D., Ph.D., Vancouver
- Closing Remarks: James P. Borgstede, M.D., RSNA Board Liaison for International Affairs



Learn more about the "Presents" Sessions

Go to RSNA.org/KoreaPresents and RSNA.org/CanadaPresents to see lists of exhibitors from the featured countries, get more details about the scientific presentations and find out about activities in the RSNA Global Connection booth during RSNA 2014.

RSNA 2014 is a Historic Celebration

BY EVONNE ACEVEDO JOHNSON

From its modest origins to its present-day global community of professionals around the world, RSNA has been inextricably linked with the evolution of radiology over the last century. During the Society's 100th annual meeting this year, the RSNA community is invited to celebrate this historic milestone with a Centennial celebration destined to make history of its own.

"THIS IS A TWO-YEAR CELEBRATION," said Ronald L. Arenson, M.D., RSNA president-elect and co-chair of the RSNA Centennial Committee. "RSNA 2014 is our 100th annual meeting, and in 2015 we will celebrate the founding of the Society itself. We wanted to encompass all the facets of RSNA's influence and evolution over the years. I am so pleased with the exciting activities we have planned for our community."

"As we celebrate the past, we will also look to the future," added 2104 RSNA President N. Reed Dunnick, M.D., who co-chairs the Centennial Committee with Dr. Arenson. "I invite all attendees to sign the Memory Book at RSNA 2014. It will give you a place to leave your mark, congratulate your society—and yourselves—on 'A Century of Transforming Medicine,' and give your predictions for the next hundred years."

RSNA Fills Necessary Niche

To grasp the magnitude of RSNA's first 100 years, "I think you have to go back to the origins of radiology in the early 20th century," said M. Paul Capp, M.D., a retired pediatric radiologist who chaired the RSNA Scientific Exhibits Committee from 1975 to 1978.

"At the turn of the century there were just a few radiologists, and it was pretty much a confined community," Dr. Capp said. "They didn't have CT scans or MR or ultrasound; they just had



Dunnick



Arenson

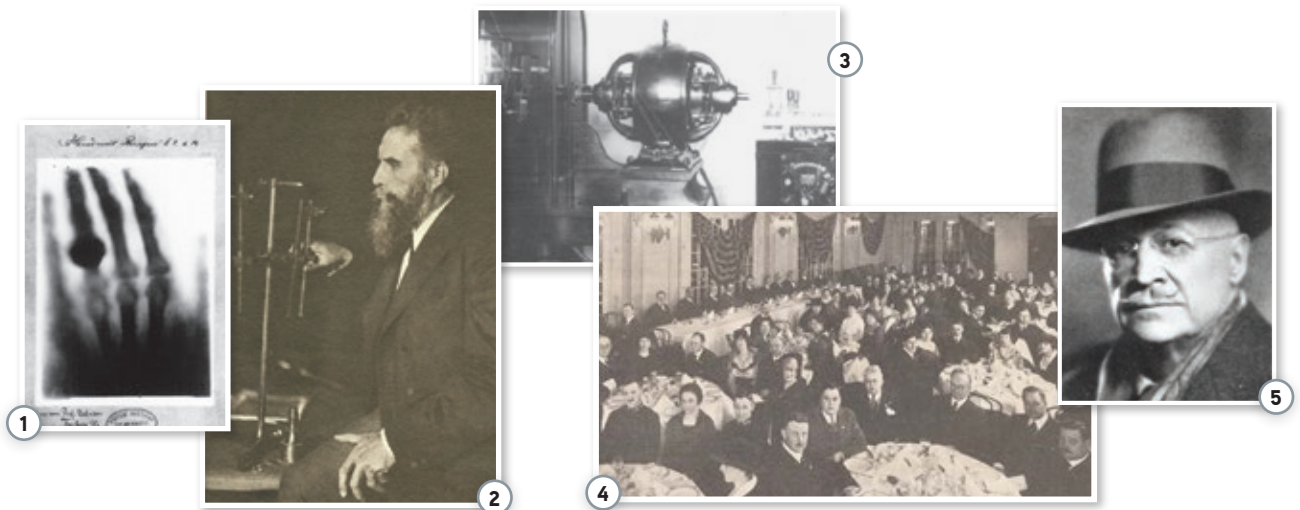


McLoud

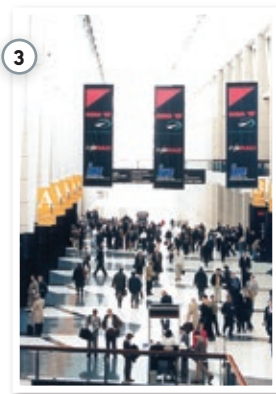
plain, old-fashioned images on glass plates, and all they could image then was chest and bones."

After Wilhelm Roentgen's historic discovery in 1895, physicians began looking to X-rays as a means to facilitate diagnoses and spare their patients the trauma of surgery.

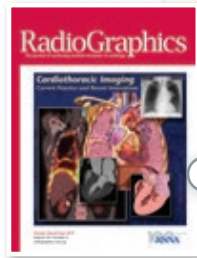
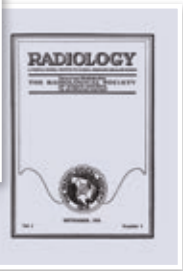
But the science wasn't accepted overnight. In 1899, when Boston internist Francis Williams, M.D., presented research on the value of X-rays in diagnosing lung and heart diseases, even respected physicians expressed skepticism. After one such presentation, renowned clinical medicine professor F.C. Shattuck, M.D., reportedly said, "Frank Williams has shown you plates and tells you that the heart is here and that the lung is here.



As with all of radiology, RSNA's beginnings grew from the discovery of the X-ray by Wilhelm Roentgen (2) in 1895, who took his first medical X-ray of his wife's hand (1). Almost 20 years later, a meeting of five radiologists led to the founding of the Western Roentgen Ray Society, predecessor to RSNA. The RSNA meeting which eventually began exhibiting X-ray equipment such as the original "Snook" X-ray apparatus (3) and grew to include banquets such as this 1937 gathering at the Palmer House in Chicago (4), which began hosting RSNA meetings in 1933. (5) RSNA's first president, Fred S. O'Hara, M.D.



In the last century, RSNA and the specialty have grown and evolved together. McCormick Place (1) became RSNA's long-time venue in 1975 after the Society outgrew its long-term space at the Palmer House Chicago (2); McCormick Place expanded to three halls in the mid-1990s, creating the need for the highly travelled Grand Concourse pictured early on (3) and in 2013 (4); RSNA's flagship, peer-reviewed journals have evolved dramatically since their debut. The first issue of *Radiology* in 1923 (5) and *RadioGraphics* in 1981 (6) pictured with current issues of the journals.



Now, I can't see a thing in these plates and, to be truthful, I don't think he can."

Physicians with faith in the medical potential of X-rays recognized the need for legitimacy, and in 1900 formed the American Roentgen Ray Society (ARRS). ARRS held its first annual meeting in New York City that year.

As time went on, many radiologists outside the East Coast found traveling to the ARRS annual meeting prohibitive. As a result, two decades after Roentgen's discovery, five individuals convened to create an independent, regional radiologic society based in the central part of the U.S.

Edwin C. Ernst, M.D., of St. Louis, gathered local colleagues Miles B. Titterington, M.D., and Gray C. Briggs, M.D., in his office. Fred S. O'Hara, M.D., who later became RSNA's first president, made the 100-mile trip from Springfield, Illinois. The group enlisted the support of George W. Brady, a manufacturer and salesman of X-ray equipment and accessories who offered insight into costs and hospital relations.

Benjamin H. Orndoff, M.D., who served as RSNA's president in 1918, wrote that the professional organization was unique because it was "constructed on democratic principles and dedicated to the study and practical application of [radiology]."

The new organization was named the Western Roentgen Society. Founders developed a roster of 62 charter members who sent annual dues of \$10 and planned a meeting for December 15 and 16, 1915, at the Hotel Sherman in downtown Chicago. Thirty charter members attended, representing 17 states.

The Society developed quickly. Four years later, RSNA membership topped 500 and 19 commercial exhibitors had demonstrated their X-ray technology at the annual meeting. While founders had laid a firm foundation for success, they recognized that "Western" was regionally limiting and "radiology" more all-encompassing. In 1919, the Society elected to rename the organization the Radiological Society of North America.

"In those days, there were no radiologists, really—most people were engaged in other areas of medicine and practiced radiology as a sideline," said Michael S. Huckman, M.D., an emeritus professor of radiology at Rush University Medical Center in Chicago and longtime RSNA member. "RSNA brought them together and created radiology as a specialty."

"RSNA did something very unique back in those days," Dr. Capp said. "Its members understood that radiology was not just radiologists—a team approach was needed, encompassing the entire field. They opened the umbrella to include technologists, physicists, administrators . . . and invited industry to come in and show its products."

The Society as Convener

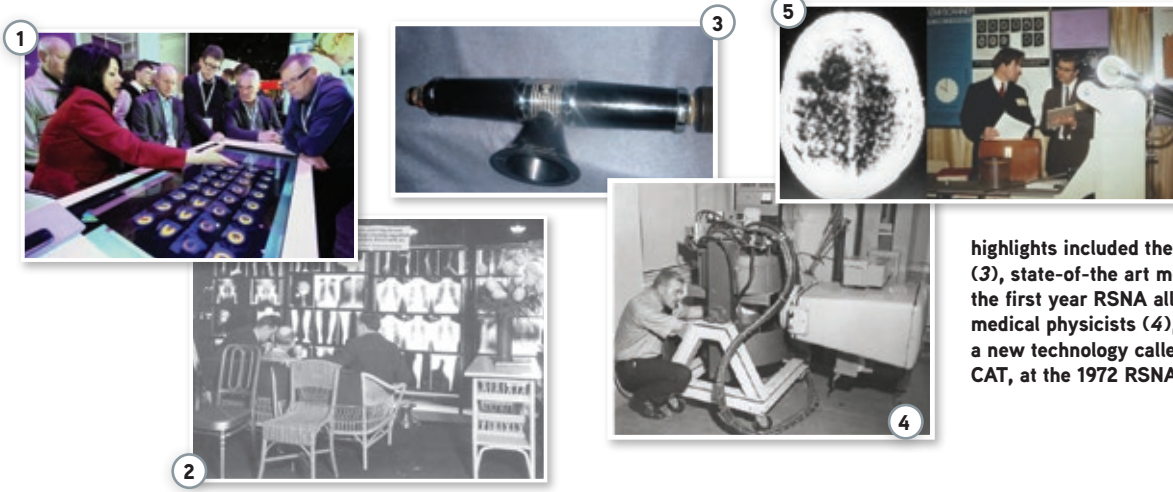
Over the decades, as medical imaging advancements surged, RSNA became known as the convener for new science, education and technology in radiology. Launched in 1923, the journal *Radiology* became the first choice for authors to publish their latest science. The journal *RadioGraphics*, founded in 1981, was dedicated to continuing education in radiology. RSNA was granted permission to award CME for some activities beginning in 1974.

All along, the RSNA annual meeting—held in locations throughout the country, from Cleveland to San Francisco, before settling in Chicago in 1985—became one of the specialty's not-to-be missed events.

"The annual RSNA meeting was unique because every year it offered outstanding presentations of the best scientific research in radiology combined with an extensive portfolio of educational material including refresher courses, plenary sessions and educational exhibits," said 2008 RSNA President Theresa C. McCloud, M.D., vice-chair of education in the Department of Radiology at Massachusetts General Hospital, Boston. "The technical exhibits area was the largest of its kind in the world. It allowed radiologists to compare and contrast new imaging devices and equipment, facilitating the acquisition of new technologies."

RSNA also recognized the significance of global partnerships and the contributions that international professionals bring to the forum, Dr. Capp said. "Members went to other countries and invited them to be part of their team," he explained. International professionals from nearly 130 countries now represent more than a third of RSNA annual meeting attendees, and the journals *Radiology* and *RadioGraphics* receive more international submissions than ever before.

Continued on next page



Now one of the premier exhibition halls in the world drawing nearly 27,000 healthcare professionals in 2013 alone (1), the RSNA Technical Exhibition began in 1915 with just 19 X-ray companies exhibiting their products (2). Future highlights included the Coolidge X-ray tube from 1936 (3), state-of-the-art medical physics technology in 1948, the first year RSNA allowed full membership for RSNA medical physicists (4), and a history-making display of a new technology called computed axial tomography, or CAT, at the 1972 RSNA Annual Meeting (5).

Continued from previous page

“The one thing that kept it all together was RSNA,” said the late David H. Hussey, M.D., who served as 2005 RSNA President. In a 2012 video interview, Dr. Hussey recalled the role RSNA played in maintaining a community for radiologists of all subspecialties, including his own, radiation oncology. “There is always a danger, as you develop all these subspecialties, of the field fragmenting,” Dr. Hussey said. “We’re now at a focal point, where radiation oncology and diagnostic radiology are coming closer than ever.”

RSNA’s meetings and journals were an essential early platform for CT imaging—a development that changed the specialty forever, according to William R. Hendee, Ph.D., emeritus distinguished professor of radiology, radiation oncology, biophysics and bioethics at the Medical College of Wisconsin in Milwaukee, emeritus professor of radiology at the University of Colorado and a longtime RSNA volunteer.

“The first introduction of CT scanners by the British company EMI was made at the RSNA annual meeting,” Dr. Hendee said. “That was the first public viewing of CT. Ever since, RSNA has offered a showcase for advances in CT technology and will continue that role into the future.”

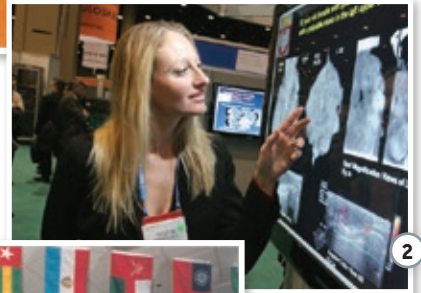
Centennial Showcase Shines

RSNA meeting attendees who want to review and relive the Society’s history—in tandem with the evolution of the specialty itself—will have that opportunity through the RSNA 2014 Centennial Showcase. Featuring an introduction by a virtual Wilhelm Roentgen, the multi-faceted experience lets attendees see, hear and discover the advancements that shaped radiology and RSNA.

“I am especially excited about the Centennial Showcase, which will feature historic science, education and technology, and Cases of the Century, which allow attendees to try their hand at diagnosing ‘vintage’ images using no more than the tools radiologists of the past had at hand,” Dr. Arenson said. “To honor the technological advancements that have been showcased at the RSNA annual meeting for the past hundred years, the RSNA 2014 Technical Exhibits will open with a special ceremony, hosted by leaders in the radiologic industry,” Dr. Dunnick said.

As they reflect on the past 100 years, RSNA members are also looking to the future of the specialty and offering a few predictions.

“There will be a huge emphasis on molecular imaging,” Dr. Capp said. “We will be able to do things pathologically, histologically, that we certainly cannot do now. There will be screening techniques using ultrafine molecular and sub-molecular atomic imaging.”



The RSNA Annual Meeting through the decades: (1) McCormick Place in 1976; (2) an electronic education exhibit from RSNA 2013; (3) a 1988 International Registration Booth; (4) attendees perusing the *Daily Bulletin*, a familiar staple at every annual meeting since 1990.

Dr. Hendee added, “As you watch the changes that are occurring today, you see that we are becoming more and more an information science and not just an imaging science. I think imaging will be an integral part in the care of absolutely every individual.” □

EVONNE ACEVEDO JOHNSON is a Goliad, Texas-based freelance writer specializing in healthcare issues.

Don't Miss the Celebration of a Century

RSNA is celebrating the 100th anniversary of its annual meeting in 2014 and the 100th anniversary of the Society itself in 2015. Explore a host of live and virtual features and activities to mark this historic event, including:

Centennial Showcase

Lakeside Center, Hall D

Explore an onsite experience to discover the advancements that shaped radiology and RSNA. The Centennial Showcase will feature a historical timeline, special welcome from a virtual Wilhelm Roentgen, Cases of the Century and more.



Centennial Website— Explore the Evolution of Radiology

As RSNA gears up for its 100th annual meeting, the society has unveiled a fun, interactive way to lend your voice and participate in our once-in-a-lifetime Centennial celebration. Go to RSNA.org/Centennial to explore radiology milestones and share your own story on our interactive timeline.

Sip & Savor Social

Wednesday, December 3, 5:00 – 7:00 p.m. Skyline Ballroom, 3rd Floor McCormick Place, West Building

Enjoy drinks, entertainment and tastings by some of Chicago's top restaurants (view the full list in the 2014 Dining Guide on Page 42). The Chicago-based Matt Stedman Band will perform. Don't miss the celebration of the century. Add tickets to your registration for only \$40 per person.



Technical Exhibits Grand Opening Ceremony

Sunday, November 30, 11:00 a.m.

The technical exhibits will open with a ceremony where leaders and industry partners will celebrate a century of the technology and innovation that changed the world of radiology.

X-ray Art by Arie van't Reit

Booth 3965, South Hall, Building A

View 30 X-ray photographs created by Arie van't Riet, a Dutch radiation physicist who turned the traditional way of using X-ray imagery on its head. He accidentally became an artist by using X-ray imagery to capture natural life-processes.

Wilhelm Roentgen Laboratory

Booth 7950, North Hall, Building B

Visitors are invited to take center stage and be part of Wilhelm Roentgen's laboratory. Pose with a life-size Wilhelm against an enlarged image of his recreated laboratory at the University of Wurzburg.

Centennial-themed Items Featured at RSNA Store

The RSNA Store will feature a supply of Centennial-themed items. Located in RSNA Services, the Store will also feature education products including refresher course USBs and *RadioGraphics* special issues, RSNA Mobile CME products and RSNA-branded merchandise and apparel.



RSNA R&E Foundation Announces 2014 Grant Recipients

The RSNA Research & Education (R&E) Foundation funded 94 grants totaling \$3.6 million. This represents a 25 percent funding rate and the highest amount ever awarded by the Foundation. 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

Stephen R. Bowen, Ph.D.

University of Washington
Multimodality Quantitative Molecular Imaging for Personalized Radiation Therapy of Lung Cancer Through Differential Tumor Dose Escalation and Functional Lung Avoidance

SIEMENS

James Ernest Hansen, M.D.

Yale School of Medicine
Targeting Glioblastoma with a Lupus Autoantibody

Wolf E. Heberlein, M.D.

University of Arkansas for Medical Sciences
IRE-based Multi-modality Loco-regional Tumor Therapy for Pancreatic Cancer

Charles Y. Kim, M.D.

Duke University Medical Center
Trans-arterial Embolization of Hypervascular Liver Tumors with Electrically Conductive Particles for Modulation of Percutaneous Radiofrequency Ablation Zone Size and Configuration

GE Healthcare



Tae Kim, Ph.D.

University of Pittsburgh
Magnetic Resonance Imaging of Early Biomarker for Hypertension-induced Cerebrovascular Alterations



Kenneth S. Lee, M.D.

University of Wisconsin
Quantitative Imaging of the Tendon: Use of Ultrasound Shear Wave Elastography as a Biomarker to Predict Tendon Rupture

Joseph Scott McNally, M.D., Ph.D.

University of Utah
Role of the Angiotensin Pathway and Redox State in Carotid Plaque Permeability



Michael A. Ohliger, M.D., Ph.D.

University of California, San Francisco
Non-invasive Monitoring of Liver Inflammation and Fibrosis Using Hyperpolarized Carbon-13 MRI



Sean Sunghun Park, M.D., Ph.D.

Mayo Clinic, Rochester
11C-Choline PET/CT Image-Guided Stereotactic Ablative Radiotherapy (IG-SABR) in Oligometastatic Prostate Cancer

Habib Rahbar, M.D.

University of Washington
Improving Treatment Outcomes of Ductal Carcinoma in Situ with Breast MRI

Haris Iqbal Sair, M.D.

The Johns Hopkins University
Intrinsic Language Network Assessed with Resting State Functional Magnetic Resonance Imaging: Potential Role in Presurgical Mapping

Atul Bhanudas Shinagare, M.D.

Brigham and Women's Hospital, Harvard Medical School
Optimization of Chest CT Utilization in Patients with Advanced Ovarian Cancer

Roberta M. Strigel, M.D., M.S.

University of Wisconsin-Madison
High Spatio-temporal Resolution Breast MRI: Improving the Characterization of Breast Cancer

GE Healthcare



Janice S. Sung, M.D.

Memorial Sloan Kettering Cancer Center
Clinical Utility of Whole Breast Screening Ultrasound in Patients Undergoing Digital Breast Tomosynthesis

Sarah Beth White, M.D.

Medical College of Wisconsin
Magnetically Triggered Oxaliplatin Release for the Treatment of Colorectal Liver Metastasis



Junqian Xu, Ph.D.

Icahn School of Medicine at Mount Sinai
Development of Whole Spinal Cord Functional Assessment with Multiband Magnetic Resonance Imaging

Anna E. H. Zavodni, M.D., M.H.Sc.

Sunnybrook Health Sciences Centre, University of Toronto
CT Myocardial Tissue Characterization: Utility in CTA Bypass Graft Assessment



Michael M. Zeineh, M.D., Ph.D.

Stanford University
Multimodal MRI to Detect Brain Injury in Athletes
[ASNR/RSNA Research Scholar Grant](#)

Jeff L. Zhang, Ph.D.

University of Utah
Real-time Monitoring of Renal Hypoxia and Hypoperfusion with Quantitative MRI

RESEARCH SEED GRANT

Mohamed Abazeed, M.D., Ph.D.

Cleveland Clinic
Integrative Radiogenomics and Precision Therapy in Squamous Cell Lung Cancer

Ayaz Aghayev, M.D.

Brigham and Women's Hospital, Harvard Medical School
The Gravitational Gradient in Abdominal Aortic Aneurysms

TOSHIBA

Leading Innovation >>>

Jalal B. Andre, M.D.

University of Washington
Arterial Spin Labeling - A Novel and Accurate MRI Metric to Predict Clinically Significant Vasospasm Following Aneurysmal Subarachnoid Hemorrhage

TOSHIBA

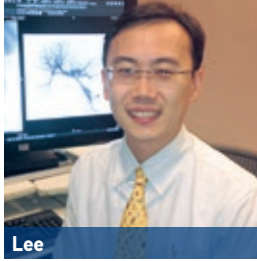
Leading Innovation >>>



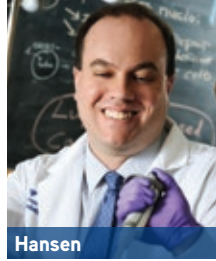
Herberlein



Hanneman



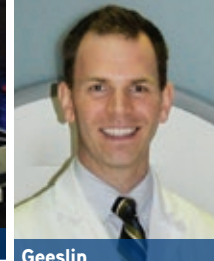
Lee



Hansen



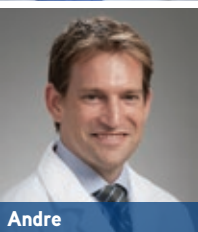
White



Geeslin



Jaremko



Andre



Koay



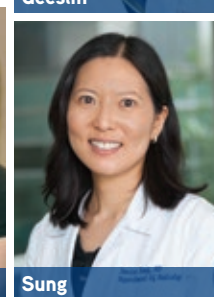
Fowler



Brown



Ivanidze



Sung



Lee

Amy Marie Fowler, M.D., Ph.D.
University of Wisconsin-Madison
Impact of Endocrine-resistant Estrogen Receptor-alpha Variants on [18F] Fluoroestradiol Imaging of Breast Cancer



Brian Andrew Hrycushko, Ph.D., M.S.
The University of Texas Southwestern Medical Center
Local Hypothermia as a Radioprotector During Prostate Stereotactic Body Radiotherapy

Jacob L. Jaremko, M.D., Ph.D.
University of Alberta
3D Ultrasound of Infant Hips: Toward an Understanding of Normal Development and Improved Detection of Hip Dysplasia

Eugene Jon Koay, M.D., Ph.D.
The University of Texas MD Anderson Cancer Center
Predicting Gemcitabine Delivery in Pancreatic Cancer with Principles of Mass Transport



Wen Ling, Ph.D.
University of Pittsburgh
Selective and Quantitative Detection of Proteoglycan in disc by iTIP gagCEST

Gregory Jon Nadolski, M.D.
Hospital of the University of Pennsylvania
Near Infrared Fluorescence Imaging of Matrix-Metalloproteinase-2 Activity as a Biomarker of Vascular Remodeling in Hemodialysis Access

Edwin H.G. Oei, M.D., Ph.D.
Erasmus MC, University Medical Center Rotterdam, Netherlands
Quantitative Dynamic Contrast-enhanced MRI for Studying Bone Perfusion

Akhilesh Keshav Sista, M.D.
Joan and Sanford I. Weill Medical College of Cornell University
Assessment of a Multi-variable Physiologic Profile's Ability to Determine Catheter-directed Thrombolysis Efficacy in Real-time using a Porcine Model of Submassive Pulmonary Embolism



Joel M. Stein, M.D., Ph.D.
Hospital of the University of Pennsylvania
Glioblastoma Radiosensitization with Polymeric Micelles Containing Gold and Iron Oxide Nanoparticles

Alda Lui Tam, M.D.
The University of Texas MD Anderson Cancer Center
Developing an Electroporation and Nanoparticle-based Therapeutic Platform for Bone Metastases: Evaluation of Local Delivery Strategies to Optimize Intratumoral Nanoparticle Uptake



Tokihiko Yamamoto, Ph.D.
University of California, Davis
CT-based Pulmonary Gas Exchange Imaging for Personalized Radiotherapy



RESEARCH RESIDENT/FELLOW GRANT

Hamza Alizai, M.D.
Resident at The University of Texas Health Science Center at San Antonio
Research conducted at New York University School of Medicine
Identification of Novel Biomarkers of Bone Strength and Fracture Risk via High Resolution, High Field MRI

Jacob D. Brown, M.D., Ph.D.
University of California, San Francisco
A Novel Image-guided Pain Treatment: Selective Deletion of Nociceptors by Intraganglionic Injection of Resiniferatoxin

Joseph Robert Evans, M.D., Ph.D.
University of Michigan
Investigating the Role of SchLAP1, a Novel Long Noncoding RNA, in Prostate Cancer Radioresistance

Matthew G. Geeslin, M.D., M.S.
University of Virginia
Evaluation of Spiral-based 3D MR Thermometry for Brain Applications of MR-guided Focused Ultrasound in a Porcine Model



Kate Hanneman, M.D.
Stanford University School of Medicine
Combined Positron Emission Tomography-Magnetic Resonance Imaging for the Diagnosis of Cardiac Sarcoidosis
Ralph Schlaeger Charitable Foundation Research Fellow Grant

Susie Yi Huang, M.D., Ph.D.
Massachusetts General Hospital, Harvard Medical School
Ultra-high Gradient Diffusion MRI for Characterizing Axonal Pathology in Multiple Sclerosis



Jana Ivanidze, M.D., Ph.D.
Joan and Sanford I. Weill Medical College of Cornell University
Blood Brain Barrier Permeability and Molecular Markers of Inflammation: Interplay and Significance for the Development of Global Cerebral Edema in Patients with Aneurysmal Subarachnoid Hemorrhage

Jesse Jones, M.D.
University of California, Los Angeles
MRI Surveillance of Induced Pluripotent Stem Cells for Stroke Using Gadolinium Nanoparticles

Nima Kokabi, M.D.
Emory University School of Medicine
Disparities in Utilization of Contemporary Interventional Radiology-based Locoregional Therapies for Unresectable Hepatocellular Carcinoma and Impacts on Survival: a SEER-Medicare Population Study



Kyungmouk Steve Lee, M.D.
Joan and Sanford I. Weill Medical College of Cornell University
Catheter-directed Intraportal Delivery of Cell Therapy for Liver Regeneration: a Feasibility Study in a Large Animal Model of Cirrhosis

Stephanie Markovina, M.D., Ph.D.
Washington University
Squamous Cell Carcinoma Antigen in Cervical Cancer Prognostication and Response to Therapy

Continued on Next Page

Continued from previous page

Christopher Maroules, M.D.

The University of Texas Southwestern Medical Center
Quantification of Volumetric Pulmonary Perfusion Using 3D Arterial Spin Labeled Perfusion MRI: Feasibility and Evaluation in Pulmonary Arterial Hypertension

Prince Research Resident Grant

Nima Nabavizadeh, M.D.

Oregon Health & Science University
Noninvasive, In Vivo Contrast-enhanced Ultrasound and Molecular Imaging of Early Microvascular Changes Following High-dose Radiation Therapy

Kazim Narsinh, M.D.

University of California, San Diego
MRI Tracking of Cellular Immunotherapy using Natural Killer Cells and Perfluorocarbon Tracers

Kristin Kelly Porter, M.D., Ph.D.

The Johns Hopkins University
Application of 4D Phase Contrast MRI as a Non-invasive Measure of Treatment Response in Patients with Pulmonary Hypertension



Timothy John Robinson, M.D., Ph.D.

Duke University Medical Center
Detection of Novel Alternative Splicing Biomarkers of Hypoxia in Breast and Lung Tumors

James Spencer Clayton Ronald, M.D., Ph.D.

Duke University Medical Center
Identification of Novel Angiogenesis Biomarkers Correlating with Tumor Response after Hepatic Arterial Embolization for Hepatocellular Carcinoma



James Eric Schmitt, M.D., Ph.D.

Hospital of the University of Pennsylvania
Imaging Genomic Analysis of the 22q11 Deletion Syndrome

Jennifer Elaine Soun, M.D.

Columbia University Medical Center
Quantitative T1rho Mapping in Multiple Sclerosis: Development of a Potential Novel Biomarker for Disease Prognostication and Management



Peter Christian Thurlow, M.D.

Allegheny General Hospital and the University of Wisconsin
Evaluating the Effect of Foot Strike Biomechanics on MR Imaging of the Knee using a Novel Multi-component T2 Mapping Sequence

Jordan Torok, M.D.

Duke University Medical Center
Modulation of Endothelial Cell Radiation Sensitivity and Lung Tumor Response to Radiation Therapy



Behroze Vachha, M.D., Ph.D.

Massachusetts General Hospital, Harvard Medical School
Task-free Presurgical Mapping of Eloquent Cortex using fMRI at Ultrahigh Field Strength (7T) MRI in Patients with Medically Refractory Epilepsy

Silver Anniversary Campaign Pacesetters Research Fellow Grant

Michael C. Veronesi, M.D., Ph.D.

University of Chicago
In Vivo Fate Mapping of Magnetic Nanoparticles in the Brain Following Intranasal Administration using MRI

Alexander Michael Vezeridis, M.D., Ph.D.

University of California, San Diego
In Vivo Ultrasound Imaging and Diagnosis of Implanted Medical Device-related Infections using Microbubbles Targeted to Biofilm

RSNA Presidents Circle Research Resident Grant



John-Paul J. Yu, M.D., Ph.D.

University of California, San Francisco
Combined Biochemical, Genetic, and Metabolomic Efforts Towards Neuroimaging Schizophrenia and Psychiatric Disease

Chi Zhang, M.D., Ph.D.

Columbia University Medical Center
Studies on the Effects of Combined Treatment with Metformin and a Dual mTOR1/2 Inhibitor, AZD8055, in Tumor Control of Glioblastomas

RESEARCH MEDICAL STUDENT GRANT

Daniel Arteaga, B.A.

Vanderbilt University
Characterizing Perfusion Territory Dynamics and Vessel Wall Morphology in Patients at Risk for Stroke

Jamaal Benjamin, Ph.D.

The University of Texas Southwestern Medical Center
Enhancing Prognostic value of Computed Tomography (CT) Enterography in IBD Diagnosis

Wilfred Dang, B.H.Sc.

University of Ottawa
What is a Good Quality History and How Does it Affect Accuracy of Interpretation of Acute Abdominal CT?

Samantha Delapena, B.S.

University of Southern California Keck School of Medicine
Contrast Enhanced Ultrasound for Evaluating Antiangiogenic Treatment in Hepatocellular Carcinoma

Philips Healthcare/RSNA Research Medical Student Grant



Adnan Elhammali, B.S.

Washington University
Metabolic Rewiring in PI3K Activated Cervical Cancer

Edward M. Lawrence, B.S.

Enrolled at Albert Einstein College of Medicine
 Research conducted at Memorial Sloan-Kettering Cancer Center
Establishing Tumor Heterogeneity in Patients with Metastatic High-grade Serous Ovarian Cancer (HGSOC): Correlating In Vivo Imaging Phenotypes with Histopathology and Immunohistochemistry

Boshen Liu, B.S.

University of Mississippi Medical Center
Rapid Bone Density Screening of Routine CT Images using Color Enhanced Detection (CED)



Tara Martinez, B.S., R.N.

University of Mississippi Medical Center
Use of a Phantom to Develop Imaging Protocols to Quantify Liver Surface Nodularity on CT Images from Multiple Different CT Scanners

Gwendolyn J. McGinnis, B.S.

Oregon Health & Science University
Suppression of the T cell Response and Enhancement of Detrimental Effects of Radiation on the Brain

Kelly Michaelson, Ph.D.

Geisel School of Medicine at Dartmouth College
Comparing X-ray and Optical Imaging for Breast Density Determination

Leslie A. Modlin, B.A.

Stanford University School of Medicine
Circulating Tumor DNA as a Novel Biomarker for Metabolic Tumor Volume in Non-Small Cell Lung Cancer

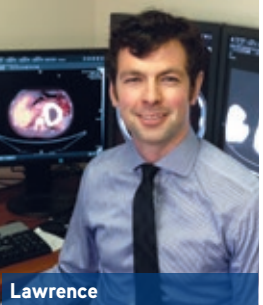
Megha Nayyar, B.A.

University of Southern California Keck School of Medicine
Role of Imaging in Active Surveillance of Renal Masses: A Systematic Review of the Literature

Chulhyun Park, B.S.

University of California, San Diego Medical Center
Effects of Intravenous Gadodotate Disodium and Flip Angle on Hepatic Proton-Density Fat Fraction Estimation with Multi-echo MR Imaging at 3T





Lawrence



Ronald



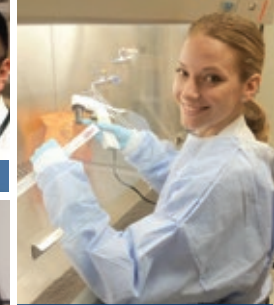
Vezeridis



Penninck



Zuo



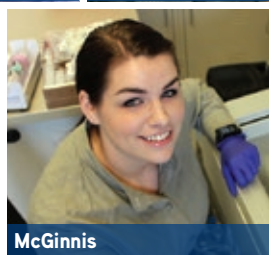
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Persson



Benjamin



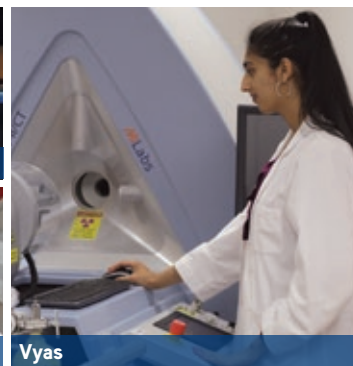
McGinnis



Berman



Dang



Vyas



Subramaniam



Martinez

Thomas J. Quinn, B.S.

Albert Einstein College of Medicine
Combination Low-Energy High Intensity Focused Ultrasonography (LOFU) and Radiation Therapy (RT): Preclinical Evaluation of Autologous In Situ Vaccination in a Mouse Model of Spontaneously Metastatic Melanoma

Arif Rashid, B.S.

Enrolled at University of Pittsburgh School of Medicine; Research conducted at Johns Hopkins Hospital
Applying Diffusion Tensor MRI after Radiation Therapy of Pediatric Brain Tumors to Establish Dose Constraints and Predictive Image Biomarkers in the Hippocampus and Periventricular Regions

Julia Talley, B.S.

The University of Texas Health Science Center at Houston
Evaluation of Effects of Electroporation and Gemcitabine Nanoparticle Formulation on Tumoral Response in a Pancreatic Adenocarcinoma Nude Mouse Model

Dmitriy Timerman, B.S.

Massachusetts General Hospital, Harvard Medical School
Quantitative Multimodal Analysis of Brain Structure and Metabolism in the Region of Developmental Venous Anomalies

Justin R. Tse, B.S.

University of California, Los Angeles
Predicting Hepatocellular Adenoma Subtype with Quantitative and Qualitative MRI Features

Shri Vyas, B.A.

Duke University School of Medicine
Characterization of Early Anti-Angiogenesis Treatment Effects in Colorectal Carcinoma Using High-Resolution Dynamic Contrast-Enhanced Ultrasound and Magnetic Resonance Imaging

David Xu, B.A.

Columbia University College of Physicians & Surgeons
Novel T1rho Sequence for In-Vivo Detection of Lumbar Intervertebral Disc Changes with Axial Load



James Yoon, B.A.

University of Southern California Keck School of Medicine
Analysis of 18F NaF PET-CT Tumor Response Assessment of Skeletal Metastases from Prostate Cancer

Chung Yao Yu, B.A.

University of Southern California Keck School of Medicine
Performance of PET Radiotracers in Biochemical Recurrence of Prostate Cancer

Derek Zachman, B.A., M.S.

Oregon Health & Science University
Mechanisms of Endothelial-dependent Hematopoietic Stem Cell Repair Following Ionizing Radiation Injury

Marcus Zuo, B.S.

Medical College of Wisconsin
Cost-effectiveness of Endovascular vs. Open Surgical Repair for Popliteal Artery Aneurysms

EDUCATION SCHOLAR GRANT

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University of Pennsylvania
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Improved Education in Digital Breast Tomosynthesis using Machine Learning and Computer Vision Tools



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The Development of Video-based Clinical Ultrasound Teaching Tools and the Construction of a Web-based Educational Program

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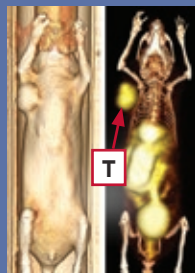
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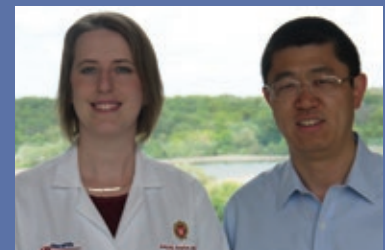
Amy Marie Fowler, M.D., Ph.D., a tenure-track Assistant Professor in the Breast Imaging Section at the University of Wisconsin-Madison, is focusing on advancing the use of molecular imaging to improve outcomes for patients with breast cancer. "Molecular imaging holds promise as a noninvasive biomarker assay for guiding treatment decisions and predicting response, as well as for developing new targeted therapies" Dr. Fowler said. "Specifically, I am interested in imaging estrogen and progesterone receptors (ERalpha, PR), which are important tumor biomarkers for assessing prognosis and guiding



FES PET/CT imaging of a tumor-bearing mouse. FES uptake is visualized in the tumor (T) located in the right mammary fat. Activity from physiologic clearance is identified in liver, gallbladder, bowel, and urinary bladder.

treatment, using whole body PET/CT and dedicated breast PET devices, to predict ..response to endocrine therapy and monitor for the development of endocrine resistance."

With a 2014 Philips Healthcare/RSNA Research Seed Grant, Dr. Fowler will examine how constitutively active forms of ERalpha impact [18F]fluoroestradiol (FES) imaging of ERalpha+ endocrine-resistant breast cancer using a preclinical xenograft model. Elucidation of the molecular mechanisms affecting tumoral FES uptake is critical for appropriate interpretation of FES-PET imaging studies that potentially guide patient treatment decisions.



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R&E Foundation Grants Launch Careers, Spur Added Funding

RSNA members can take an active role in moving the specialty forward by supporting—or applying for—the Research & Education (R&E) Foundation grants that represent the future of radiology and related scientific disciplines.

The R&E Foundation has grants available for medical students, residents, fellows and faculty at all levels. From hypothesis-driven basic science, translational and clinical studies to development of new strategies for teaching methods, the Foundation supports projects that are changing the way radiologists practice and learn.

In 2014, the Foundation will fund 94 grant projects totaling \$3.6 million—and that's just the beginning. An R&E grant often serves as a pathway to additional funding. Surveys show that R&E grant recipients have gone on to receive over \$1.5 billion

in subsequent funding from other sources such as the National Institutes of Health (NIH).

“My thanks to the RSNA R&E Foundation for its dedication to supporting research and education in radiology. The generous grants and awards from the Foundation launch careers that would otherwise have never gotten off the ground,” said Michael Jurkiewicz, M.D., Ph.D., an RSNA Research Resident Grant recipient. “My project, ‘A Novel Method of BOLD fMRI Resting State Functional Connectivity Analysis Across the Human Brain,’ would have been difficult, if not impossible, to conduct had it not been for the generous award.”

Visit RSNA.org/Foundation for more details or to submit an application.

RSNA WEBSITE SUPPORTS BREAST CANCER AWARENESS MONTH

In recognition of Breast Cancer Awareness Month in October, RSNA has developed a website featuring tools and resources to help radiologists and their patients stay informed of advances in detection and treatment of breast cancer. The broad array of RSNA products and resources available at RSNA.org/Breast-Cancer-Awareness includes:

- *Radiology* articles including, “Digital Mammography Screening with Photon-counting Technique: Can a High Diagnostic Performance be Realized at Low Mean Glandular Dose?”
- *RadioGraphics* articles including, “Ductal Carcinoma in Situ of the Breasts: Review of MR Imaging Features.”
- RSNA Online Education courses including RSNA annual meeting refresher courses, *Radiology Select* Volume 4: Breast Cancer Screening and *RadioGraphics* articles/online CME tests.
- *RadiologyInfo.org*, the online information source for patients.

RSNA Staff Retirement

Earlier this year, RSNA said goodbye to an employee whose quarter century of service included many years in human resources, where she was a familiar face as the Society grew from several dozen to more than 200 employees.

Jeanne Jendra, 26 years

RSNA has grown rapidly in recent years, hiring new employees to handle the expansion of the annual meeting, education offerings and journal content, as well as other products and services for an increasing membership. That these newcomers could immediately feel at home and tend to the Society's business was in large part due to the friendly welcome they received from Jendra.

Jendra joined RSNA in April 1988 as an administrative assistant in the Society's Editorial and Publishing Services division and worked as a schedule coordinator and



operations manager for the Publications Department. She was also administrative assistant to the executive director and a manager in the Learning Center before becoming Assistant Director of Administration and Human Resources in 1998.

“Jeanne brought an energy to the RSNA that was addicting,” said Mark Lichtenberger, RSNA Director of Administration and Human Resources. “The employees truly enjoyed interacting with her on a daily basis, as she made them feel so at ease with whatever seemed to be on their minds.”

Journal Highlights

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

CT and MR Imaging Diagnosis and Staging of Hepatocellular Carcinoma

CT and MR imaging play critical roles diagnosing and staging hepatocellular carcinoma (HCC). Emerging evidence suggests that MR imaging with hepatobiliary agents may be the most sensitive technique for detecting such HCCs.

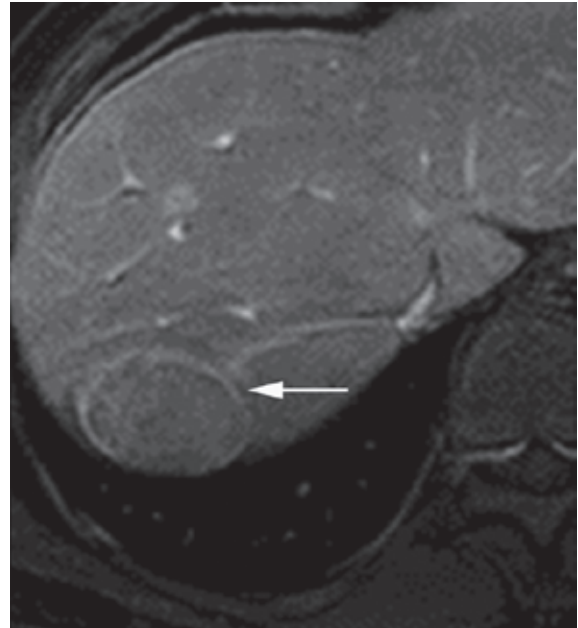
In the first of a two-part review published in the October issue of *Radiology* (RSNA.org/Radiology), Jin-Young Choi, M.D., of the Research Institute of Radiological Science in Seoul, Korea, Jeong-Min Lee, M.D., of Seoul National University Hospital, and Claude B. Sirlin, M.D., of the University of California, San Diego Medical Center, discuss basic concepts of diagnosis and staging, review the diagnostic performance of CT and MR imaging with extracellular contrast agents and of MR imaging with hepatobiliary contrast agents, and examine in depth the major and ancillary imaging features used in diagnosing and characterizing HCC. The article is the second in a two-part study.

While some single-center comparative studies have shown slightly better performance of dynamic MR imaging using extracellular contrast agents than multiphasic CT, the differences are small. The per-lesion sensitivity of MR imaging for nodular HCC of all sizes is 77 percent to 100 percent, while that of CT is 68 percent to 91 percent. The per-lesion sensitivities, stratified by size, are 100 percent for both modalities for nodular HCCs larger than 2 cm, 44 percent to 47 percent (MR imaging) and 40 percent to 44 percent (CT) for 1- to 2-cm HCCs, and 29 percent to 43 percent (MR imaging) and 10 percent to 33 percent (CT) for HCCs smaller than 1 cm.

Thus, both modalities provide excellent sensitivity for nodular HCCs larger than 2 cm, modest sensitivity for 1- to 2-cm HCCs and poor sensitivity for HCCs smaller than 1 cm, and it is not yet clear which modality is superior.

Ancillary features can be divided into those that favor the diagnosis of HCC specifically (intralesional fat, corona enhancement, nodule-in-nodule architecture, and mosaic architecture) and those that favor the diagnosis of malignancy but are not specific for HCC (mild-moderate T2 hyperintensity, restricted diffusion, and, if other features confirm a solid mass, lesional iron sparing).

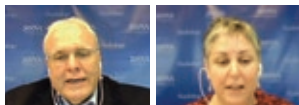
"Some ancillary imaging features show promise for predicting tumor grade or microvascular invasion, but independent confirmatory studies are needed to validate these features for these purposes," the authors write.



A 69-year-old man with encapsulated progressed HCC. Mass is isointense on portal venous phase image with a capsule appearance (arrow). Mosaic architecture and capsule appearance permit confident diagnosis of HCC, even though mass does not appear to wash out to hypointensity relative to liver in portal venous phase.

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EXTRA
PODCASTS

Listen to *Radiology* Editor Herbert Y. Kressel, M.D., deputy editors and authors discuss the following articles in the August issue of *Radiology* at pubs.rsna.org/page/radiology/podcasts:

- "Identification of Intrinsic Imaging Phenotypes for Breast Cancer Tumors: Preliminary Associations with Prognostic Gene Expression Profiles," Ahmed Bilal Ashraf, Ph.D., and colleagues.
- "ALK Molecular Phenotype in Non-Small Cell Lung Cancer: CT Radiogenomic Characterization," Shota Yamamoto, M.D., and colleagues.
- A joint podcast focuses on two articles on MR imaging in ADHD:
 - "Intrinsic Brain Abnormalities in Attention Deficit Hyperactivity Disorder: A Resting-State Functional MR Imaging Study," Fei Li, Ph.D., and colleagues.
 - "Multimodal MR Imaging of Brain Iron in Attention Deficit Hyperactivity Disorder: A Non-invasive Biomarker That Responds to Psychostimulant Treatment?" Vitria Adisetiyo, Ph.D., M.S., and colleagues.

MR Imaging-based Assessment of the Female Pelvic Floor

Pelvic floor weakness can provoke a wide range of symptoms, including pain, urinary and fecal incontinence, constipation, difficulty in voiding, a sense of pressure, and sexual dysfunction. When the condition is diagnosed solely on the basis of physical and clinical examination, the compartments involved and the site of prolapse are frequently misidentified. Such errors contribute to a high number of failed interventions.

MR imaging, which allows visualization of all three compartments, has proved a reliable technique for accurate diagnosis, especially when involvement of multiple compartments is suspected.

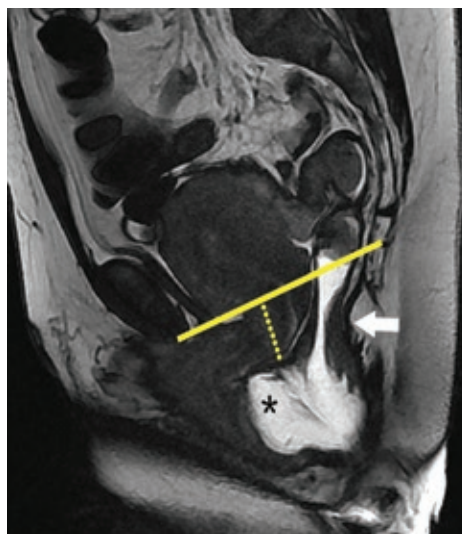
In an article in the September-October issue of *RadioGraphics* (RSNA.org/*RadioGraphics*), Laura García del Salto, M.D., of the Department of Radiology at the Hospital del Henares-Central Radiodiagnostic Unit in Coslada, Spain, and colleagues assess the benefits of MR imaging for examining pelvic floor weakness. Specifically, the authors:

- Review the pelvic floor anatomy
- Describe the MR imaging protocol used in their institutions
- Survey common MR imaging findings in the presence of pelvic floor weakness
- Highlight key details that radiologists should provide surgeons to ensure effective treatment and improved outcomes.

Over the past decade, MR imaging with dynamic sequences has been proven accurate and reliable for identifying pelvic floor weakness, especially when multiple compartments are involved, because it allows all three compartments to be visualized simultaneously. In addition, ultrasonography has emerged in the past several years as an important diagnostic method.

"MR imaging is an excellent tool for noninvasive evaluation of the pelvic floor. Thin-section MR imaging allows a careful assessment of the ligaments and muscles, and dynamic MR imaging with steady-state sequences may play a complementary role in evaluating functional disorders," the authors write.

RadioGraphics

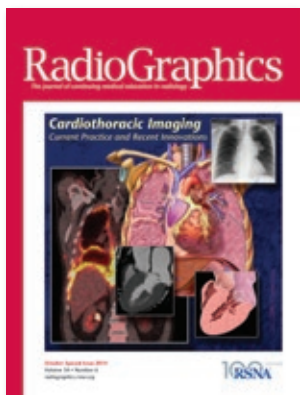


Pelvic organ prolapse in a 52-year-old woman with a bulging perineal mass. Sagittal FIESTA MR image obtained at maximal effort during defecation shows moderate uterine prolapse in the middle compartment (dotted line). In the posterior compartment, a moderate anterior rectocele (*) and caudal angulation of the levator plate (arrow) can be seen. Solid line = PCL

(*RadioGraphics* 2014;34;5:1417-1439) ©RSNA 2014 All rights reserved. Printed with permission.

This article meets the criteria for *AMA PRA Category 1 Credit™*. SA-CME is available online only.

RadioGraphics Monograph Issue Focuses on Cardiothoracic Radiology



Cardiothoracic radiology is the focus of the 2014 *RadioGraphics* monograph, which will be published in mid-October. The issue, "Cardiothoracic Imaging: Current Practice and Recent Innovations," covers a broad range of topics, including dose reduction in cardiac CT, the use of multidetector CT in the assessment of valvular disease and transcatheter intervention, cardiac MR imaging, evaluation of the solitary pulmonary nodule and imaging and staging of uncommon primary intrathoracic malignancies.

Guest Editors Robert M. Steiner, M.D., and Jeremy J. Erasmus, M.B., B.Ch.—*RadioGraphics*' Editorial Board members specializing in cardiac and thoracic radiology, respectively—solicited the material needed to produce a state-of-the-art resource for radiologists involved in the imaging of cardiac and chest disease. The guest editorial provides an integrative overview of the topics covered and includes an introductory note from *RadioGraphics* Editor Jeffrey S. Klein, M.D.

Initiated in 1999, the popular annual monograph issues have covered a spectrum of topics across the radiologic subspecialties. The *RadioGraphics* monographs can be accessed at pubs.rsna.org/page/radiographics/specialissues. Members and subscribers who receive *RadioGraphics* in print will automatically receive a print copy of the 2014 monograph.

Residents & Fellows Corner

RSNA Recognizes Chief Residents

As part of its commitment to support radiologists in every stage of their careers, RSNA takes this time of the year to acknowledge those selected as chief residents.

RSNA recently sent each new chief resident a gift box (right) including a "Chief Resident" mug. RSNA membership is free for residents and fellows and dues are discounted the first two years of practice. Learn more at RSNA.org/Benefits.



Radiology in Public Focus

A press release was sent to the medical news media for the following article appearing in a recent issue of *Radiology*.

The Boston Marathon Bombing: After-Action Review of the Brigham and Women's Hospital Emergency Radiology Response

The surge in imaging utilization after the Boston Marathon bombing stressed the need to analyze emergency radiology operations. Opportunities for improvement in a radiology department's response to a mass casualty incident (MCI) may be revealed by analyzing relevant activities during the response, including patient arrival, imaging orders, exam completion and exam interpretation with results communication and reporting.

In a retrospective study, John Brunner, M.D., of the Department of Radiology, Emergency Radiology Section, at Brigham and Women's Hospital (BWH), and colleagues analyzed imaging utilization and emergency radiology process turnaround times for 40 patients in response to the April 15, 2013, Boston Marathon bombing in order to identify opportunities for improvement in the BWH emergency operations plan.

Compared with routine emergency radiology operations, radiographic completion times were lengthened (31 vs. 52 minutes, respectively; $P < .001$) because of the bottleneck created by a single conventional radiography plate reader; CT examination completion times were reduced (72 vs. 37 minutes, respectively; $P = .001$) by availability of three CT scanners with a radiologist stationed at each scanner for protocoling and image review. Dictated report turnaround times did not differ significantly from routine operations, despite the high rate of imaging, because of increased radiologist staffing in response to the MCI.

"An after-action report of a facility's response to an MCI is a fundamental part of emergency preparedness and quality improvement. Planning should include increased availability of imaging equipment to avoid bottlenecks and reduce examination completion times, and radiologist staffing needs must be



Radiographic image of frontal view of the pelvis in a 33-year-old man reveals 17 spherical metallic opacities determined to be ball bearings and two linear opacities consistent with nails in the thigh and groin.

(*Radiology* 2014;273:178-87)

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anticipated, along with workflow modifications to accommodate prompt communication of imaging findings, with detailed reports to follow the influx," the authors write.

Senior author Aaron Sodickson, M.D., Ph.D., is interviewed in an October *Radiology* podcast.

New on *RadiologyInfo.org*

Visit *RadiologyInfo.org*, the public information website produced by the RSNA and ACR, to read the latest content posted to the website:

- Diverticulitis:
[Radiologyinfo.org/en/info.cfm?pg=diverticulitis](http://radiologyinfo.org/en/info.cfm?pg=diverticulitis)
- Lymphoma:
[Radiologyinfo.org/en/info.cfm?pg=lymphoma](http://radiologyinfo.org/en/info.cfm?pg=lymphoma)

RadiologyInfo.org

The radiology information resource for patients

Media Coverage of RSNA



In July, 297 RSNA-related news stories were tracked in the media. These stories reached an estimated 120 million people. Coverage included *Newsday*, *Today.com*, *Examiner.com*, *The Baltimore Sun*, *New York Daily News*, *NBCNews.com*, *Auntminnie.com* and *Science Daily*.

OCTOBER AND NOVEMBER PUBLIC INFORMATION ACTIVITIES FOCUS ON BREAST AND LUNG CANCER AWARENESS

To highlight National Breast Cancer Awareness Month in October and National Lung Cancer Awareness Month in November, RSNA is distributing public service announcements (PSAs) that focus on the importance of screening and the symptoms, risk factors and possible treatment options related to these cancers.

In addition, the RSNA “60-Second Checkup” audio program focusing on breast cancer awareness for October and lung cancer screening for November will be distributed to nearly 100 radio stations across the country.

Education and Funding Opportunities

Writing a Competitive Grant Proposal

March 6-7, 2015
RSNA Headquarters
Oak Brook, IL

Registration is open for the Writing a Competitive Grant Proposal workshop, designed for researchers in radiology, radiation oncology, nuclear medicine and related sciences who are interested in pursuing federal funding.

Guided by a faculty of leading researchers with extensive experience in all aspects of grant applications and funding, the program will focus on developing specific aims to be included in a grant application. Participants will be provided tools for getting started in the grant writing process and developing realistic expectations. Faculty includes Udo Hoffmann, M.D., M.P.H., and G. Scott Gazelle, M.D., M.P.H., Ph.D., of Massachusetts General Hospital in Boston; Ruth Carlos, M.D., of the University of Michigan Health System in Ann Arbor; and Martin Pomper, M.D., Ph.D., of the Johns Hopkins School of Medicine in Baltimore.

The course fee is \$175. Register online at RSNA.org/CGP. Contact Rachel Nelson at 630-368-3742 or rmelson@rsna.org for additional information.



Medical Meetings

October-November 2014

OCTOBER 2-4

European Society of Cardiac Radiology (ESCR), Annual Scientific Meeting, Cité Universite, La Maison Internationale, Paris
• www.escr.org

OCTOBER 8-11

Korean Society of Radiology (KSR), 70th Korean Congress of Radiology, Seoul
• www.kcr4u.org
* Visit the RSNA Booth

OCTOBER 15-18

International Skeletal Society (ISS), 41st Annual Meeting and Musculoskeletal Imaging Course, Edinburgh International Conference Centre, Edinburgh, Scotland
• www.internationalskeletalsociety.com

OCTOBER 15-18

The Society of Chairs of Academic Radiology Departments (SCARD), 2014 Fall Meeting, JW Marriott Tucson Starr Pass Resort & Spa, Tucson, AZ
• www.scardweb.org

OCTOBER 16-20

La Société Française de Radiologie (SFR)/ French Society of Radiology, Journées Françaises de Radiologie (JFR) 2014/French Days of Radiology 2014, Palais des Congrès, Porte Maillot, Paris
• www.jfrepo.com
* Visit the RSNA Booth

OCTOBER 17-19

Australasian Society of Ultrasound in Medicine (ASUM), 44th Annual Scientific Meeting, Crown Promenade, Melbourne
• www.asum.com.au

OCTOBER 19-21

Radiology Business Management Association (RBMA), Fall Educational Conference, The Westin Seattle, WA
• www.rbma.org

OCTOBER 22-23

British Institute of Radiology (BIR), Annual Congress, Euston Square, London
• www.bir.org.uk

OCTOBER 24-26

Society of Radiologists in Ultrasound (SRU), 2014 Annual Meeting, Marriott City Center, Denver
• www.sru.org

NOVEMBER 14-18

American Medical Informatics Association (AMIA), Annual Symposium, Washington Hilton Hotel, Wash. D.C.
• www.amia.org/amia2014

FIND MORE EVENTS AT
RSNA.org/Calendar.aspx

Annual Meeting Preview

Medical imaging science, education and technology—RSNA 2014 offers it all. Use this overview of the myriad educational and scientific offerings, technical exhibits and courses—as well as the technologies available to guide you and the amenities that will help you enjoy your Chicago stay—to plan your ideal experience.



Learning Opportunities

From lectures and special sessions focused on the specialty's hottest topics to the presentations of cutting-edge research and the latest in radiology informatics, learning opportunities in every subspecialty abound at RSNA 2014. With full participation in the meeting, each physician can earn up to 93.00 *AMA PRA Category 1 Credits*[™].

RSNA 2014 Offers Exceptional, Diverse Science and Education

As medical imaging continues to rapidly evolve, the robust collection of scientific presentations, education exhibits and courses at RSNA 2014 will help attendees stay at the forefront of the latest discoveries and techniques. The program delivers exciting content for every level of experience—from members-in-training to veteran radiologists.

“The scientific program for RSNA 2014 is going to be exceptional,” said **Jon A. Jacobson, M.D.**, chair of the RSNA Scientific Program Committee. “This year, more than 8,000 high-quality abstracts were submitted, which was an increase from the prior year. In addition, the number of international abstracts has also increased. This has resulted in a diverse selection of timely topics and high-quality research.”

New requirements for abstract submissions led to increased overall quality in the Education Exhibits program for RSNA 2014.

“Registrants will be pleased with the quality as well as the wide range of education exhibits at this year’s annual meeting,” said **Isaac R. Francis, M.D.**, chair of the RSNA Education Exhibits Committee. “The abstracts included new techniques for prostate cancer imaging, CT screening for lung cancer, quantitative and functional imaging, image-guided musculoskeletal interventions, PET/MRI applications in oncology and an exhibit on the introduction of a national RIS/PACS in Ireland.”

RSNA 2014 also promises another excellent educational program including refresher courses, essentials, case-based sessions, controversies, and a Friday imaging symposium on incidentalomas, said **Donald P. Frush, M.D.**, chair of RSNA Refresher Course Committee. “Our offerings are the result of remarkable sculpting by the RSNA



Jacobson



Francis



Frush

staff of the innovative and creative courses designed by the track chairs,” Dr. Frush said.

Themes that will complement conventional topics, Dr. Frush said, will be evident across subspecialties and include emerging technologies, contemporary imaging strategies and current challenges. Educational programs will also focus on evolving trends such as lung cancer screening, global imaging issues and non-interpretive responsibilities including the relevance of information technology in the delivery of high-quality imaging.

"Increasing use of educational enhancements such as audience response technology, RSNA Diagnosis Live™ and SAMs, as well as continued integration of scientific program and other educational material, will amplify the impact of the program content," Dr. Frush added.

RSNA received 13,485 science and education abstracts to consider for presentation at RSNA 2014—a 3 percent increase from last year. Of those, 2,151 were chosen for education exhibits and 2,703 were chosen for scientific presentations.

Breast Imaging

Tomosynthesis screening and diagnostic outcomes are "hot topics" this year, said Scientific Program Breast Subcommittee chair Emily F. Conant, M.D. "The number of high quality abstracts has significantly increased as tomosynthesis is being implemented clinically in breast centers internationally," Dr. Conant said.

A wide variety of education presentations will appeal to learners on all levels, including radiologic-pathologic correlations of various benign and malignant diseases and case-based and pictorial reviews, said Education Exhibits Breast Subcommittee chair Susan J. Ackerman, M.D. "Topics include updates in multimodality imaging from interventional procedures such as radioactive seed localization, tomosynthesis-guided localizations and imaging pitfalls in dynamic breast MRI," Dr. Ackerman said.

Cardiac Radiology

Interest continues in new techniques for coronary imaging and non-ischemic cardiomyopathies, said Scientific Program Cardiac Subcommittee chair Robert M. Steiner, M.D. He added there is growing interest in technologies such as transcatheter aortic valve implantation or replacement, radiation reduction, and PET/MRI and PET/CT.

The cardiac education exhibits are applicable to all levels of experience, from residents to subspecialists in cardiac imaging, said Shawn D. Teague, M.D., Education Exhibits Cardiac Subcommittee chair. "There is a fair amount of material this year on congenital-related cardiac entities and the management of these abnormalities," Dr. Teague said. "Quantitative imaging has a bigger focus this year



with new quantitative MRI pulse sequences, as well as an interesting first look at spectral imaging with CT."

Chest Radiology

"The hot topic in chest radiology is lung cancer screening—appropriate in light of recent and developing actions by the Centers for Medicare & Medicaid Services (CMS)," said Reginald F. Munden, M.D., D.M.D., Scientific Program Chest Subcommittee chair. Other abstracts pertain to lung nodules and malignancy, Dr. Munden added, and submissions for dual energy/spectral imaging and functional imaging applications for lung disease increase as these technologies become part of the mainstream.

In abstracts for education exhibits, "There was an increased emphasis on early lung cancer detection, specifically looking at ground glass nodules," said Eric T. Goodman, M.D., the Education Exhibits Chest Subcommittee chair. "Since the U.S. Preventive Services Task Force recommendations supporting lung cancer screening, the radiology community has been ramping up efforts to give practicing radiologists the tools to develop lung cancer screening programs at local institutions."

Emergency Radiology

"Emergency radiology scientific sessions will highlight a continued focus on optimizing imaging for ER patients with a broad range of non-traumatic and traumatic presentations," said Scientific Program Emergency Radiology Subcommittee chair Aaron D. Sodickson, M.D., Ph.D. "CT continues in the forefront, with particular attention given to protocol optimization and radiation dose awareness and a growing

focus on dual energy applications in the ER setting. The expanding role of MR imaging in the ER is evident in the scientific content, along with thought-provoking submissions on imaging utilization and ER practice management," Dr. Sodickson said.

Dr. Sodickson noted that emergency radiology series courses, combining refresher course content and scientific presentations, include an always popular trauma course, this year, "Contemporary and (Sometimes) Controversial Topics in Imaging of Trauma," and a new session, "Evidence Based Imaging in Emergency Radiology: What is the Evidence?" "RSNA's first oral scientific session dedicated to forensic radiology has been organized as an integrated science and practice session," he added.

Education Exhibits Emergency Radiology Subcommittee chair Stephen F. Hatem, M.D., said overall submissions climbed more than 11 percent when compared to 2013, and nearly 50 percent from 2012. The largest bump came in head and neck/central nervous system, which increased four-fold. Other topics seeing considerable increases in abstract submissions included trauma, chest/cardiac, musculoskeletal and forensic imaging.

Gastrointestinal Radiology

Use of advanced imaging techniques—using features other than lesion size—to help predict or assess response to oncologic treatments for cancers including rectal, gastric, hepatic and pancreatic will be a hot topic this year, said Scientific Program Gastrointestinal Subcommittee chair David

Continued on next page



Continued from previous page

H. Kim, M.D. "Attendees should pay special attention to some interesting imaging-based research concerning rectal cancer, the gastrointestinal applications of contrast-enhanced ultrasound in the abdomen and issues of lesion detection with CT dose reduction techniques in low-contrast situations," Dr. Kim said.

"There were several noteworthy abstracts on the application of dual-energy CT and material-density imaging to improve diagnostic accuracy for common diseases of the abdomen," said Lisa M. Ho, M.D., Education Exhibits Gastrointestinal Subcommittee chair. Reviewers were also enthusiastic about abstracts covering functional and quantitative imaging, such as MR diffusion and MR/CT perfusion.

Genitourinary Radiology/ Uroradiology

"Prostate imaging using multiparametric MR imaging continues to explode," said Julia R. Fielding, M.D., Scientific Program Genitourinary Subcommittee chair. Developing MR imaging uses include replacing biopsy in cases when a patient chooses watchful waiting over more invasive therapies, and fusing MR imaging with ultrasound to target biopsy, Dr. Fielding said. New trends include testicular imaging, quantification of prostate imaging and perfusion imaging.

Trends in uroradiology education exhibits indicate continued interest in MR imaging of the prostate as it becomes more accepted by urologists for evaluation of patients suspected of harboring prostate cancer but

with negative US-guided biopsies, as well as for active surveillance, said Education Exhibits Uroradiology Subcommittee chair Sheila Sheth, M.D.

Health Services Policy and Research/Policy and Practice

Cost, cost-restraint and value are the hot topics, said Paul Cronin, M.D., M.S., chair of the Scientific Program Health Service, Policy and Research Subcommittee. "Papers ranged from the variability and transparency of the cost of a diagnostic test in a certain geographic location to cost-effective analyses," he said. "Abstracts discussed costs at local and national levels and also comparisons among health systems at a national level. Other abstracts assessed providing equivalent information, such as cancer staging, with fewer sequences, series or modalities."

New topics included education simulation training and an increased emphasis on evidence synthesis to provide systematic reviews, meta-analyses, cost-effective analyses and decision rules. Abstracts indicated increased use of large databases, such as Surveillance, Epidemiology and End Results, to assess imaging on outcomes. Radiation dose, iodinated and gadolinium-based contrast agents are again popular issues, Dr. Cronin added.

Hot topics for education exhibits in this area include implications for radiologists with regard to the latest code updates from the International Statistical Classification of Diseases and Related Health Problems (ICD-10), said Dean K. Shibata, M.D., Educa-

tion Exhibits Policy and Practice Subcommittee chair. "Excellent exhibit submissions, particularly in the education and quality improvement categories, should appeal to a wide range of interests," Dr. Shibata added.

Radiology Informatics

Hot topics in informatics are value, analytics, mobility and quality image analysis, said Scientific Program Radiology Informatics Subcommittee chair Rasu Shrestha, M.D., M.B.A. "There has been much focus this year on image processing and analysis," Dr. Shrestha said. "The quality of the submissions in this area shows that the industry is maturing to focus on image segmentation and algorithms that drive clinical decision making."

Noteworthy topics in education exhibits include 3D printing and an exhibit on implementing a national RIS/PACS in Ireland, said Education Exhibits Radiology Informatics Subcommittee chair John Eng, M.D. "As in past years, some informatics education exhibits will be presented on individual standalone computer systems, allowing attendees a truly hands-on education experience and an opportunity to interact with project developers," Dr. Eng added.

Molecular Imaging

New trends in molecular imaging include imaging of prostate cancer with PET tracers superior to choline, multimodality imaging (including PET/MR), and imaging inflammation, said Alexander Drzezga, M.D., Scientific Program Molecular Imaging Subcommittee chair. "A number of abstracts demonstrated potential consequences with regard to treatment selection/monitoring, including microtubular stabilization in neurodegeneration, staging in breast and prostate cancer using novel PET tracers, and increased drug delivery in pancreatic cancer," he added.

"For education exhibits, many studies were submitted concerning imaging of prostate cancer and its metastases," said Dr. Drzezga, who also serves as Education Exhibits Molecular Imaging Subcommittee chair. "Exciting novel tracers with high sensitivity for imaging of this common cancer have become available and are finding their way into clinics.

"In molecular imaging there is a clear trend towards translation of novel imaging approaches into clinical applications, which

represents an exciting development and opens the molecular imaging sessions to a broad audience," Dr. Drzezga added.

Musculoskeletal Radiology

Trends in musculoskeletal radiology include soft tissue and bone tumor characterization with DWI and quantitative imaging, finite element analysis of bone and quantitative MR translating to clinical application, said Christine B. Chung, M.D., Scientific Program Musculoskeletal Radiology Subcommittee chair.

Ultrasound-guided procedures were a notable topic in abstracts submitted for education exhibits, which also included such new topics as high-volume stripping of tendons, according to Education Exhibits Musculoskeletal Radiology Subcommittee chair Kambiz Motamedi, M.D.

"The tendon-related submission in particular was interesting because it is a new and exciting treatment to deal with chronic tendinosis, a disease entity that is difficult to deal with and is very stubborn to heal," Dr. Motamedi said.

Neuroradiology

Evaluation of structural and functional brain connectivity for neuropsychiatric diseases is a hot topic in neuroradiology, said Pratik Mukherjee, M.D., Ph.D., Scientific Program Neuroradiology Subcommittee chair. Other topics include in vivo imaging of myelin using MR with ultra-short TE (UTE), whole-brain functional connectivity changes in multiple sclerosis and imaging in neuromyelitis optica. Other topics include head impacts and white matter changes in high school football players, functional connectivity of the default mode network in schizophrenia and arterial spin labeling perfusion for seizure foci in epilepsy.

Nuclear Medicine


"PET/MRI continues to be an active area of investigation that will be covered through a number of exciting presentations at this year's RSNA meeting," said Jonathan E. McConathy, M.D., Ph.D., Scientific Program Nuclear Medicine Subcommittee chair. "Topics include initial results with PET/MRI systems with time-of-flight capability, as well as evaluation of PET/MRI for specific oncologic imaging applications."

Dr. McConathy also noted the two nuclear medicine series sessions, "Non-FDG PET Radiotracers in Oncology" and "Assessment

Virtual Meeting

Add the Virtual Meeting to Enhance Your RSNA 2014 Experience

Wondering how you'll see everything there is to see at McCormick Place? This year's Virtual Meeting offers 50 percent more content than last year and—new this year—provides the opportunity for radiologic technologists to obtain continuing education credit. With the Virtual Meeting you can tune in to a full slate of live and on-demand sessions during RSNA 2014 and on-demand sessions through December 19. The opportunity to earn CME or Category A+/A continuing education credits for radiologic technologist and radiologist assistants is available for live activities.



Visit RSNA.org/Virtual to add the Virtual Meeting to your registration. The fee is \$100 for RSNA/AAPM members; \$300 for non-members. RSNA members-in-training, medical student members and retired members can access the Virtual Meeting for free.

Visitors to the Virtual Meeting page can view video highlights of past RSNA Virtual Meetings and explore the full gamut of offerings planned for RSNA 2014. Starting November 29, registered Virtual Meeting attendees can:

- Watch nearly 60 live streaming courses, including plenary sessions, the image interpretation session, refresher courses, multisession courses, series courses and scientific sessions.
- Submit diagnoses for Cases of the Day consisting of five cases per subspecialty area throughout the week. Answers will be revealed the following morning.
- Earn Continuing Education credits—Participating in live courses can earn you CME credits from anywhere in the world.
- View digital education exhibits and digital scientific presentations.
- Shop cutting-edge products, services, equipment and software from RSNA 2014 exhibitors.
- See courses on demand through December 19. No CME credits are awarded for viewing on-demand sessions.

RSNA is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. The RSNA designates this live activity for a maximum of 78.75 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

To view the Virtual Meeting Program, go to RSNA.org/Virtual. For more information, contact virtual@RSNA.org.

of Cancer Treatment Responses: Updates," will combine outstanding talks by invited speakers with presentations of clinical research studies that will provide an overview of the state-of-the-art in oncologic molecular imaging.

An increased focus on PET/MRI was also evident in abstracts submitted as education exhibits.

"This reflects installment of PET/MRI scanners for clinical purposes at many centers around the world and also many abstracts integrating functional and structural imaging in their topics," said Rathan M. Subramanian, M.D., Ph.D., Education Exhibits Nuclear Medicine Subcommittee chair. "PET/MRI abstracts are a must see—as this is a major development in the field and will influence radiology as a whole," he added.



Pediatric Radiology

Hot topics to be featured at RSNA 2014 include the study of prenatal brain development using 3T imaging, according to Rajesh Krishnamurthy, M.D., the Scientific Program Pediatric Radiology Subcommittee chair. Postnatal imaging with non-rigid image registration and finite strain theory is another interesting development, Dr. Krishnamurthy added.

"This year's topics in pediatric radiology education exhibits include cutting-edge applications in cardiac imaging and neuroradiology, as well as tutorials in basic concepts—there is something for everyone," said Kate A. Feinstein, M.D., the Education Exhibits Pediatric Radiology Subcommittee chair.

Physics

This year, education exhibits in physics have expanded to include a third focus area: imaging science and interpretation. "The goal is to establish a stronger bridge between the more traditional, hard-core physical science aspects of radiology and those that depend on technology to produce images of the highest quality to optimize interpretation efficacy and efficiency," said Elizabeth A. Krupinski, Ph.D., Education Exhibits Physics Subcommittee chair.

"This opens the door for more image perception, observer performance and

image quality submissions from researchers who struggled to find the best track for work that cuts across all modalities but doesn't quite fit one in particular," Dr. Krupinski added.

Among the 40 exhibits on the Physics track, dose will again be a highlight. The Imaging Science track covers a wide variety of topics that explore the multitude of ways the more basic sciences address day-to-day image presentation and interpretation. "Although all the papers are physics-based, they all focus on a distinct clinical problem and will be of interest to basic scientists, radiologists, residents and technologists in search of a better understanding of what makes a better image for interpretation while protecting patients and providing them with the safest and most effective imaging experience," Dr. Krupinski said.

Radiation Oncology and Radiobiology

"Some of the most innovative abstracts in this area centered on exploration of biological mechanism of advanced radiation therapy, functional imaging during radiation therapy, refinement of advanced targeted image-guided radiation therapy delivery and radiation safety," said Nina A. Mayr, M.D., Scientific Program Radiation Oncology/Radiobiology Subcommittee chair.

Education exhibits in radiation oncology and radiobiology continue to focus on the use of high-technology radiation therapy in the treatment of common malignancies, according to Education Exhibits Radiation Oncology Subcommittee chair Carl J. Rossi, Jr., M.D. He noted a particular focus this year on post-radiation imaging changes seen in normal tissue and how these findings can often be misinterpreted. "I would consider this to be a must see topic in our exhibits, as this is an issue that all radiation oncologists routinely face when reviewing post-treatment scans," Dr. Rossi said.

Vascular/Interventional Radiology

"Dose reduction for both radiation and contrast use were again hot topics in CT and MR angiography," said Charles T. Burke, M.D., Scientific Program Vascular and Interventional Subcommittee chair. "Atherosclerotic imaging was also quite prominent, especially the use of metabolic imaging for better plaque characterization." Other notable topics, Dr. Burke said, were 4D imaging, PET/MR for vascular imaging, using PET/MRI to not only provide anatomic information about vascular plaques but also metabolic information that can potentially be used for risk stratification, and percutaneous treatment of prostate cancer.

Plenary Lectures

RSNA 2014 will feature plenary session lectures on a spectrum of healthcare topics. All lectures will be presented in the Arie Crown Theater.

SPECIAL LECTURE

Sunday, November 30 • 8:30 a.m.

Exceptional Opportunities in Biomedical Research

In this Special Lecture, **Francis Collins, M.D., Ph.D.**, the Director of the National Institutes of Health (NIH), will help celebrate the RSNA's centennial meeting by examining the exceptional opportunities that scientific and technological breakthroughs offer for biomedical research. With particular focus on NIH-supported imaging research, the talk will examine recent



Collins

advances in fundamental knowledge about biology—and highlight the ways in which that knowledge is serving to improve human health. Topics include the Brain Research

through Advancing Innovative Neurotechnologies (BRAIN) Initiative; the Accelerating Medicines Partnership (AMP); and affordable technologies to extend imaging insights to low-resource settings. Dr. Collins will conclude with a discussion of future challenges, such as training the next generation of researchers; supporting the development of innovative research, programs, and partnerships; and encouraging broader appreciation and support for the biomedical research enterprise.

As NIH director, Dr. Collins oversees the work of the largest supporter of biomedical research in the world, spanning the spectrum from basic to clinical research. Dr. Collins is a physician-geneticist noted for his landmark discoveries of disease genes and his leadership of the international Human Genome Project, which culminated in April 2003 with the completion of a finished sequence of the human DNA instruction book. He served as director of the National Human Genome Research Institute at the NIH from 1993-2008.



Before coming to the NIH, Dr. Collins was a Howard Hughes Medical Institute investigator at the University of Michigan. He is an elected member of the Institute of Medicine and the National Academy of Sciences, was awarded the Presidential Medal of Freedom in November 2007 and received the National Medal of Science in 2009.

NEW HORIZONS LECTURE

Monday, December 1 • 1:30 p.m.

Future of Ultrasound

Quantitative methods nearly unique to ultrasound are giving the modality a new life, says **Jonathan M. Rubin, M.D., Ph.D.** Dr. Rubin says rapidly expanding applications of elasticity imaging are poised to have a major impact—for example, shear wave speed imaging will likely replace liver biopsies for fibrosis/cirrhosis assessment. Volume flow estimation, meanwhile, has the potential to significantly affect transplant evaluations, fetal evaluation through umbilical cord blood flow measurements, carotid artery flow and cerebral perfusion. Finally, says Dr. Rubin, there are myriad new applications for contrast agents, using the bubbles that comprise the agents not only for contrast but also delivery.

In a research career spanning more than 30 years, Dr. Rubin has exploited the basic characteristics of ultrasound and other modalities to offer real-time imaging in neurosurgery, assess thrombus age in deep vein thrombosis, discriminate between edema and fibrosis in Crohn's disease and improve gating methods for registering cardiac



Rubin

CT scans. In the area of blood flow detection and measurement, Dr. Rubin's original paper on Power Doppler ultrasound has been referenced more than 800 times and he was among the first to describe volume flow.

Dr. Rubin serves as director of the Division of Ultrasound in the Department of Radiology at the University of Michigan Hospitals in Ann Arbor. He has served as principal investigator on more than 30 funded projects and holds 10 patents for ultrasound technology. Dr. Rubin has received the Joseph H. Holmes Clinical Pioneer Award of the American Institute of Ultrasound in Medicine and the Lawrence Mack Lifetime Achievement Award of the Society of Radiologists in Ultrasound.

ANNUAL ORATION IN DIAGNOSTIC RADIOLOGY

Tuesday, December 2 • 1:30 p.m.

Transitioning From Volume-Based to Value-Based Practice: A Meaningful Goal For All Radiologists or a Meaningless Platitude?

Radiology faces many threats, ranging from commoditization, declining reimbursements, and termination of groups by hospitals to the perception that much imaging is unnecessary. Countering the threats, says **David C. Levin, M.D.**, means moving from the current volume-based practice model to a value-oriented one. Dr. Levin calls on radiologists to become true consulting physicians who actively assess the appropriateness of imaging requests, more closely supervise performance of the studies and do better at communicating results to patients. Focusing more on quality



Levin

is another way to provide value, he adds, as is developing closer ties to primary care physicians. With these changes, says Dr. Levin, within five years radiology could be considered a high-value specialty more helpful to patients and referring physicians than at present.

Dr. Levin is professor and chairman emeritus of the Department of Radiology at Jefferson Medical College and Thomas Jefferson University Hospital in Philadelphia. He is regarded as an expert in health policy and practice, with recent research focusing on the utilization and costs of imaging procedures, the effects of self-referral and practice patterns in imaging. Dr. Levin established the Jefferson Center for Research on Utilization of Imaging Services.

A prolific author, researcher and lecturer, Dr. Levin was awarded the RSNA Gold Medal in 2009 and also has received the gold medals of the American Roentgen Ray Society, American College of Radiology, Association of University Radiologists and Society of Interventional Radiology. In 2008,

an endowed chair was established in his honor at Thomas Jefferson University, renaming the chair of the Department of Radiology as The David C. Levin Professor and Chair of Radiology.

ANNUAL ORATION IN RADIATION ONCOLOGY

Wednesday, December 3 • 1:30 p.m.

"Error Bars" in Medical Imaging: Stealth and Treacherous

While medical imaging has markedly improved radiation therapy, limitations remain and excessive over-reliance on imaging can be detrimental, according to **Lawrence B. Marks, M.D.** For example, clinicians must understand the likely



Marks

patterns of cancer spread, beyond the radiologically defined lesion, when defining targets for radiation therapy. Differences in the physiologic state during diagnostic imaging, versus treatment, can influence the validity of medical images for radiation planning; for example, "good" diagnostic images may require breath hold, while therapy is usually not delivered in this state. Dose volume histograms, a cornerstone of modern radiation oncology, typically ignore inter- and intrafraction motion and discard all spatial information. Meanwhile, oncologist-radiologist communi-

cation is often ambiguous, potentially increasing risks for misinterpretation and errors—EHR-based standardization of our communication should be embraced. Dr. Marks urges all to acknowledge and minimize the error bars associated with the application of medical images to RT.



Dr. Marks is the Dr. Sidney K. Simon Distinguished Professor of Oncology Research in the Department of Radiation Oncology at the University of North Carolina at Chapel Hill School of Medicine. He is a recognized expert in radiation therapy-in-

Other Plenary Sessions

More information about these sessions is available at RSNA.org/AnnualMeeting.

Sunday

8:30 a.m.

President's Address

10:45 a.m.

Oncodiagnosis Panel

4:00 p.m.

Report of the RSNA Research & Education Foundation

4:00 p.m.

Image Interpretation Session

Friday

12:30 p.m.

Friday Imaging Symposium

duced normal tissue injury, has conducted several imaging-based prospective clinical trials to better understand radiation-induced lung and heart injury, and was the lead physician for the recent Quantitative Analyses of Normal Tissue Effects in the Clinic (QUANTEC) initiative sponsored by the American Society for Radiation Oncology and the American Association of Physicists in Medicine.

Dr. Marks is also interested in human-factors engineering and has studied the frequency and causes of human errors in the radiation oncology clinic. This work has led to the implementation of systems aimed to reduce errors and enhance patient safety. He has published and lectured about this sensitive issue and serves on several national committees aimed to improve patient safety.

RSNA/AAPM SYMPOSIUM

Thursday, December 4 • 1:30 p.m.

Radiomics: From Clinical Images to Omics

In this symposium presented in conjunction with the American Association of Physicists in Medicine, **Robert J. Gillies, Ph.D.**, and **Hedvig Hricak, M.D., Ph.D., Dr. h.c.**, will describe the motivation underlying medical imaging analyses of tumor heterogeneity and response to therapy, and the role of medical imaging omics in oncology as a biomarker and the potential benefits leading to improved outcomes. They will also address the benefits and challenges of advanced and high-throughput image analysis from large databases at multiple centers.

Dr. Gillies is chair of the Department of Cancer Imaging and Metabolism, director of the Center of Excellence in Cancer Imaging and Technology, vice-chair for research in the Department of Radiology and scientific



Gillies



Hricak

director of the Small Animal Imaging Lab (SAIL) and Image Response Assessment Team (IRAT) shared services at the Moffitt Cancer Center in Tampa, Fla. Dr. Gillies' research emphasizes the use of imaging to inform evolutionary models of carcinogenesis and response to therapy. He currently serves the National Cancer Institute as a member of the Experimental Therapeutics (NExT) special emphasis review panel and the Network Consulting Team for the Early Detection Research Network (EDRN). Dr. Gillies also serves the U.S. Department of Defense as a member of the integration panel for the Prostate Cancer Research Program.

Dr. Hricak is chair of the Department of Radiology at Memorial Sloan-Kettering Cancer Center, a professor of radiology at Cornell University Medical College and an attending radiologist at Memorial Hospital, all in New York. She is a genitourinary imaging authority who helped develop the use of MR imaging and CT for gynecological cancers. Dr. Hricak has served as the principal investigator of a National Institutes of Health (NIH)-funded study on the use of MR imaging and MR spectroscopy for risk assessment in prostate cancer patients. She also has co-directed an NIH-funded program that trains young scientists and physicians in oncologic molecular imaging. Dr. Hricak served as RSNA president in 2010.

SATURDAY COURSES

Nuevos Horizontes en Diagnostico por Imagen Desde el CIR: Sesión del Colegio Interamericano de Radiología (CIR) en Español/New Horizons in Diagnostic Imaging from CIR: Session of the Interamerican College of Radiology (CIR)

This session is presented in Spanish with simultaneous English translation.

AAPM/RSNA Tutorials: Multi-spectral and Volumetric Imaging

The Physics Tutorial for Residents looks at the underlying physics of multi-spectral volumetric imaging and the advanced applications that can increase its effectiveness. Imaging artifacts resulting from hybrid imaging techniques and the limitations of the technology will be discussed.

Immediately following is the Tutorial on Equipment Selection, which details the advanced capabilities of multi-spectral volumetric imaging in the major modalities of ultrasound, MR, CT and nuclear imaging.

Grantsmanship Workshops

Two workshops examine the National Institutes of Health (NIH) grant application process from different perspectives. The "NIH Grantsmanship Workshop" helps applicants understand the process for preparing a competitive research or training grant application. "RSNA/ARR Study Section Reviewers Workshop—What It Takes to Be an Expert Reviewer for the NIH: The Peer Review Process Demystified" prepares reviewers with an overview of grant mechanisms and evaluation criteria. Both sessions give attendees the opportunity to learn from a mock study section.

Claim Credit Electronically with Credit Eval

Evaluate RSNA 2014 courses and sessions and claim credits online, via your own laptop or mobile device, or at any of the Internet Kiosks within McCormick Place. The Credit Eval Center allows you to begin your evaluations as early as 10 minutes after courses begin, claim your credits onsite, and walk away with printed certificates in hand. You will also receive links via e-mail that allow you to print certificates at home. For RSNA members, credits are automatically added to the RSNA CME Repository. After the meeting, attendees will still be able to evaluate courses and claim credit for one week. Assistance will be available in the Mobile Connect booth in the RSNA Services area. Before the meeting, visit Credit Eval to build your agenda—RSNA.org/AnnualMeeting.

SPECIAL COURSES

Special Interest, Hot Topic, Controversies Sessions

Discover radiology-related topics that are late-breaking (Hot Topics), are particularly controversial or offered in a game format (Controversies), or are programs the RSNA Board deems of particular importance (Special Interest). High levels of audience interest and opinion are expected. Sessions are offered Monday-Thursday; see the *RSNA Meeting Program* for titles.

RSNA Diagnosis Live™

These exciting expert-moderated sessions feature a series of interactive case studies to challenge radiologists' diagnostic skills. Submit and discuss your responses with your colleagues in a fast-paced game format. Monday's session from 4:30-6:00 p.m. will feature chest, abdomen and neuroradiology cases; Tuesday's and Wednesday's sessions from 7:15-8:15 a.m. will feature a potpourri of body, cardiac, musculoskeletal, neuroradiology, and ear/nose/throat cases; and Thursday's session from 3:00-4:00 p.m. will feature musculoskeletal, pediatric, and interventional radiology cases. All sessions will be held in Room E451B.

Estate Planning Focus of Monday Session

Understanding the fundamentals of estate planning, planning for retirement and strategies for leveraging taxable gifts are among the topics to be covered at the Monday session, "Estate Planning for a Better Tomorrow."

Alicia K. Waltenberger, Esq., Director, Wealth Planning Strategies, TIAA-CREF Financial Services, will discuss retirement needs analysis, Roth conversions, estate planning basics, leveraging taxable gifts, non-tax-related planning and charitable planning. A question/answer period will follow the session.

"Estate Planning Today for a Better Tomorrow" will be held from 3:00-5:30 p.m., Monday, Dec. 1, in Room E253AB.

"Presents" Sessions Spotlight Canada, Korea

For its 100th anniversary, RSNA has partnered with the Canadian Association of Radiologists (CAR) and the Korean Society of Radiology (KSR) to bring the best research and education from Canada and Korea to share with RSNA. Read more on Pages 5-6.

Canada Presents

"Beyond Diagnosis: How Cardiovascular Imaging Research in Canada is Improving Clinical Outcomes," is scheduled for Tuesday, 10:30 a.m.-12:00 p.m. The session will include presentations in multiple modalities, case studies and a panel discussion by Canadian experts in cardiovascular radiology. The course will include six 10-minute presentations, followed by a 30-minute panel discussion with the audience.

The session will be moderated by Bruce B. Forster, M.D., and Jonathon A. Leipsic, M.D. Presenters are Dr. Leipsic, Vancouver, Mayank Goyal, M.D., FRCPC, Calgary, Gilles P. Soulez, M.D., Montreal, Darren Klass, M.D., Ph.D., Vancouver, Andrew M. Crean, M.D., Toronto, and Ting-Yim Lee, MSc., Ph.D., London.

For more information on Canada Presents, visit RSNA's dedicated website at RSNA.org/CanadaPresents.

Korea Presents

"Exploring Evidence in Cardiovascular Imaging," is scheduled for Monday, 10:30 a.m.-12:00 p.m. The session, including 20-minute lectures by top Korean radiologists—each followed by a 5-minute discussion—will be moderated by Tae-Hwan Lim, M.D., and Arthur Stillman, M.D. Presenters are Jin Hur, M.D., Sang Il Choi, M.D., and Byoung Wook Choi, M.D., Ph.D.

For more information on Korea Presents, visit RSNA's dedicated website at RSNA.org/KoreaPresents.

Earn SAM, CME credits.

Forty-one in-person self-assessment module (SAM) courses will be offered at RSNA 2014, allowing participants to obtain both continuing medical education (CME) and SAM credit for each course attended. With the help of SAM faculty, this year's courses have been designed to cover a wide range of subspecialties.

RSNA offers SAMs that meet the American Board of Radiology's (ABR) criteria for a self-assessment activity in the ABR Maintenance of Certification (MOC) process. Participants can earn up to 1.50 SAM Credit and 1.50 AMA PRA Category 1 credits.

The RSNA Annual Meeting in-person SAMs is an Accredited Self-Assessment Program (SAP—Section 3) as defined by the MOC of the Royal College of Physicians and Surgeons of Canada (RCPSC), and has been approved by the Canadian Association of Radiologists (CAR) for a maximum of 1.50 credit hours.

Six weeks after SAM participation at the RSNA Annual Meeting, attendees will receive an e-mail directing them how to retrieve test remediation, additional references and their earned SAM certificate. Attendees receive anonymous peer data comparison, including submitted answers and the peer performance for each question answered. References are also provided for each SAM question to encourage and facilitate further independent study.

Pre-registration is required for SAM courses. Go to RSNA.org/Register. Members attend RSNA 2014 SAM courses for free; non-members pay \$50.

REFRESHER AND MULTISESSION COURSES

RSNA 2014 offers more than 300 refresher courses covering traditional and cutting-edge topics. Multisession courses are scheduled for time blocks ranging from several hours to several days, to allow intensive study of various topics.

Quality Certificate Sessions at RSNA 2014

Attendees of the Quality Multi-Session Symposium on Tuesday, Dec. 2, will have a chance to earn up to three Quality Essentials Certificates (QEC) designed to recognize those who demonstrate a threshold level of knowledge in four quality improvement domains. QECs will be available in the following sessions:

TUESDAY

8:30-10:00 a.m. (MSQI31)

- **Fundamentals of Lean: What, How and Why Now? (Satisfies domain: Quality Improvement in Your Practice)**

10:30 a.m.-12:00 p.m. (MSQI32)

- **Implementing Lean in Your Practice (Satisfies domain: Radiologist Performance Improvement)**

1:30-3:00 p.m. (MSQI33)

- **The Lean Toolbox in Practice (Satisfies domain: Staff and Patient Safety)**

A Quality Essentials Certificate is awarded to participants who earn 80 percent or higher on the related SAM test. Last year's online QEC courses are available at RSNA.org/Quality. 2014 QEC sessions will be available online by June 2015.

Advanced Level Quality Certificate

To be eligible to receive an Advanced Level Quality Certificate, candidates must attain a QEC in each of these categories: Quality Improvement in Your Practice, Staff and Patient Safety, Customer Satisfaction and Radiologist Performance Improvement. Candidates must also have exhibited a Quality Storyboard poster at an RSNA Annual Meeting. For more information, visit RSNA.org/Quality.

RSNA 2014 Professionalism Course Reviews Future Impact of Past Century of Technology

As the RSNA enters its second century, and into an age of molecular and genomic imaging, reviewing the ethical implications of radiological technologies developed in the past century may offer insights into ethical dilemmas that new imaging technologies may create in the future. An RSNA 2014 RSNA Professionalism Committee refresher course, "The Ethical Power of Radiologic Technology: Reviewing the Past to Prepare for the Future," will examine the interface of ethics and radiological technology. Professionalism Committee Chair Stephen D. Brown, M.D., will lead the interactive sessions. Registration for all RSNA 2014 courses is underway at RSNA.org/Registration.



LEARNING CENTER

The Learning Center, located in Hall D, Level 3, is home to education exhibits, Quality Story Boards and scientific poster presentations, grouped according to subspecialty. Many authors of posters and education exhibits are scheduled to give lunchtime presentations of their work; see the RSNA Meeting Program for days and times. Digital scientific posters and education exhibits are available to meeting attendees via the Virtual Meeting 24 hours a day throughout the meeting week.

Quantitative Imaging

Located in the Learning Center, the Quantitative Imaging Reading Room is 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 Biomarkers Alliance (QIBA) kiosk, see the latest efforts of the RSNA-directed group that aims to improve the value and practicality of quantitative imaging biomarkers by reducing variability across devices, patients and time.

Pediatric and Nuclear Medicine/ Molecular Imaging Campuses

Separate Pediatric and Nuclear Medicine/Molecular Imaging campuses feature many components—including refresher and series courses, scientific presentations, and education exhibits—of these subspecialties to facilitate focused study during the week. The Pediatric Campus is located in Rooms S101B and S102AB of McCormick Place. The Nuclear Medicine/Molecular Imaging Campus is located in S503AB, S504CD and S505AB. Lunch hour CME sessions featuring discussions of scientific posters and education exhibits in the pediatric and nuclear medicine/molecular imaging subspecialties will take place in the campuses.

RADIOLOGY INFORMATICS

IHE/RSNA Image Sharing Demonstration

The Integrating the Healthcare Enterprise (IHE®) Image Sharing Demonstration in Booth 1336 in South Building, Hall A, showcases state-of-the-art methods being deployed today to make medical images and related data available securely and conveniently. Learn how radiologic care centers can share images and reports with patients and healthcare providers through image-enabled personal health record

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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. Demonstrations, taking place regularly during exhibit hours, will feature systems developed for the RSNA Image Share network, vendors and research organizations.

In addition, the refresher course “The RSNA Image Share Network—How It Operates and How to Put It into Your Office,” on Wednesday from 12:30 to 2:00 p.m. in Room S501ABC, will detail the goals and technical architecture of the RSNA Image Share project. Attendees interested in implementing Image Share at their sites are invited to attend a town hall meeting following the refresher course.

Informatics Courses

More than 70 refresher courses, many of them hands-on, will be offered on informatics topics including advanced imaging tools, monitoring radiation exposure, computer-aided diagnosis and 3D printing. Courses are also available on RSNA Informatics projects such as Clinical Trial Processing software, MIRC® Teaching File software, RadLex® and Reporting.

Informatics Area—Learning Center

Visit the Informatics area in the Learning Center to take guided tours of IHE, MIRC, RadLex and Reporting. For more information, go to RSNA.org/Informatics.

RSNA EDUCATION

RSNA Store Features Refresher Courses Available for Purchase on USB

Visit the RSNA Store in the Lakeside Center for a demonstration of the new refresher courses on USB. With over 60 individual refresher courses and multiple topical collections available for purchase on USB, the RSNA Store has a wealth of learning opportunities spanning all subspecialty areas.

Each USB is compatible on both Mac and Windows operating systems, and no internet connection is required. Each USB includes up to 3GB of additional storage for personal use.

RSNA staff will also be available in the store to give demonstrations of the integrated features on each refresher course, including the built-in transcript feature,

automatic bookmarking feature, and included CME test. Individual courses cost \$55 for members and \$80 for non-members. Refresher course collections on USB are reduced 25 percent from individual USB pricing. Collections offer two or three refresher courses packaged on one convenient device.

If you are not attending the annual meeting you can still purchase the USBs by visiting rsna.org/purchase. Contact the Education Center at ed-ctr@rsna.org for more information on all of our education offerings.

Academy of Radiology Leadership and Management

More than 30 courses at RSNA 2014 count toward the Certificate of Achievement offered by the Academy of Radiology Leadership and Management (ARLM).

Medical imaging professionals can earn a Certificate of Achievement from ARLM by participating in 50 hours of education—including at least 30 hours in person—across a spectrum of domains including financial skills, human resources, professionalism, legal/contracting and academic mission.

In addition, ARLM-eligible courses now also count toward the Radiology Leadership Institute of the American College of Radiology.

Learn more about ARLM-eligible courses by picking up an ARLM subspecialty brochure at McCormick Place and looking for the **(ARLM)** in the *RSNA Program in Brief*. RSNA Store staff can answer questions regarding ARLM achievements or courses.



McCormick Place and Chicago

Getting around McCormick Place and the RSNA annual meeting is easy thanks to helpful digital and printed resources. Diverse technical exhibits and a broad spectrum of RSNA services and dining and entertainment options help you get the most out of your trip to the Windy City.

TECHNOLOGY

Take advantage of digital resources to learn more about specific sessions, get general information and find your way around RSNA 2014 and McCormick Place.

Meeting Central

Bookmark RSNA.org/AnnualMeeting as your go-to source for the very latest, up-to-date information:

• RSNA Meeting Program

The online *RSNA Meeting Program* offers easy-to-search, detailed information about each of the hundreds of presentations happening at RSNA 2014. In addition to searching for courses by keyword, title and name of presenter, users can search the online program by day, type and specialty.

• Frequently Asked Questions

Whether you're wondering where to pick up your badge, how to make travel arrangements, how to access the *Meeting Program*, or what the weather is like in Chicago, Meeting Central has the answers to your RSNA 2014-related questions. This section covers a broad range of topics including travel, housing and exploring Chicago.

• Credit Eval Center

Credit Eval makes claiming credit easy. Read more on Page 30.

Meeting App

Download the RSNA 2014 app for Apple and Android smartphones and tablets and access the *Meeting Program* even when you're offline. The app also offers maps for navigating McCormick Place, online help during the annual meeting, a QR code scanner, an agenda planner and exhibitor list access, and a notification center with important meeting alerts. Available via the App Store and



Google Play. The RSNA 2014 app is sponsored by Siemens.

Mobile Connect Booth—RSNA Services

Get the most out of your personal digital devices, including the on-the-go flexibility offered by RSNA's mobile apps. Tech experts will be on hand in this casual, open environment in RSNA Services to help attendees get familiar with the functions of their mobile devices and introduce them to RSNA apps, the *Meeting Program*, and Credit Eval. Stop by anytime during RSNA Services hours for personalized, hands-on help from RSNA experts.

Internet Kiosks

Computers will be available at Internet Kiosks throughout McCormick Place for use in accessing Meeting Central and the Credit Eval Center (see Page 30).

WiFi

Wireless connectivity is available throughout McCormick Place. Note: These wireless networks are not secure and should not be used for sending sensitive information.

Charging Stations

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

TECHNICAL EXHIBITS

Technical Exhibits at RSNA 2014 will feature nearly 700 exhibitors in two halls: Hall A in the South Building and Hall B in the North Building. A balanced mix of companies will be located in both halls.

Featured in the Technical Exhibits:

Country Pavilions:

Exhibitors from Canada (Ontario), China, France, Germany, Japan and Korea will showcase their products and services in their country booths.

Publishers Row:

Browse educational titles in all areas of medical imaging in South Building, Hall A.

Vendor Workshops:

Get hands-on tutorials of vendor software systems.

Associated Sciences:

Organizations for allied professionals are located together in South Building, Hall A.

Bistro RSNA:

Enjoy a great lunch without leaving the exhibit halls.

Continued on next page

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

The RSNA 2014 meeting app is available for download to help you plan your visit to the RSNA Technical Exhibits. This app lists complete exhibitor information including floor plans.

Technical Exhibits Guide

Available at McCormick Place, the Technical Exhibits Guide includes floor plans, exhibitor list, food service and other exhibit floor activities. Distributed in bins adjacent to the *Daily Bulletin* and at exhibit hall entrances, the *Technical Exhibits Guide* is an essential navigational tool for RSNA attendees.



Technical Exhibits Hours

Hall A (South Building) and
Hall B (North Building)

Sunday

11:00 a.m. - 5:00 p.m.

Monday-Wednesday

10:00 a.m. - 5:00 p.m.

Thursday

10:00 a.m. - 2:00 p.m.

RSNA SERVICES

RSNA staff will demonstrate resources, provide information and answer questions about RSNA's full array of products and services. Anchored by the RSNA Plaza, RSNA Services on Level 3 of the Lakeside Center offers:

RSNA Global Connection:

Unique networking opportunities to connect radiology professionals from around the world.

Career Connect:

The place to go if you're looking for a job or advertising to fill one.

Journals, News & *RadiologyInfo.org*:

Check out RSNA's print, online and mobile publications and the RSNA-American College of Radiology public information website.

Membership:

Get answers to questions about membership, journal subscriptions, dues payments and making the most of your benefits.

Radiology Cares®: *The Art of Patient-centered Practice*:

RSNA's campaign to optimize the patient experience in radiology.

RSNA Store:

Education products including refresher course USBs and *Radiology Select*. Explore RSNA mobile CME products and find RSNA-branded merchandise and apparel, with special items this year to mark the RSNA Centennial.

Research & Education (R&E) Foundation:

Learn more about R&E activities, including current grant and award recipients as well as individual, private practice and corporate donors.

The R&E Donor Lounge:

Offers computers, a coat room and comfortable furniture for relaxation and refreshments for those who have received a donor ribbon as well as those who have contributed at least \$300 onsite.


Headshot area:

Have a professional headshot taken for free to use for CVs, passports and social media profiles.

Virtual Meeting:

Learn more about and register for the Virtual Meeting.

Help Center

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

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

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

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

Ribbon Pick-Up

This year, RSNA will award approximately 13,000 special recognition ribbons recognizing long-term members, RSNA committee members and refresher course faculty. Ribbons can be picked up in the Grand Concourse, Level 3, at the Ribbon Desk.

Centennial Showcase

Adjacent to RSNA Services in Hall D is the Centennial Showcase. Turn to Page 9 to read about this one-of-a-kind celebration of radiologic advancement.



Registration & Housing

Final Discounted Advance Registration

Register by Nov. 7 to receive the discounted registration fee and full conference materials mailed to you in advance. (International visitors must register by Oct. 24 to receive these materials in advance.) Registrations received after Nov. 7 will be processed at the increased fee and conference materials must be obtained at McCormick Place. No hotel reservations will be accepted via the RSNA housing system after Nov. 7.

RSNA 2014 Registration

Internet
(fastest way)
Go to RSNA.org/Register

Telephone
(Mon.-Fri. 8:00 a.m. – 5:00 p.m. CT)
1-800-650-7018 • 1-847-996-5862

Registration Fees

By Nov. 7	After Nov. 7	
\$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
\$180	\$280	Non-Member Resident/Trainee
\$180	\$280	Radiology Support Personnel
\$825	\$925	Non-Member Radiologist, Physicist or Physician
\$825	\$925	Hospital or Facility Executive, Commercial Research and Development Personnel, Healthcare Consultant and Industry Personnel
\$325	\$325	One-day registration to view only the Technical Exhibits

Virtual Meeting Registration Fees

\$0	RSNA Member-in-Training, RSNA Medical Student Member and Retired RSNA Member
\$100	RSNA/AAPM Member
\$300	Non-Member

Onsite Registration

Those who register after the deadline or do not receive their badges in advance should proceed to Professional Registration, Already Registered line, located in the Lakeside Center, Level 3, Hall D. Those who did not register in advance and wish to obtain a badge should proceed to Professional Registration, New Registration line located in the Lakeside Center, Level 3, Hall D. RSNA encourages attendees to do this on Saturday, November 29, to avoid long lines later in the week.

Hours of Operation:

Saturday, November 29
12:00 p.m. – 6:00 p.m.

Sunday, November 30—Thursday, December 4
7:30 a.m. – 5:00 p.m.

Friday, December 5
7:30 a.m. – 12:00 p.m.

Reserve Your Room Now

Discounted hotel room rates are available for RSNA attendees. To see the hotel list and room rates go to RSNA.org/Register. Don't delay and miss your chance to save. The deadline for housing reservations and changes through RSNA is Nov. 7. A deposit equal to one night stay including tax required to confirm your hotel reservation. Reservations may be secured with a major credit card at the time of booking. The credit card must be valid through December 2014 and will be charged by the hotel approximately two weeks before the annual meeting. Registrants can also send a check, money order or wire transfer (payable to RSNA) for the hotel deposit. (Attendees are responsible for all wire transfer fees.)

Exclusive Air Discounts

American Airlines

American offers a 5 percent discount off lowest applicable fares. Applicable restrictions may apply. Book online at AA.com/group with promotional code 99N4BI or call American at 800-433-1790 and provide the promotional code. Service fees may apply for phone reservations.

United

United offers discounts from 2 percent to 10 percent off applicable fares. Discounts apply on United Airlines and flights operated by United or other airlines branded United Express. International discounts are allowed on flights operated and/or marketed on the following carriers provided such flights are booked by a travel agency or United Reservations:

- **Flights via the Atlantic:** Air Canada, Austrian Airlines, Tyrolean Airways, Brussels Airlines, Lufthansa Airlines, Swiss International Airlines
- **Flights via the Pacific:** United codeshare flights operated by All Nippon Airways

Applicable terms and restrictions apply. Book online at United.com with offer code ZR28820672 or call United at 800-426-1122 and provide the offer code. Service fees apply for phone reservations.

Delta Air Lines

Delta offers special discounts off most fares. Applicable restrictions may apply. Discounts applicable to U.S./Canada originating passengers. Book online at Delta.com and enter Meeting Event Code NMHP6.

TRANSPORTATION

RSNA offers complimentary shuttle bus service to and from McCormick Place. A dedicated bus lane makes the trip quick and easy, even during rush hours. Check signage in the hotel lobby and at McCormick Place Convention Center for exact pick-up and drop off locations.

Ride the Metra Electric Train for free using the Metra ticket located in your registration envelope. Trains run from downtown Chicago stations to the McCormick Place Convention Center Station in just seven minutes. Stations are located within walking distance to many hotels. The ticket must be shown to the conductor when requested. For more information about shuttle bus service and Metra, including the arrival and departure schedules, go to RSNA.org/AnnualMeeting and click PlanYourTrip.

SERVICES FOR INTERNATIONAL ATTENDEES

- Certificate of Attendance—Use the computers in the Internet Kiosks to print a personalized certificate of attendance.
- Interpretation Services – International attendees will be assisted at the Help Centers and at Professional Registration with their conference questions in the following languages: Chinese, Dutch, French, German, Italian, Japanese and Spanish.
- Travel Services - ESA Voyages, the official international travel provider at RSNA 2014, will be available at the Help Center (Grand Concourse, Level 3) and at Professional Registration (Lakeside Center, Level 3, Hall D) to assist with questions.
- Currency Exchange services are no longer offered at McCormick Place, but various locations can be found in Chicago and within both Chicago airports.

FINDING YOUR WAY

RSNA 2014 publications, procedures and features help attendees make the most out of the annual meeting.

Name Badge

A name badge is required to attend RSNA courses or events or to enter the exhibit halls. RSNA encodes a simple QR code on name badges with the registrant's name, institution, address, e-mail address, phone/fax numbers and radiologic specialty as provided at the point of registration. This QR Code can be scanned by a technical exhibitor when an attendee requests information or follow-up. 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 Centers.

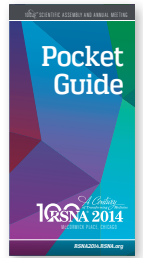


RSNA uses radiofrequency identification (RFID) badge scanning technology within the Technical Exhibit Halls. No personal information is stored in the RFID badge, only an ID number. Should you wish to "opt out" of this program, please visit either Help Center onsite located on Level 3 of the Grand Concourse and Lakeside Center.

Pocket Guide

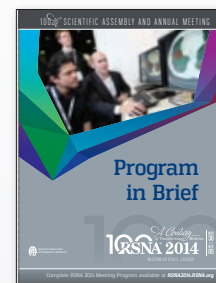
The RSNA 2014 Pocket Guide is an important, easy-to-use reference guide to items such as:

- Complete A-Z listing of everything available to attendees
- Event information
- Floor plans of each building and each floor of McCormick Place
- Shuttle bus schedules, routes and boarding locations
- Taxi fees and loading and unloading areas
- Airport transportation service with times, costs and boarding information
- Complete Metra Electric Line Train System schedule outlining station locations, times and drop-off destinations
- Parking lot locations, hours and fees



RSNA Program in Brief, Official Meeting Bag and Lanyard

One complimentary copy of the printed



RSNA 2014 Program in Brief, official meeting bag and lanyard are available at the new self-serve distribution areas located in the Lakeside Center, Level 3, Hall D

(across from Registration) or in the Grand Concourse, Level 3. Additional copies of the *Program in Brief* will be available for purchase at the RSNA Store.

In addition to the printed *RSNA 2014 Program in Brief*, RSNA offers an online program with a user-friendly search engine to find presentations to fit your schedule. (See more information on Page 34.)



Daily Bulletin

The *Daily Bulletin* is the official newspaper of the RSNA annual meeting. Featuring overnight news from the meeting, the newspaper can be found in bins throughout McCormick Place. Each day's issue will also be available via the RSNA 2014 Mobile App and online at RSNA.org/Bulletin. The *Daily Bulletin* also includes a Technical Exhibits Focus section offered Sunday-



Wednesday 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 2014 news, more than 150 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 18,000 stories about RSNA 2013. Press conferences will again be held onsite at the 2014 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 disease and injury detection, diagnosis and treatment.

RESIDENTS AND FELLOWS

RSNA 2014 offers a full roster of Resident and Fellow-focused programming along with unparalleled networking opportunities and perks for trainees. RSNA annual meeting registration is free for RSNA members-in-training. Go to RSNA.org/Register.

Residents/Fellows Programming—

Tailored specifically for radiology residents and fellows, the program features a Wednesday symposium offering a wide range of sessions including, "Career 101: What Type of Job is Best for Me?" "Practice Experts Answer Your Questions," "What You Should Know About the Job Market," "Interviewing to Win: Secrets from the Business World," and "Money Talk: The Veil is Lifted," along with a session featuring "Recent Hires Answers to the Job Questions You Need to Know." Residents and fellows may also be interested in the Tuesday program, "Strategies for ABR Core Exam and ACGME Program Requirements," featuring sessions including, "The ABR Core Exam: An Update on Strategies That Work."

Residents Lounge—Located in the Learning Center, the lounge offers RSNA members-in-training and nonmember residents a place to relax and network while enjoying complimentary refreshments. The lounge is open Sunday – Thursday, 8:00 a.m. – 6:00 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 and network with longtime RSNA members and leaders. The reception is held Monday, 4:00–5:00 p.m., in the Hyatt Regency McCormick Place hotel.

RSNA Research & Education Foundation—Visit the R&E 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.

Resident/Fellow Brochure—Residents and fellows attending the meeting will want to pick up the "Resident/Fellow" brochure listing other courses and sessions with content of interest to members in training.

TOURS AND EVENTS

RSNA has teamed up with Hosts Chicago and Bloomingdale's to offer you exclusive ways to experience Chicago during your stay for RSNA 2014. 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.org/Register.

5k Fun Run

Tuesday, December 2, 6:30 a.m.

Arvey Field, South Grant Park, Chicago

Enjoy a 5k event with your colleagues along Chicago's beautiful Lake Michigan shore and help fuel critical research to keep our specialty at the forefront of healthcare. During online registration or onsite at McCormick Place, you can sign up as a runner or walker for the 5k Fun Run. The signup donation is \$40, will benefit the RSNA



R&E Foundation, and is fully tax deductible. You'll also receive a commemorative T-shirt.



2014 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 2014. Visit the Help Desk near the Grand Concourse for restaurant recommendations, reservations and concierge services.

Bistro RSNA—The Best Place to Eat, Meet & Network

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 exhibit hall houses a Bistro RSNA. One low price of \$20 gets you an all-inclusive meal, including tax, beverages and dessert, as well as express entry and a reserved seat. The menu changes daily. Purchase tickets online before Nov. 26 and save another \$1.00 off the onsite price, at RSNA.org/BistroRSNA.aspx



Chicago Offers World-Class Dining Options

No matter the palate or the wallet, Chicago provides visitors with an exciting selection of cuisines and settings at mealtime. Round out your RSNA 2014 experience by taking an excursion to one of Chicago's eclectic roster of restaurants.

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

AMERICAN

Acadia

1639 S. Wabash Ave.; 1-312-360-9500

The minimalist chic of the room helps temper the complexity of the menu. Famous for the Yukon Gold potato and green apple risotto, this high-end, contemporary American restaurant has something for everyone, including a burger. *Very Expensive*

Ada Street

1664 N. Ada St.; 1-773-697-7069

Chicago restaurant greets Michael Kornick and David Morton teamed up again on Ada Street, a tavern featuring tasty, hearty, small plates. Take time to visit the restaurant's vinyl library to select a record for the staff to play. *Inexpensive*

NEW Barn & Company

950 W. Wrightwood Ave.; 1-773-832-4000

Not only does Pitmaster Gary Wiviott serve up some mean smoked brisket and baby back ribs, but this BBQ joint also has a Barn Dance the first Friday of each month with country music, bales of hay and a mechanical bull. *Moderate*

The Bedford

1612 W. Division St.; 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 St.; 1-312-715-0708

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

The Boarding House

720 N. Wells St.; 1-312-280-0720

A two-level dining room, a chandelier made of over 9,000 wine glasses, and a 500-bottle wine list set the atmosphere for this River North eatery opened by Alpana Singh. *Expensive*

Brunch

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

The perfect stop for guests at 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*

Carriage House

1700 W. Division St.; 1-773-384-9700

The southern fare here is offered in both classic and "re-imagined" dishes over shared tables and family-style meals. *Moderate*

Chicago Firehouse Restaurant

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

Escargot and vegetable strudel share the appetizer menu at this top-rated steakhouse, 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*

Deca

160 E. Pearson St.; 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. It's also a 2014 Michelin Bib Gourmand winner. *Moderate*

The Gage

24 S. Michigan Ave.; 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*

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*

Grace

652 W. Randolph St.; 1-312-234-9494

Diners choose from one of two prix-fixe menus, one all vegetable, that showcase local favorite Curtis Duffy's creative contemporary cuisine. *Very Expensive.*

NEW Hubbard Inn

110 W. Hubbard St.; 1-312-222-1331

Hubbard Inn features European inspired small plates, quintessential mid-century cocktails and old world décor. *Moderate*

Lillie's Q

1856 W. North Ave.; 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 St.; 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*

North Pond

2610 N. Cannon Dr.; 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*

Park Grill

11 N. Michigan Ave.; 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*

Perennial Virant

1800 N. Lincoln Ave.; 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 St.; 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*

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*

Sable

505 N. State St.; 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*

Sixteen

401 N. Wabash Ave.; 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 St.; 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*

ASIAN

Aria

200 N. Columbus Dr.; 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*

Japonais

600 W. Chicago Ave.; 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 St.; 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*

Sunda

110 W. Illinois St.; 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 St.; 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*

Tamarind

614 S. Wabash Ave.; 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*

CAJUN/CREOLE

Heaven on Seven on Rush

600 N. Michigan Ave.; 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*

CONTINENTAL

Au Cheval

800 W. Randolph St.; 1-312-929-4580

Enjoy Au Cheval's European take on a corner diner, including a pork porterhouse. For an additional treat try some of the more than 30 international beers on tap or select from the cocktail or wine list. *Inexpensive*

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CUBAN

Habana Libre

1440 W. Chicago Ave.; 1-312-243-3303

It may be 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*

FRENCH

Balsan

11 E. Walton St.; 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*

Bistronomic

840 N. Wabash Ave.; 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 St.; 1-312-226-6479

A pretty French bistro blossoming in the middle of Little Italy. *Moderate*

Chez Moi

2100 N. Halsted St.; 1-773-871-2100

Classic French bistro served in a comfortable Lincoln Park setting. *Moderate*

Les Nomades

222 E. Ontario St.; 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*

Maude's Liquor Bar

840 W. Randolph St.; 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*

Paris Club

59 W. Hubbard St.; 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*

FUSION

Roy's

720 N. State St.; 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*

GREEK

NEW The Parthenon

314 S. Halsted St.; 312-726-2407

Go for the flaming cheese, stay for everything else on the menu at this longtime Greektown mainstay, which serves up a fabulous array of flavors, from meat and fish to vegetarian and gluten-free options. *Moderate*

INDIAN

India House

59 W. Grand Ave.; 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*

ITALIAN

437 Rush

437 N. Rush St.; 1-312-222-0101

This Italian steakhouse, a block off of Michigan Avenue, offers steak, lobster and regional fare in a classic setting. *Expensive*

Bar Toma

110 E. Pearson St.; 1-312-266-3110

Visit this imaginative Italian wine bar for a meal, drink or snack. Only steps from Michigan Avenue, fancy pizza and specialty cheeses are a mainstay in the dining room. A quick coffee or gelato can be had at the stand-up espresso bar. *Inexpensive*

Gioco

1312 S. Wabash Ave.; 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*

NEW Italian Village

71 W. Monroe St.; 1-312-332-7005

Close to the city's theater district, this famous Italian eatery opened in 1927 and has been following its founder's simple philosophy ever since: Make good, simple food, serve it in ample portions and offer it with warm Italian courtesy. *Moderate*

Osteria Via Stato

620 N. State St.; 1-312-642-8450

Get the feeling of being transported to 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 St.; 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 St.; 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*

Rosebud on Rush

720 N. Rush St.; 1-312-266-6444

Handmade pastas are a trademark of this quaint two-story Italian restaurant in a beautifully renovated brownstone. Just a block away from Michigan Avenue, Rosebud is a great pick for a shoppers' lunch or a romantic evening. *Expensive*

Spiaggia

980 N. Michigan Ave.; 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*



Sip & Savor Social

Skyline Ballroom,
3rd Floor, McCormick Place, West Building
Wednesday, December 3, 5:00 pm – 7:00 pm

Mark the RSNA Centennial with drinks, entertainment and tastings by some of Chicago's top restaurants. Don't miss the celebration of the century, featuring:



You can add tickets to your registration for only \$40 per person.

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*

MEDITERRANEAN

Nellcôte

833 W. Randolph St.; 1-312-432-0500

Named after the French villa that hosted the Rolling Stones while they recorded "Exile on Main Street," this Mediterranean restaurant exudes a similar decadence. Enjoy the beautiful crowd, loud music, elaborate marble and wood floors and enormous chandeliers. *Moderate*

The Purple Pig

500 N. Michigan Ave.; 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

MEXICAN

DeCero

814 W. Randolph St.; 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

NEW Uncle Julio's Hacienda

855 W. North Ave.; 1-312-266-4222

This always-hopping Lincoln Park hipster spot serves up authentic, border-style Tex-Mex fare that mirrors the original cooked up by cowboys on the plains a century ago. *Moderate*

Zapatista

1307 S. Wabash Ave.; 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*

Continued from previous page

SEAFOOD

Boka

1729 N. Halsted St.; 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*

Cape Cod Room

140 E. Walton St.; 1-312-787-2200

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 Ave.; 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*

GT Fish & Oyster

531 N. Wells St.; 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*



Shaw's Crab House

21 E. Hubbard St.; 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 St.; 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 Ave.; 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

Chicago Chop House

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

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

Chicago Cut Steakhouse

300 N. LaSalle St.; 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 St.; 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*

Fulton's on the River

315 N. LaSalle St.; 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*

Gene & Georgetti

500 N. Franklin St.; 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 St.; 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 Palm

323 E. Wacker Dr.; 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 St.; 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*

SUSHI/JAPANESE

Coast Sushi

2045 N. Damen Ave.; 1-773-235-5775

Coast is the gold standard among Chicago sushi enthusiasts. The rolls are mostly classical while the fish has a well-earned reputation for its freshness. BYOB. *Inexpensive*

VEGETARIAN

Green Zebra

1460 W. Chicago Ave.; 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*

RSNA 2014 Honorees

RSNA will pay tribute to a number of distinguished physicians during the 100th Scientific Assembly and Annual Meeting. All presentations will take place in the Arie Crown Theater.

Honorary Members

Presented Monday, Dec. 1 • 1:30 p.m.

Honorary Membership in RSNA is presented for significant achievements in the field of radiology. At RSNA 2014, Honorary Membership will be given to Zheng Yu Jin, M.D., of Beijing, Markus Schwaiger, M.D., of Munich, Germany, and Kaori Togashi, M.D., Ph.D., of Kyoto, Japan.



An internationally renowned leader and educator, **Zheng Yu Jin, M.D.**, is widely credited with advancing the popularization and application of cardiac interventional therapy techniques throughout his native China in the late 1980s through the early 1990s. Dr. Jin has become well known as a national and international advocate of multi-detector CT techniques over the past two decades. Now, as vice-chair of the Chinese Society of Radiology (CSR), his priority is MR technique generalization nationwide.

Dr. Jin is a professor of interventional radiology and diagnostic radiology and chair of the Department of Radiology at Peking Union Medical College Hospital (PUMCH), Beijing, where he has spent the majority of his career.

After graduating as a medical doctor in 1984, Dr. Jin joined PUMCH where he quickly ascended the ranks from resident, chief resident and attending physician to associate professor by 1993. Dr. Jin has held his current position since 1996. From 1990 to 1991, Dr. Jin completed advanced studies at Loma Linda University Medical Center, California, where he trained under renowned interventional radiologist Francis Y.K. Lau, M.D.

Dr. Jin trained in cardio-intervention and neuro-intervention, as well as peripheral intervention, which was very rare in China at that time.

As an educator for more than 30 years, Dr. Jin has been described by his colleagues as devoting his mind and spirit to the clinical radiologic education of Chinese medical students and post-graduate residents. Dr. Jin has authored and co-authored over 200 national and international peer-reviewed publications, along with authoring and compiling award-winning teaching materials and atlases (including two bilingual atlases).

Dr. Jin has served as president of the Beijing Society of Radiology since 2009. He was elected as chief secretary and vice-president of the CSR from 2006 to 2010 and from 2010 to 2014, respectively.

Dr. Jin has been awarded the National Prize for Progress in Science and Technology (twice), the Ministry of Health Prize for Progress in Science and Technology, and the Chinese Medical Science and Technology Prize.

Markus Schwaiger, M.D., is an internationally known researcher, educator, author and editor whose work has shaped

the development of multimodal molecular imaging, particularly in cardiology. He is director of the Department of Nuclear Medicine at the Technische Universität of Munich, Germany, and also serves as an adjunct professor of radiology at the University of Michigan in Ann Arbor.

Dr. Schwaiger's research portfolio reflects the development of PET from a research tool in cardiology to a worldwide-accepted clinical standard procedure in oncology. His recent articles address integrated whole-body PET/MR imaging and the use of PET to assess metabolic response and guide treatment of cancer. He currently serves as coordinator of a large center grant that addresses the role of imaging in selecting and monitoring targeted cancer therapy in preclinical models. He is involved in European Research consortia addressing endoscopic PET imaging (EndoTOFPET) as well as PET inserts for combined MR/PET instrumentation. In 2012, he received an advanced grant award of the European Research Council (ERC).

In addition to his 748 peer-reviewed publications in international scientific

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journals and 108 book chapters and proceedings, Dr. Schwaiger has served in editorial positions for more than a dozen scientific publications, including the *Journal of Nuclear Cardiology*, *Journal of Nuclear Medicine* and *European Heart Journal*.

Dr. Schwaiger has lent his expertise to a spectrum of professional societies and administrative entities for more than 20 years, including service as president of the European Association of Nuclear Medicine 2008 Congress in Munich. He serves on the RSNA Molecular Imaging Committee.

Among the numerous awards Dr. Schwaiger has received are the Distinguished Scientist Award of the Academy of Molecular Imaging, von Hevesy Medal of the Hungarian Society of Nuclear Medicine, and Paul C. Aebbersold Award of the Society of Nuclear Medicine.

Kaori Togashi, M.D., Ph.D., has spent more than 30 years researching and publishing studies expanding the horizon for MR as it applies to gynecology. Dr. Togashi's pioneering work has garnered attention from radiology and bioengineering entities.

Dr. Togashi is a professor and chair in the Department of Diagnostic Imaging and Nuclear Medicine at Kyoto University Graduate School of Medicine. When promoted to the position in 2004, she became the first woman to chair a department at the medical school of Kyoto University and the first woman to chair a department at a national university in Japan.

Dr. Togashi earned her medical degree at Kyoto University. After completing her residencies, she attended the Graduate School of Medicine at Kyoto University and received her doctorate in medical science. While working on her doctorate, Dr. Togashi was involved in very early studies of body MR imaging. She authored several articles including "Uterine Cervical Cancer: Assessment with High-Field MR Imaging," published in *Radiology* in 1986. Since then, she has published several books and nearly 300 articles in peer-reviewed



Jin



Schwaiger



Togashi

journals in English. Dr. Togashi has been a reviewer for many journals including *Radiology* and *RadioGraphics*.

Dr. Togashi's recent areas of interest are functional body MR, including cine MR to evaluate uterine peristalsis, diffusion-weighted images in oncology and diffusion tensor imaging of the uterus. Cine MR for the uterus has attracted interest not only from the radiology and gynecology specialties, but also from the bioengineering realm as a new tool to elucidate biomechanics of the uterine function. Dr. Togashi received honorary membership in the European Society of Radiology, fellowship in the International Society for Magnetic Resonance in Medicine and the gold medal of the European Society of Urogenital Radiology. Dr. Togashi serves on the RSNA International Advisory Committee and also has served on the Education Exhibit Awards Committee in Uroradiology at the RSNA annual meeting.

RSNA 2014 Dedications

RSNA Meeting Program

The scientific and educational program of the 100th Scientific Assembly and Annual Meeting of the Radiological Society of North America is dedicated to all those who have gone before us—to those who have established and joined the RSNA, and helped our Society pursue its mission and realize its vision for the past 100 years:

- ▶ The committee members who develop the annual meeting program and all RSNA activities
- ▶ The faculty and attendees for educational courses
- ▶ The researchers and attendees for scientific sessions
- ▶ The authors, reviewers, and readers of our journals
- ▶ The developers and users of informatics technology
- ▶ The donors who support and grantees who conduct radiologic research
- ▶ The members all over the world who, inspired by our Society's mission and vision, have spent their lives improving the care of their patients
- ▶ The residents and fellows who will pursue our Society's mission and help realize its vision into its next century.



Wagner

Annual Oration in Diagnostic Radiology

The Annual Oration in Diagnostic Radiology is dedicated to the memory of **Henry N. Wagner Jr.**, one of the founders of the specialty of nuclear medicine.

Gold Medalists

Presented Tuesday, Dec. 2 • 1:30 p.m.

RSNA will award three individuals its Gold Medal—RSNA's highest honor—at the 100th Scientific Assembly and Annual Meeting. They are **Gary J. Becker, M.D.**, of Tucson, Ariz., **Allen S. Lichter, M.D.**, of Alexandria, Va., and **Etta D. Pisano, M.D.**, of Charleston, S.C.

Over the course of his remarkable 36-year career in radiology, the name **Gary J. Becker, M.D.**, has become synonymous with the word “leader.”

In addition to serving as 2009 RSNA President, Dr. Becker served as executive director of the American Board of Radiology (ABR) from 2007 until his retirement in mid-2014. Among his many accomplishments, Dr. Becker oversaw ABR's critical transition from oral to computer-based exams for certification in diagnostic radiology.

Dr. Becker is a Chicago native who earned his undergraduate and medical degrees from Indiana University, where he completed his residency in diagnostic radiology and served as a professor and chief of the vascular section. In 1990, after 20 years at Indiana University, he moved to Miami Cardiac and Vascular Institute serving as director of interventional radiology and ultimately as assistant medical director of the institute and medical director of clinical research until 2004.

After serving a year and a half as branch chief of image guided intervention in the Division of Cancer Treatment and Diagnosis at the National Cancer Institute, Dr. Becker moved to the University of Arizona in 2005, serving as professor in the interventional section of the Department of Radiology.

An RSNA member since 1979, Dr. Becker volunteered in many capacities before joining the Board of Directors in 2001, serving as secretary-treasurer designate for one year and then Board liaison for science for four. He then served as Board chairman, president-elect and president. Dr. Becker has served as a *Radiology* Editorial Board member and as a consultant to the *Radiology* Editor.

Dr. Becker served six years on the ABR Board of Trustees followed by two years as associate executive director for diagnostic radiology and subspecialties.

After 28 years of service to the Society of Interventional Radiology (SIR), SIR in 1995 re-named its award for the outstanding paper presentation by a young investigator, “The Dr. Gary J. Becker Young Investigator Award.” He received the SIR gold medal in 2008.

Founding editor of the *Journal of Vascular and Interventional Radiology*, Dr. Becker has served as a manuscript reviewer, editorial board member, associate editor and editor for more than 20 journals.



Becker



Lichter



Pisano

World renowned achievements in cancer research, education and clinical care make **Allen S. Lichter, M.D.**, an ideal leader of his peers. Dr. Lichter has served as chief executive officer of the American Society of Clinical Oncology (ASCO) since 2006.

With research focusing on breast cancer, Dr. Lichter was an early advocate of the breast conserving approach and conducted one of the trials that found the use of lumpectomy and radiation therapy to be as effective as mastectomy. This work, along with other trials conducted in the U.S. and Europe, revolutionized breast cancer treatment standards.

Dr. Lichter previously served as the director of the Radiation Therapy Section of the National Cancer Institute's Radiation Oncology Branch. As chair and professor of radiation oncology and dean of the medical school at the University of Michigan, Dr. Lichter introduced an innovative curriculum, oversaw creation of a new Biomedical Science Research facility and was a prolific fundraiser.

At ASCO, Dr. Lichter has overseen projects including the CancerLinQ™ rapid learning system and the Quality Oncology Practice Initiative. His tenure also has seen the renaming of the society's philanthropic arm as the Conquer Cancer Foundation, of which Dr. Lichter was founding chairman.

A former co-editor of *Oncology*, Dr. Lichter also served in editorial positions with the *Journal of the National Cancer Institute*, *International Journal of Radiation Oncology, Biology, Physics*, and *Journal of Clinical Oncology*.

Dr. Lichter received the gold medal of the American Society for Radiation Oncology and was elected to membership in the Institute of Medicine of the National Academies of Science. He is an honorary member of the American Association of Physicists in

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Medicine and the Belgium Society for Therapeutic Radiology. Dr. Lichter presented the Annual Oration in Radiation Oncology, “The Cost of Cancer Care: Near-Term Strategies and Long-Term Solutions,” at RSNA 2007.

Women, in particular, and radiology, in general, owe a debt of gratitude to **Etta D. Pisano, M.D.**, for her tireless efforts to develop, apply and test imaging technology for the early detection and diagnosis of breast cancer and other breast problems.

Dr. Pisano has broken down barriers in her professional career, becoming the first woman dean of the College of Medicine at the Medical University of South Carolina (MUSC) in 2010. But her biggest contributions to radiology have been the research and

testing she has done to integrate emerging technology into breast imaging. Her groundbreaking study, Digital Mammographic Imaging Screening Tool (DMIST), was the largest clinical trial ever led by a radiologist and provided essential information about the efficacy of digital mammography.

Dr. Pisano served MUSC as vice-president for medical affairs and dean of the College of Medicine from 2010 to 2014. Previously Dr. Pisano had served in numerous positions at the University of North Carolina at Chapel Hill, including vice-dean for academic affairs in the School of Medicine, Kenan Professor of Radiology and Biomedical Engineering, founding director of the Biomedical Research Imaging Center (BRIC) and director of the Translational and Clinical Sciences Institute. She also served as founding chief of breast imaging at UNC Hospitals.

In addition to leading DMIST, Dr. Pisano has served as principal investigator for over 30 other studies. She has authored or co-authored 145 articles appearing in peer-reviewed journals, and has been a reviewer for more than a dozen journals, including *Radiology* and *RadioGraphics*.

Dr. Pisano is past-president of the Association of University Radiologists (AUR) and American Association for Women Radiologists. In 2008 she was elected as a member of the Institute of Medicine of the National Academy of Sciences. She is a recipient of gold medals from AUR and the American Roentgen Ray Society.

Alexander R. Margulis Award for Scientific Excellence

This annual award recognizes the best original scientific article published in *Radiology*. Named for Alexander R. Margulis, M.D., a distinguished investigator and inspiring visionary in the science of radiology. The name of the honoree will be revealed at the beginning of the Monday Plenary Session. After the award is presented, reprints of the honored article will be available for free at the Journals, News & *RadiologyInfo.org* booth in RSNA Services.

Other Awards

Trainee Research Prize

RSNA awards the Trainee Research Prize to honor an outstanding scientific presentation in each subspecialty presented by a resident/physics trainee, fellow or medical student. One trainee research prize in breast imaging is endowed by Tapan K. Chaudhuri, M.D.

A list of Trainee Research Prize recipients can be viewed in the Arie Crown Theater lobby.

Molecular Imaging Travel Award

The Travel Awards for Young Investigators in Molecular Imaging support candidates invited to present high-quality science. To be eligible, abstract presenters or poster exhibitors must be pre-doctoral students or have been awarded their doctoral degrees no more than seven years prior to submission. A list of recipients of the Molecular Imaging Travel Awards can be viewed in the Nuclear Medicine/Molecular Imaging Campus.

Canada Presents and Korea Presents

In recognition of the contributions from Canada and Korea for the “Canada Presents” and “Korea Presents” sessions, select proffered abstract presenters receive an award from RSNA. See a list of the presenters at the Canada Presents booth (South Building, Hall A: 1218) and Korea Presents booth (South Building, Hall A: 1118).



Outstanding Researcher and Educator

Presented Sunday, Nov. 30 • 8:30 a.m.

RSNA will honor two individuals at RSNA 2014 for their contributions to research and education. Theodore S. Lawrence, M.D., Ph.D., of Ann Arbor, Mich., is Outstanding Researcher. Paula J. Woodward, M.D., of Salt Lake City, is Outstanding Educator.

Outstanding Researcher

Theodore S. Lawrence, M.D., Ph.D., established himself as a world-renowned researcher for his pioneering use of radiation for the treatment of intrahepatic cancers. In particular, he led a team that developed a model that predicts the maximum safe dose of radiation that can be given to liver tumors, and showed that these higher doses could cure some previously incurable cancers.

Dr. Lawrence is the chair of the Department of Radiation Oncology and the Isadore Lampe Professor of Radiation Oncology at the University of Michigan, and co-chair of the Radiation Sciences Program of the University of Michigan Comprehensive Cancer Center. He is president of the Radiation Oncology Institute and the Society of Chairs of Radiation Oncology.

Dr. Lawrence joined the faculty of the University of Michigan in 1987, following a fellowship in medical oncology and a residency in radiation oncology at the National Cancer Institute. He received his research degree in cell biology from Rockefeller University, followed by his medical degree from Cornell University and an internal medicine residency at Stanford University.

Dr. Lawrence is a member of the Board of Scientific Advisors of the National Cancer Institute and a member of the Institute of Medicine of the National Academy of Science. He is an editor of *Translational Oncology*, *The Cancer Journal*, *Seminars in Radiation Oncology*, and *Cancer Research*. Dr. Lawrence is past-president of the American Society of Radiation Oncology (ASTRO), and former chair of the National Cancer Institute Board of Scientific Councilors, and a member of the Board of Directors of the American Society of Clinical Oncology (ASCO). He has received the ASTRO gold medal and an ASCO statesman award.



Lawrence

Outstanding Educator

Teaching has been the life ambition for **Paula J. Woodward, M.D.**, which explains why the achievement she takes the most pride in is being named Teacher of the Year a total of six times from three institutions during her career.



Woodward

Dr. Woodward, an internationally renowned professor, has focused on the educational aspects of radiology while also contributing to the research side of the field. Dr. Woodward's reputation as a leading expert in obstetrics comes from being the lead author of the book, "Diagnostic Imaging: Obstetrics," currently in its second edition and considered a standard in the field of fetal imaging.

Dr. Woodward has published nearly 30 peer-reviewed journal articles, as well as 10 other books

and nearly 200 chapters. She served as a *RadioGraphics* contributing editor from 2002 to 2006.

Dr. Woodward holds the David G. Bragg, M.D., and Marcia R. Bragg Presidential Endowed Chair in Oncologic Imaging at the University of Utah Medical Center, where she has also been a professor in the radiology department since 2005.

Dr. Woodward previously served as a Distinguished Professor at the Armed Forces Institute of Pathology (AFIP) in Washington, D.C., as well as Genitourinary Section Chief and Radiologic-Pathologic course director at AFIP.

Dr. Woodward received her medical degree from the University of Colorado School of Medicine after earning her undergraduate degree at the University of Colorado, Boulder. Upon completion of medical school, Dr. Woodward served with the United States Air Force (USAF) for eight years, including as a radiology residency at Wilford Hall USAF Medical Center in San Antonio, Texas.





2014 Honored Educator Award

To be recognized at RSNA 2014 are the recipients of the RSNA Honored Educator Award. Established in 2011, the award recognizes RSNA members who have produced RSNA educational resources in the past calendar year. This annual award is given to individuals invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. To be eligible for the award, members may participate in qualifying activities including:

- Serving as faculty at one or more of RSNA’s educational meetings
- Authoring an education exhibit, Quality Storyboard and/or Cases of the Day track for the RSNA Annual Meeting
- Authoring educational articles in *Radiology* and *RadioGraphics*
- Authoring online education materials, including online modules or original SAMs, and/or creating CME questions in support of repurposed online education.
- Donating a refresher course and writing CME questions for online learning

Eligible candidates must also participate in at least two educational categories to be considered for the award and may not earn credit for more than two activities in any given category. Based on the number of qualifying activities completed, the most eligible RSNA members are presented with the Honored Educator award in recognition of their contributions. This year’s recipients are:

Suhny Abbara, M.D.	Hernan Jara, Ph.D.	Perry J. Pickhardt, M.D.
Fatih Akisik, M.D.	Ella A. Kazerooni, M.D.	Prabhakar Rajiah, M.D., F.R.C.R.
Yoshimi Anzai, M.D.	Bharti Khurana, M.D.	Gautham P. Reddy, M.D.
Alexander A. Bankier, M.D., Ph.D.	Lucie Lalonde, M.D.	Caroline Reinhold, M.D., M.Sc.
Jenny T. Bencardino, M.D.	Ramit Lamba, M.D.	Carlos S. Restrepo, M.D.
Sonia L. Betancourt Cuellar, M.D.	David B. Larson, M.D.	Zehava S. Rosenberg, M.D.
Sanjeev Bhalla, M.D.	Meghan G. Lubner, M.D.	Osamu Sakai, M.D., Ph.D.
Julie David, M.D.	Isabelle Trop, M.D., M.P.H.	Kumaresan Sandrasegaran, M.D.
David J. DiSantis, M.D.	Katarzyna J. Macura, M.D., Ph.D.	Leslie M. Scoutt, M.D.
Ronald L. Eisenberg, M.D., J.D.	Santiago Martinez-Jimenez, M.D.	Scott Sheehan, M.D.
Mona M. El Khoury, M.D.	Katherine E. Maturen, M.D.	Aaron D. Sodickson, M.D., Ph.D.
Khaled M. Elsayes, M.D.	Christine O. Menias, M.D.	Jorge A. Soto, M.D.
Elliot K. Fishman, M.D.	Frank H. Miller, M.D.	Temel Tirkes, M.D.
Valerie P. Jackson, M.D.	Paul G. Nagy, Ph.D.	Alex Towbin, M.D.

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Centennial Website

Begin celebrating with us from home at RSNA.org/Centennial. Explore milestones, share stories, and vote in the Image Contest before October 31.

Sip & Savor Social

Wednesday, December 3, 5:00 – 7:00 PM

Skyline Ballroom, 3rd Flr, McCormick Place, West Building

Celebrate our 100th annual meeting with drinks, entertainment, and tastings by some of Chicago's top restaurants.



Centennial Showcase

Lakeside Center, Hall D

Explore an onsite experience to discover the advancements that shaped radiology. The Showcase will feature a historical timeline, special welcome from a virtual Wilhelm Roentgen, Cases of the Century, and more.

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The Virtual Meeting is available during RSNA 2014 and on-demand until December 19 at 4:00 PM Chicago time. Earn CME for live sessions only. Live sessions available for *AMA PRA Category 1 Credit*™. **NEW!** Live sessions earn Category A and A+ credit for technologists. No CME credits are awarded for viewing on-demand sessions.



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