

30 YEAR ANNIVERSARY Daily Bulletin

Welcome to RSNA 2019

It is my pleasure to welcome you to RSNA 2019, a place where we can gather and “See Possibilities Together.”

This year’s program includes the innovative science and quality education you expect from RSNA. The Board and dedicated volunteers developed a program that will leave you renewed and inspired to improve patient care. Special Interest Sessions on Monday will delve into diverse topics including new MR techniques and the role of neuroimaging in the diagnosis and treatment of depression. Our colleagues from India and Egypt developed the Country Presents series, which celebrates each country’s contributions to our field.

Don’t miss the plenary session speakers whose forward thinking presentations will inspire you to see possibilities in every aspect of health care, from strengthening commitment to our patients to collaborating across disciplines to solve today’s most pressing medical problems.

The popular Fast 5 Session on Tuesday afternoon features five speakers taking five minutes each to present creative ideas and emerging possibilities.

Recognizing a need to access the program beyond the meeting in Chicago, RSNA continues to expand the Virtual Meeting. With more than 400 courses available virtually, you can access more content than ever through April 2020.

A highlight of every annual meeting, the RSNA Technical Exhibits provide a unique setting for networking while discovering the latest products and services. The AI Showcase and Theater — in an expanded location — and the 3D Printing and Advanced Visualization Showcase and Theater highlight the latest technological advances. Also new this year are the Innovation Theater, where you can be the first to hear about new products and emerging technologies, and the Radiology Safety Zone, featuring products designed to protect you and your patients.

Unwind in the new Wellness Lounge, featuring yoga and a quiet space to refresh. Connect with colleagues over lunch at the popular Bistro RSNA or the new Café RSNA in the Technical Exhibit halls.

Visit the Connections Center to learn more about RSNA, get help with your devices, relax and recharge. The Discovery Theater offers a welcoming environment with presentations and live music.

Throughout the week the *Daily Bulletin* will keep you informed with meeting highlights and a handy exhibit map.

It is my distinct honor to preside over RSNA 2019 as president. I hope you enjoy an inspired meeting full of possibilities.

VALERIE P. JACKSON, MD
RSNA PRESIDENT



**Get More
Daily Bulletin
Online** ➔

Meet RSNA President Valerie P. Jackson, MD

RSNA President Valerie P. Jackson, MD, will open RSNA 2019 with her President’s Address, “A Matter of Perspective: Putting a New Lens on Our Patient Interactions.” She will speak about the importance of human interactions between physicians and patients and how technologic innovation in medicine makes that connection more relevant today than ever. The key, she says, is in changing our perspectives and approaches — toward patients, referring physicians and our own profession — and reimagining new ways of working together.

Daily Bulletin: What do you see as the greatest challenges facing radiologists today?

Valerie P. Jackson, MD: Radiologists continue to be challenged by the pressure of large caseloads and quick turnaround times. This makes it seem difficult to fully commit to patient-centered practice. The caseloads aren’t going to disappear, so we need to widen our perspective to focus on the benefits of communicating with patients and forging stronger alliances with referring physicians.

DB: How can a shift in perspective toward patients help radiologists facing ever-growing caseloads?

VPJ: Patients are playing a more interactive role in their medical care, and recent studies have shown that patients want more contact with their radiologists.

While the transition to patient-centered care has been easier for some than others, the paradigm shift offers several advantages. We know that diagnostic radiologists who are more patient-centered are less vulnerable to burnout and are more likely to be recognized as trusted, integral members of their patients’ health care team.

DB: In what ways can technologic innovation in medical imaging help radiologists add value?

VPJ: A number of changes in radiology practice and the overall health care environment have made patient interaction a critical and timely component of radiologic care. The emergence of artificial intelligence applications that can be trained to handle a variety of time-consuming tasks, for instance, has the potential to free radiologists to devote more time to patient interaction. It’s an exciting time in the specialty.

DB: What can all radiologists do to increase their visibility to patients?

VPJ: Patient-centered care means more than simply talking to patients. While patient communication plays a substantial role in the value-based care model, radiologists can increase visibility and improve patient interaction in a variety of ways. For example, adapting workflow to better accommodate patient preferences, developing patient-friendly radiology reports and maintaining a social media presence are just a few simple ways to enhance patient engagement.



Jackson

DB: What role do referring physicians play in this shift?

VPJ: We’ve spent a great deal of time asking ourselves what our patients want. We need to be equally dedicated when it comes to building relationships with referring physicians. We must take the time to engage their trust and open the lines of communication to determine how best to serve the interests of our patients together and ensure radiologists are vital members of the health care team.

DB: What are you most looking forward to at RSNA 2019?

VPJ: During my time on the Board, RSNA has emerged as a leader in artificial intelligence research and education with a host of initiatives that help radiologists understand how data and deep learning applications can be used to improve patient care.

I am looking forward to visiting the expanded AI Showcase as well as the redesigned RSNA Deep Learning Lab and the new hands-on workshops. I also look forward to learning from my colleagues through the innovative research across the specialty that will be presented throughout the week.

RSNA 2019 Program Dedicated to Eyler

RSNA’s 105th Scientific Assembly and Annual Meeting is dedicated to the memory of Dr. William R. Eyler, who died Dec. 5, 2018, after celebrating his 100th birthday earlier in the year.

Dr. Eyler was instrumental in establishing *Radiology* as a preeminent scientific journal. He served as assistant editor from 1962 to 1966, then as editor until 1985. During his tenure, Dr. Eyler improved the efficiency of the editorial operation and the quality of the journal, doubling the circulation.

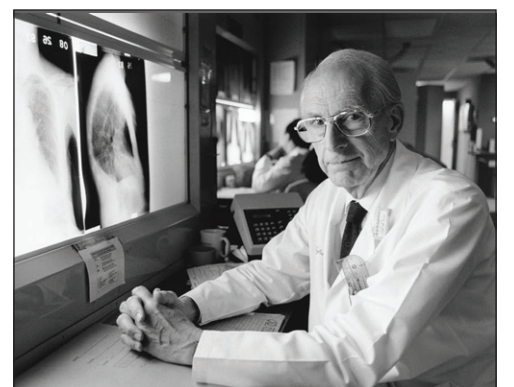
As editor, Dr. Eyler developed the RSNA Index to Imaging Literature, providing radiologists with a comprehensive library of studies and images long before the internet provided ready access. RSNA recognized this accomplishment in 2004 with a resolution honoring him at the RSNA annual meeting.

In 1998, RSNA commemorated his contributions by establishing the William R. Eyler Editorial Fellowship, which provides an opportunity for radiologists to work with

RSNA journal editors and publications staff. Dr. Eyler was a strong advocate for young radiologists, giving his time and talent to prepare future generations of residents during his 65 years of teaching.

An esteemed radiologist, Dr. Eyler served as chair of the Department of Radiology at Henry Ford Hospital for nearly three decades. Before joining Henry Ford he was a faculty member at the University of Illinois and Massachusetts General Hospital.

Dr. Eyler earned his medical degree at Harvard Medical School. He served during WWII in the Army Medical Corps with the 115th General Hospital in England and France and in occupied Germany after the war. When he returned home, he completed his residency at Massachusetts General Hospital.



Dr. Eyler received the RSNA Gold Medal in 1976. He also received gold medals from the American Roentgen Ray Society and the American College of Radiology.

GREAT RESEARCH NEEDS A GREAT AUDIENCE.

20
20

Be a Presenter at RSNA 2020!

We're looking for radiology thought leaders to provide:

Scientific Presentations / Applied Science / Education Exhibits / Quality Improvement Reports

EARN RECOGNITION

Kuo York Chynn Neuroradiology Research Award: \$3,000

The top scientific paper as selected by the Scientific Program Committee will earn this prestigious award.

The RSNA Trainee Research Prize: \$1,000

Up to 48 medical students, residents or fellows who submit expanded abstracts of their 2020 RSNA scientific presentation may receive a \$1,000 prize and certificate.

VISIT [RSNA.ORG/ABSTRACTS](https://www.rsna.org/abstracts) FOR COMPLETE GUIDELINES

Submit Online

beginning January 2020 at [RSNA.org/Abstracts](https://www.rsna.org/abstracts)
through Wednesday, April 8, 2020 NOON CT.

Questions?

Call 1-877-776-2227 (within U.S.) or 1-630-590-7774 (outside U.S.)
Includes courses in joint sponsorship with the American Association
of Physicists in Medicine.



November 29 to December 4
McCormick Place, Chicago

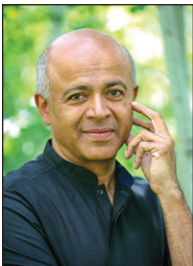
Sunday At a Glance



President's Address
Valerie P. Jackson, MD
8:30-10:15 a.m.
Arie Crown Theater
A Matter of Perspective: Putting a New Lens on Our Patient Interactions

It is in our best interests as radiologists to forge new, more beneficial relationships with those we serve, Dr. Jackson says. The

key to progress is in changing our perspectives and approaches — toward patients, referring physicians and our own profession — and reimagining new ways of working together.



Opening Session
Abraham Verghese, MD
8:30-10:15 a.m.
Arie Crown Theater
Finding the Caring in Care

Dr. Verghese is a New York Times bestselling author whose focus on the human relationship between doctor and patient has earned worldwide recognition. He will

discuss how physicians can find meaning in their roles in a professional environment that is rapidly becoming more inundated with technology.

RSNA Outstanding Educator and Outstanding Researcher Awards Presented Today



10:15 a.m. – 10:35 a.m.
RSNA Business Session
(Arie Crown Theater)

10:30 a.m. – Noon
Innovation Theater Presentations
(South Hall, Level 3)

10:30 a.m. – 2:20 p.m.
RSNA AI Theater Presentations
(AI Showcase, North Building, Level 2)

10:45 a.m. – 12:15 p.m.
Scientific Paper Sessions

12:30 p.m. – 1:30 p.m.
Scientific Poster, Quality Improvement Reports and Education Exhibit Presentations (Learning Center)

1 p.m. – 3 p.m.
Interventional Oncology Series: Interventional Therapies for Primary and Metastatic Lung Tumors (Room S405AB)

2 p.m. – 3:30 p.m.
Educational Courses

2 p.m. – 4 p.m.
Innovation Theater Presentations (South Hall, Level 3)

3 p.m. – 4 p.m.
First-Time Attendee Orientation (Discovery Theater)

4 p.m. – 5:45 p.m.
Plenary Session (Arie Crown Theater)

Report of the RSNA Research & Education Foundation
Thomas M. Grist, MD

Image Interpretation Session

View the full program and add sessions to My Agenda on the RSNA 2019 App or at Meeting.RSNA.org.

Daily Bulletin

© 2019 RSNA
The RSNA 2019 *Daily Bulletin* is the official publication of the 105th Scientific Assembly and Annual Meeting of the Radiological Society of North America. Published Sunday, December 1–Thursday, December 5.

Daily Bulletin Editorial Board	Abraham H. Dachman, MD, <i>Chair</i>
	Harris L. Cohen, MD
	Jean-Marc Gauguet, MD, PhD
	Barry Glenn Hansford, MD
	Edith M. Marom, MD, <i>Vice-Chair</i>
	Tejas S. Mehta, MD, MPH
	Elie Portnoy, MD
	Carlos H. Torres, MD
	Krista E. Weiss, MD
	William F. Sensakovic, PhD, <i>AAPM Liaison</i>
	Jeffrey S. Klein, MD, <i>Board Liaison</i>
Managing Editor	Beth Burmahl
Executive Editor	Shelley Taylor
Executive Director	Mark G. Watson
Deputy Executive Director	Karena Galvin
Assistant Executive Director: Marketing and Communications	Jennifer L. Michalek
Director: Public Information and Communications	Marijo Millette
Director: Corporate Relations	Jaclyn Kelly
Assistant Director: Corporate Relations	Lisa Lazzaretto
Senior Graphic Designer	Ken Ejka
Graphic Designers	Eriona Baholli-Karasek Nicole Cooper Tyler Drandel Deborah King Kelly Myers Sera Stack
Staff Writers	Jennifer Allyn Amanda Cagle
Daily Bulletin Online	James Georgi LeRoy Jones

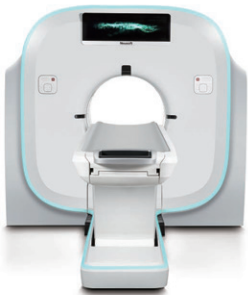
The RSNA 2019 *Daily Bulletin* is owned and published by the Radiological Society of North America, Inc., 820 Jorie Blvd., Suite 200, Oak Brook, IL 60523.





Broadening Your Possibilities

*Not available in the United States.



NeuViz Epoch, AI based 512-slice CT.

Explore your options at RSNA booth #4719
www.neusoft-medical.com/en/


Neusoft Medical Systems

GREETINGS

Welcome to RSNA 2019 from the RSNA Board of Directors



RSNA Board members (left to right): Bruce G. Haffty, MD, liaison for science, Curtis P. Langlotz, MD, PhD, liaison for information technology and annual meeting, Jeffrey S. Klein, MD, liaison for publications and communications, Valerie P. Jackson, MD, president, James P. Borgstede, MD, president-elect and secretary-treasurer, Mary C. Mahoney, MD, chair, Umar Mahmood, MD, PhD, liaison for international affairs, Matthew A. Mauro, MD, liaison for education.



OFFICE OF THE GOVERNOR
207 STATE HOUSE
SPRINGFIELD, ILLINOIS 62706

JB PRITZKER
GOVERNOR

Greetings!



I'm pleased to welcome everyone gathered for the Radiological Society of North America's 105th Scientific Assembly and Annual Meeting "See Possibilities Together."


Since its founding, the Radiological Society of North America has provided avenues for the world's leading medical professionals – radiologists, radiologic technologists, and radiation oncologists – the opportunity to gather for an annual assembly to discuss and present on the future of radiology. The work you do makes a profound impact on our citizens, and I'm thrilled the Radiological Society of North America's annual forum continues to be a cornerstone event in Chicago. I commend you all for your extraordinary dedication to public service.

I also would like to extend a warm welcome to everyone traveling from outside Illinois for RSNA 2019. During your stay, I encourage you to explore and discover everything our great state has to offer. From historic landmarks, to world-renowned museums, and first-class dining and theater experiences, there are truly a wide array of interests represented across Illinois.

On behalf of the citizens of Illinois, I offer my best wishes for an enjoyable and memorable event.

Sincerely,





OFFICE OF THE MAYOR
CITY OF CHICAGO

LORI E. LIGHTFOOT
MAYOR

December 1, 2019

Dear Friends:

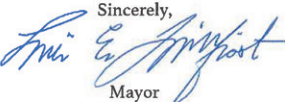
On behalf of the City of Chicago, I am honored to welcome all those gathered for the Radiological Society of North America's 105th Scientific Assembly and Annual Meeting.

The Radiological Society of North America (RSNA) is a non-profit organization dedicated to providing educational resources and support to more than 54,000 members from 136 countries. Themed, "See Possibilities Together," this year's meeting will bring together more than 50,000 industry professionals to network, learn and inspire. With a full schedule of plenary sessions, technical exhibits, workshops, and the AI Showcase, attendees will gain the tools and resources needed to foster excellence in health care through education, research and technological innovation. I commend RSNA for their ongoing efforts to move the industry forward.


I hope that during your stay in Chicago you take the time to see all the City has to offer. Vibrant neighborhoods, an iconic skyline, and an incredible lakefront invites you to explore Chicago. Explore our downtown and lakefront areas, tour the vibrant neighborhoods across our city, sample our diverse cuisine, visit our distinguished universities, and our world-class museums during your stay.

I hope your event is memorable and enjoyable. Best wishes for continued success.

Sincerely,



Mayor





Diverse Radiology for a Diverse World.

RSNA[®]
Radiological Society
of North America

Join RSNA today.

Our members are fostering effective change for radiology's future—and so can you.

Together we are creating radiology that reflects our world, advances your career and gives you the tools you need to succeed.



We Are Radiology. Join RSNA today

[RSNA.org/membership](https://www.rsna.org/membership)

8:30 AM-4:30 PM CT • membership@rsna.org
1-877-RSNA-MEM (776-2636) • 1-630-571-7873



Together, we are **SEEDING THE FUTURE OF RADIOLOGY**

For every \$1 granted by the R&E Foundation, 50 additional dollars in subsequent funding are awarded from other sources like the NIH.

We are responsible for the growth of radiology research and education. And we are growing strong.

Help seed the future of medical imaging.
Make a donation today.

[RSNA.org/Foundation](https://www.rsna.org/Foundation)



Creating a Culture of Wellness in Radiology

By Richard Dargan

As radiologists continue to face mounting workloads and competing demands on their time, having dinner with a co-worker or attending a yoga session may not be high on their list of priorities.



Bender



Brown



Fried



Everett



Bhargava

Yet activities like these are key to achieving a healthy well-being, which helps diffuse the stress and burnout experienced by so many radiologists. In a 2019 Accreditation Council for Graduate Medical Education (ACGME) survey, almost half of radiologists said they have suffered burnout, citing workload as the primary source. But radiologists who are laser-focused on their patients need to recognize that self-care is directly linked to patient care, according to experts. To that end, RSNA 2019 offers a number of sessions devoted to promoting wellness at the individual and institution level. (See sidebar.)

“We don’t talk to each other like we used to,” said session presenter Claire E. Bender, MD, a radiologist at the Mayo Clinic in Rochester, MN. “That isolation has been detrimental to the profession.”

Dr. Bender is on the panel of the Controversy Session: *Radiologist Burnout: How Should we Help Mitigate?* As a radiologist who started her career in the 1980s, Dr. Bender said that outside forces like regulations and reimbursement cuts have sapped some of the joy from the profession, and that creating opportunities for interaction within the department like planned lunches and dinners can help bring it back.

Combatting isolation and developing a culture of wellness within a group or division is central to a session by Brandon P. Brown, MD, a radiologist at the Indiana University School of Medicine in Indianapolis and chair of RSNA’s Professionalism Committee. Dr. Brown will describe how his institution spent two years building a program from the ground up that

encourages interaction among staff in both academic and social settings.

“Human beings are interdependent and interconnected in ways we cannot ignore,” Dr. Brown said. “We need to foster opportunities for people to rediscover each other.”

These opportunities are particularly important for residents who may become discouraged from observing overworked faculty members, according to Jessica G. Fried, MD, chief resident, diagnostic radiology, at Penn Medicine in Philadelphia. “With so much clinical volume, the educator-learner relationship has been suffering,” she said. “When we see faculty members who don’t have time to eat lunch or go to the bathroom, what hope can we have?”

Dr. Fried, who serves on the National Academy of Medicine’s Action Collaborative on Clinician Wellbeing and Resilience, is presenting an RSNA 2019 session that will focus on strategies to promote wellness in radiology residents.

Increasing workloads also put pressure on radiologists looking to start families. An RSNA 2019 panel discussion will look at this pressure in the context of the U.S. 1993 Family and Medical Leave Act (FMLA), which allows employees up to 12 weeks of leave to care for a new child.

That length of time can be problematic for smaller radiology practices, said ses-

sion presenter Catherine J. Everett, MD, a diagnostic radiologist at Coastal Radiology in New Bern, NC. Dr. Everett, who only had two weeks off for the births of each of her five children, will talk about the limitations of FMLA and new ways to think about family leave.

Another way radiologists can mitigate burnout is by better organizing their lives, according to presenter Puneet Bhargava, MD, a radiology professor at the University of Washington in Seattle, who will present findings from more than a decade of research analyzing time management and productivity.

“Success leaves clues behind,” Dr. Bhargava said. “When you look at the people who navigated stress and burnout challenges successfully, the common thread that emerges is that they were very organized and had a plan.”

The presenters agree that reducing burnout will take a concerted effort from the top down to tackle the problem before it gets worse.

“When we’re constantly at full tilt, it changes the nature of what we do as physicians,” Dr. Fried said. “We need to take care of ourselves if we are going to survive the monumental changes of the last 10 to 15 years and those that lie ahead.”



Wellness at RSNA 2019

Maintaining wellness while making the most of your experience during a busy conference can be a challenge in itself. That is why RSNA 2019 has dedicated wellness spaces throughout McCormick Place to help you rest and recharge during the week.

- The new Wellness Lounge, located in the North Building, Level 2, is a quiet space away from the activity for yoga and relaxation. Complimentary water, yoga mats, aromatherapy and calming music help create a soothing experience. Attendees can also visit the prayer and meditation rooms for quiet reflection throughout the week.
- Camp RSNA, onsite child care services, provide a safe space for children traveling with you for the meeting. For nursing mothers, lactation suites are located throughout McCormick Place, including at Camp RSNA.
- As you network, shop and learn during RSNA 2019, remember to eat well and drink plenty of water. Water bottle refill stations are located throughout the building for your convenience. If trekking through the expansive halls of McCormick Place isn’t enough activity for you, sign up for the RSNA 5K Fun Run on Tuesday morning along the scenic Chicago lakeshore to benefit the RSNA R&E Foundation.

Networking at RSNA 2019

An important activity for your well-being is networking with your peers, and the annual meeting provides plenty of inviting locations to catch up with colleagues or meet with a mentor.

- The RSNA Connections Center, located in Lakeside Center East, Level 3, offers ample lounge seating with nearby food and beverage carts. With lounge tables equipped with charging stations throughout, this is a great place to take a break and recharge.
- The Discovery Theater includes a full schedule of entertainment and informational sessions, and space to relax and enjoy the atmosphere.
- The Residents Lounge, located in the Learning Center, is available for members-in-training and non-member residents to relax and network while enjoying complimentary refreshments.
- Plan a lunch date with colleagues at Bistro RSNA or Café RSNA. Located in the Technical Exhibits Halls, Bistro RSNA offers a gourmet menu and a relaxed dining experience, while the new Café RSNA includes multicultural options in a food-court style cafe with open seating and a prix fixe menu.

RSNA 2019 Sessions Focus on Physician Wellness

- *Moving Past Burnout: Strategies Beyond Individual Interventions to Mitigate Work-related Stress and Promote Physician Wellness in Radiology* (Sponsored by the RSNA Professionalism Committee) Sunday, 2 – 3 p.m. | RC116
- *Burnout of a Radiology Physician Workforce*, Tuesday, 8:30 – 10 a.m. | RC332.
- *Controversy Session: Radiologist Burnout: How Should We Help Mitigate?* Wednesday, 4:30 – 6 p.m. | SPSC45
- *Getting Stuff Done: A Mindful Approach to Personal Productivity*, Monday, 8:30 – 10 a.m. | RC253

- *A Hands-on Technology Workshop to Enhance Personal Productivity (Hands-on)* Monday, 10:30 a.m. – Noon | RCA22; RCA42
- *Paid Family/Parental Leave in Radiology with a Focus on Private Practice: A Panel Discussion* (In Conjunction with the American Association for Women Radiologists) Wednesday, 8:30 – 10 a.m. | RC516
- *Work-Life Balance for Radiologists with Young Families*, Friday, 8:30 – 10 a.m. | RC816C

Add these and all RSNA 2019 sessions to My Agenda at Meeting.RSNA.org.

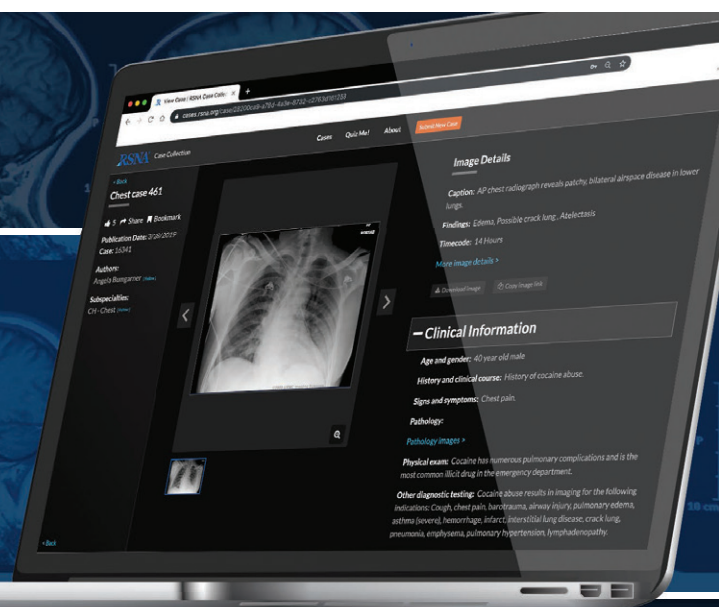
RSNA’s 5K Fun Run to Support Radiology Research



Join your colleagues and walk, run or jog during the 2019 RSNA 5K Fun Run, kicking off Tuesday, Dec. 3, at 6:30 a.m., Arvey Field, South Grant Park.

The annual Fun Run benefits the R&E Foundation through the fully tax-deductible \$50 registration donation. Register at the Fun Run desk (Grand Concourse, level 2.5 of McCormick Place) Sunday and Monday between 7:30 a.m. and 5 p.m. Pre-registered runners should visit the desk to pick up their bibs and T-shirts. Since 2012, participants have raised more than \$206,000 to fund R&E grants. This year’s Fun Run is sponsored by Konica Minolta Healthcare.

RSNA Case Collection™ MAKE YOUR MARK IN RADIOLOGY



Share your expertise.
Advance your career.
Enhance your CV.
Submit to the new RSNA Case Collection.

Your case will help build an extensive education and point of care resource—offering access to the global radiology community.

All submissions are peer-reviewed and RSNA-vetted to provide a curated and trusted resource that aids in diagnosis.

Submissions open January 2020. [Cases.RSNA.org](https://cases.rsna.org).

[RSNA.org/Journals](https://rsna.org/Journals)

RSNA Journals™

Radiology

RadioGraphics

Radiology:
Artificial Intelligence

Radiology:
Cardiothoracic Imaging

Radiology:
Imaging Cancer





See the Innovative Possibilities in the Technical Exhibits Halls

More than 700 leading manufacturers, suppliers and developers of medical information and technology help make the RSNA Technical Exhibits Halls the ideal setting to engage with industry experts and discover the latest medical imaging products and services. Shop and compare equipment supplies, devices and software throughout the North and South buildings and AI Showcase.



AI Showcase

Sponsored by Zebra Medical Vision

The newly expanded AI Showcase, located in the North Building, Level 2, features more than 130 companies offering attendees the opportunity to experience AI software and product demonstrations, connect with industry leaders and see the possibilities of AI firsthand. The AI Showcase also features an AI Theater and a Hands-on Workshop led by exhibitors. For more information on programming in the AI Showcase, go to Meeting.RSNA.org.

RSNA AI Deep Learning Lab

Now integrated into the AI Showcase, the RSNA AI Deep Learning (DL) Lab features four unique sessions focusing on using open-source tools for completing DL tasks. Attendees are invited to bring their own devices to begin completing actual tasks in DL. Sessions are repeated Sunday through Thursday.

3D Printing & Advanced Visualization Showcase

The 3D Printing & Advanced Visualization Showcase has been expanded and relocated to the North Hall, Level 3. The RSNA 3D Special Interest Group (SIG) will present the latest research and technology in 3D printing for medical applications from Sunday to Wednesday from 2 to 3 p.m. Short exhibitor presentations to be held throughout the week are available at Meeting.RSNA.org.



Innovation Theater

Located in the South Building, the Innovation Theater features 20-minute exhibitor presentations of new products and

advances in medical imaging. Presentations are held from 10:30 a.m. to noon, and from 2 to 4 p.m. Sunday through Wednesday.

IR Zone, South Building

Recognizing the continued growth of interventional radiology (IR), the IR Zone is dedicated to companies offering products and equipment unique to IR.



Radiation Safety Zone

Dedicated to critical products to protect you and your patients, the Radiation Safety Zone, in the North Building, includes companies offering a variety of products and services designed to create a culture of radiation safety.

First-Time Exhibitor Pavilion

First-time exhibitors demonstrating new products and services will be featured in a showcase area inside the South Building. Other first-time exhibitors located throughout the exhibits halls will be identified with a First-Time Exhibitor logo.

Startup Showcase

Visit the Startup Showcase in the South Building to explore the latest in medical imaging and connect with emerging companies positioned to bring new products and services to market. RSNA has partnered with MATTER, a health care startup incubator, in developing the showcase. The RSNA Startup Showcase Spotlight is featured in the South Building from 1 - 2:30 p.m. Wednesday

Publishers Row

Shop for educational publications and professional services addressing virtually every aspect of medical imaging.

Visit the RSNA Publications Booth 1119 (South Building) featuring RSNA journal-related products and services, including the full suite of *Radiology* journals. Meet the RSNA journal editors (see schedule below), or attend *Publishing in RSNA Journals: Tips from the Editors* on Sunday, Dec. 1, at 2 p.m.

Editor Meet and Greets

- Gary D. Luker, MD, Editor, *Radiology: Imaging Cancer*, Monday, 10:30 a.m.
- Mariam Moshiri, MD, Editor, RSNA Case Collection, Monday, 1 p.m.
- Charles E. Kahn, MD, Editor, *Radiology: Artificial Intelligence*, Monday, 2 p.m.
- Suhny Abbbara, MD, Editor, *Radiology: Cardiothoracic Imaging*, Tuesday, 11 a.m.
- Jeffrey Klein, MD, Editor, *RadioGraphics*, Wednesday, 9 a.m.
- David Bluemke, MD, PhD, Editor, *Radiology*, Wednesday, 1 p.m.

Recruiters Row: South Building, Level 3

The annual meeting is the perfect opportunity to meet with employers recruiting at RSNA. Meet with employers recruiting during RSNA 2019 and use the lounge in this area for interviews or one-on-one meetings.

Vendor Workshops

Vendors provide hands-on tutorials of commercial software systems in a classroom setting. Refer to Meeting.RSNA.org for a complete list of Vendor Workshops.

Bistro RSNA

Technical Exhibits, North Hall B & South Hall A

With an extensive gourmet menu and ample seating, Bistro RSNA is a convenient

option to sit down to a comfortable lunch and network with colleagues. For more information, visit bistrotickets.com/rsna or stop by the Bistro Desk, Grand Concourse, Level 3.

Lunch

Sunday, Dec. 1, to Wednesday, Dec. 4
11 a.m. to 2:30 p.m.

Brunch

Thursday, Dec. 5
10:30 a.m. to 1:30 p.m.



Café RSNA

Technical Exhibits, South Building, Level 3

This affordable food court style café features a wide variety of cuisine, casual dining, open seating and a prix-fixe menu. Sunday, Dec. 1, to Wednesday, Dec. 4
11 a.m. to 2:30 p.m.



RSNA AI Café, located in the AI Showcase, includes food carts offering sandwiches and tacos.

Exhibit Hours

Halls A & B, South and North Buildings and AI Showcase

Sunday–Wednesday 10:00 a.m.–5:00 p.m.
Thursday 10:00 a.m.–2:00 p.m.

Technical Exhibits Focus

Check out the Technical Exhibits Focus featuring a floor plan and daily industry presentations in the *Daily Bulletin*, Sunday through Wednesday.

India, Egypt Featured in 2019 Country Presents Session

This year RSNA honors two international radiology associations with its Country Presents series: The Indian Radiological & Imaging Association (IRIA) and the Egyptian Society of Radiology and Nuclear Medicine (ESRNM).

India Focuses on Unique Challenges

The RSNA 2019 session *India Presents: Indian Radiology — Serving a Billion Population*, held on Monday, Dec. 2, will feature a delegation from IRIA who will discuss radiological trends prevailing in India and solutions to the country's unique challenges.

The series will begin with a short cultural program and an overview of radiology in India by IRIA National President Hemant T. Patel, MD, followed by a panel discussion on radiology and infectious diseases, imaging trends in oncology and the practice of radiology in rural India and the country's corporate hospitals. Bijal B. Jankharia, MD, will discuss IRIA's breast imaging outreach programs in India's second- and third-tier cities. To showcase one of its major initiatives, the Samrakshan Program, which iden-



Patel

tifies pregnancies at risk for pre-eclampsia/hypertension and fetal growth restriction at 12 weeks using ultrasound, Bhupendra Ahuja, MD, will present *Evolution of Fetal Radiology: Our Challenges, Our Achievements*.

The IRIA recently established a research and education foundation to foster more research in AI, disease-based radiology and sequencing. Two presentations will discuss

this new initiative: *Radiology Post-Graduate Education in India: Preparing Gen Next* by Mohanan Kunnummal, MD, and *Artificial Intelligence (AI) in Indian Radiology: We are all Set!* by Harsh Mahajan, MD.

"On behalf of our 17,000 radiologists, I thank RSNA for choosing India as a country presenter," Dr. Patel said. "It's a unique opportunity to share an in-depth view of radiology and culture in our country."

Egypt Takes a Case-Based Approach

Radiologists from ESRNM will present a Tuesday, Dec. 3, session, *Radiology in Egypt: A Case-Based Approach*, featuring a review of 15 different radiology cases.

Pediatric care in Egypt is concentrated in large, national specialized pediatric hospitals that serve significant geographic regions of the country. Mohamed Elltomey, MD, will discuss several complex and rare pediatric cases from these national centers.

The women's imaging unit at Cairo University is the first academic facility dedicated to the subspecialty in Egypt and Dorria Salem, MD, will present imaging diagnoses from the unit, focusing on rim enhancing lesions and the merits of imaging modalities for reaching a diagnosis. Norran H. Said, MD, will discuss several



El-Diasty

ongoing research projects using contrast-enhanced mammography and its role as a problem-solving tool in the diagnostic and screening setting.

In a case review on the use of radiology to safely and non-invasively investigate ancient mummies and artifacts, Sahar Saleem, MD, will discuss how archaeological imaging uncovers new information about ancient

civilization and helps museums create 3D printed replicas of rare artifacts.

"I hope the Egyptian participation at RSNA 2019 will be remarkable and impressive," said Professor Tarek El-Diasty, ESRNM chairman and head of the Radiology Department, Urology and Nephrology Center, at Mansoura University. "I wish for a very fruitful gathering for Egyptian attendees."

RSNA Connections Center — Your RSNA 2019 Home Base

Located in Lakeside Center East, Level 3, the RSNA Connections Center is your central hub to learn about RSNA services, get your questions answered or enjoy a break from meeting sessions. Attendees can access:

DIGITAL SUPPORT

RSNA technology experts can provide one-on-one digital help with Meeting Central, the meeting app, Virtual Meeting, Credit Eval, My Agenda and Diagnosis Live™. They will also help you with any connectivity issues and answer questions about iOS and Android functionality.

INFORMATION DESK

Visit RSNA staff at the Information Desk for answers to your questions about RSNA 2019.

MEMBERSHIP & RESOURCES

Staff will be available to provide information about RSNA membership benefits and services including:

- Career Connect
- Image Wisely®
- Informatics products
- International programs
- Journal subscriptions
- Membership renewals and payments
- Online Education
- Radiology Cares®: The Art of Patient-Centered Practice
- *RadiologyInfo.org*®
- Virtual Meeting

RIBBON PICK UP

The self-serve ribbon wall is located in the Membership & Resources area. If you don't see one you are looking for, please ask for assistance.

R&E DONOR SUITE

Learn about the R&E Foundation and how you can seed the future of radiology with a gift. Read about current grant and award recipients as well as individual, private practice and corporate donors. Attendees

with a donor ribbon and those who contribute at least \$300 onsite enjoy exclusive access to the Donor Suite, which features computers, a coat room, comfortable furniture and light refreshments.

CARICATURES OFFERED ON #GIVINGTUESDAY

Help change the face of radiology by letting our artists create a caricature of yours! Show your support for the R&E Foundation and receive a fun RSNA 2019 souvenir. Available Tuesday, Dec. 3, 9 a.m. – 5 p.m., next to the RSNA Shop. \$25 per caricature with all proceeds benefiting the R&E Foundation.

RSNA PHOTO BOOTH

Choose from a variety of custom backgrounds to create your own fun photo. RSNA will share your photo on our #WeAreRadiology wall in the Membership & Resources area. A photographer will also be on hand to take professional portraits, which will be sent via email. Photos are complimentary.

Fun Photos:

- Sunday, Tuesday and Thursday, 9 a.m. – 5 p.m.
- Monday and Wednesday, 12:30 – 5 p.m.

Professional Portraits:

- Monday and Wednesday, 9 a.m. – Noon

THE RSNA SHOP

RSNA Shop is your go-to resource for RSNA branded merchandise and apparel. Choose from gifts including holiday ornaments, hats, keychains, golf balls, fleece tops, and a limited edition water bottle to support the R&E Foundation



Discovery Theater Features Entertainment and Education

The Discovery Theater hosts informative, entertaining programming all week. Back by popular demand is the Diagnosis Live™ Resident Competition with residency programs competing for the ultimate bragging rights. Along with a diverse spectrum of theater performances, presentations include Navigating RSNA presented in multiple languages, Navigating Chicago for Residents, and information about new RSNA programs. View the full schedule at Meeting.RSNA.org.

Discovery Theater Performances Daily at Noon:

Sunday

Broadway Classics: Jordan von Haslow & Quintet

Monday

Acoustic Artist: Melanie Devaney

Tuesday

Ukulele Barrett Band

Wednesday

Martin Metzger Flamenco Quartet:
Noon – 1 p.m.

Acrobat: Gretchen in Motion 1 – 2 p.m.

Thursday

Acoustic Artist: Cary Kanno

RSNA Learning Center Features Thousands of Posters and Exhibits

Located in Lakeside Center East, Level 3, the Learning Center houses more than 2,500 education exhibits and scientific digital posters covering a range of subspecialties. Scientific posters will be displayed within each learning community. During the lunch hour, authors will be present for Poster Discussions. Visit Meeting Central for days/times.

RSNA Case Collection

Visit the lounge near the RSNA Journals' Editorial Offices to learn more about RSNA Case Collection — launching in mid-2020. Together we're building an education and point-of-care resource with access to the global radiology community. Attend a Discovery Theater presentation about the Case Collection on Sunday, Dec. 1, at 2:30 p.m.

Crowds Cure Cancer: Help Annotate Data from the Cancer Imaging Archive

Attendees are invited to participate in this crowd-sourcing initiative to generate valuable data on deep learning, radiomics and radiogenomics and accelerate quantita-

tive imaging research. Images are provided by the National Cancer Institute's Cancer Imaging Archive (TCIA). Because many cases lack the tumor-location labels that computer scientists need to jump-start their research, participants will be asked to anonymously review cases and visually mark tumor locations. TCIA will share this data to accelerate cancer research. Attendees who complete the project will receive an RSNA ribbon.

The Crowds Cure Cancer booth will be open all day throughout the week.

NCI Image Perception Lab

Researchers supported by the National Cancer Institute (NCI) will conduct studies on radiologic

image perception at RSNA 2019. Attendees can learn about this important area of research, and if they wish, participate in the studies as volunteers.

Quality Improvement (QI) Report Walk

Join experts in quality improvement (QI) in radiology as they walk through the QI reports, highlighting examples of great work and sound methodology. Those interested in leading and publishing QI projects will find this especially valuable. The QI report walk will be held Monday, Dec. 2, at 3 p.m. in the Quality report section. This session may be claimed for *AMA PRA Category 1 Credit*™.

CONTINUING EDUCATION CREDITS AVAILABLE

RSNA is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. RSNA designates this live activity for a maximum of 94 *AMA PRA Category 1 Credits*™. Physicians should claim only credit commensurate with the extent of their participation in the activity. Attendees can evaluate CME courses and claim credit electronically.

Self-Assessment Modules (SAMs)

This year, 24 courses offered by RSNA have been approved for Self-Assessment Modules (SAMs). Each RSNA in-person SAM is available for up to 1.50 SAM credits and up to 1.50 *AMA PRA Category 1 Credits*™. Note: All courses designated for SAM credit at RSNA 2019 will require attendees to use their personal devices to complete the required test questions during the live session. To claim SAM credit, attendees must complete the required test questions during the live session and evaluate and claim CME for the SAM course. RSNA staff will be on hand in Digital Support and the Learning Center Information Desk to assist with the process; visit Meeting.RSNA.org for additional details.

Sunday's

Physics Quiz

Q What is the approximate ratio of skin dose from digital subtraction angiography to conventional fluoroscopy in IR procedures?

[Answer on page 13A.]

McCormick Place: An Art Museum Within a Convention Center

Large collection of public of artwork showcases Chicago history and culture

By Richard Dargan

If you've attended an RSNA annual meeting, you're probably familiar with the massive square footage, long escalators and subterranean bus gates at McCormick Place. But you might not know that McCormick Place houses a superlative collection of public art. There are more than 100 pieces on display, mostly concentrated in the South and West buildings.

The collection began in the South Building in 1997, with major works from both Chicago-based and international artists, before the focus was refined with the opening of the West Building in 2007, according to McCormick Place officials.

"For the South Building, we procured art from all over the United States, but with the continued expansion, we've returned to our Chicago roots," said Marilyn Rubio, senior manager of Community Engagement and Special Events at the Metropolitan Pier and Exposition Authority (MPEA), owner and operator of McCormick Place. "It's now one of the largest public art collections in the state."

The collection offers a fascinating look at how different artists interpret Chicago, according to Nicol Chervenak, MPEA's Director of Planning and Program Management.

"There's a little bit of everything in the collection," she said. "You'll see photography, painting and sculpture in both representational and abstract form. It's like walking around a museum."

Artists Capture the Essence of Chicago

For the West Building, planners worked closely with Chicago-area artists to fit pieces into the architecture of the space.

Dan Ramirez's suite of eight paintings, for instance, discreetly occupies niches along the Central Concourse. Ramirez sprayed and brushed acrylic polymers over 13-foot-tall aluminum panels to create the series, which was inspired by writer Nelson Algren's 1951 prose poem *Chicago: City on the Make*.

A contrast to the rectilinearity of Ramirez's series, Chicago-based artist Nick Cave's *Universe* (2007) presents an explosion of flower petals across an eight-foot-diameter disc. A closer look at the piece reveals Cave's skill at integrating scraps of material like sequined and beaded fabric into the work, an aptitude he developed as a child repairing hand-me-down clothes in his large family in Missouri.



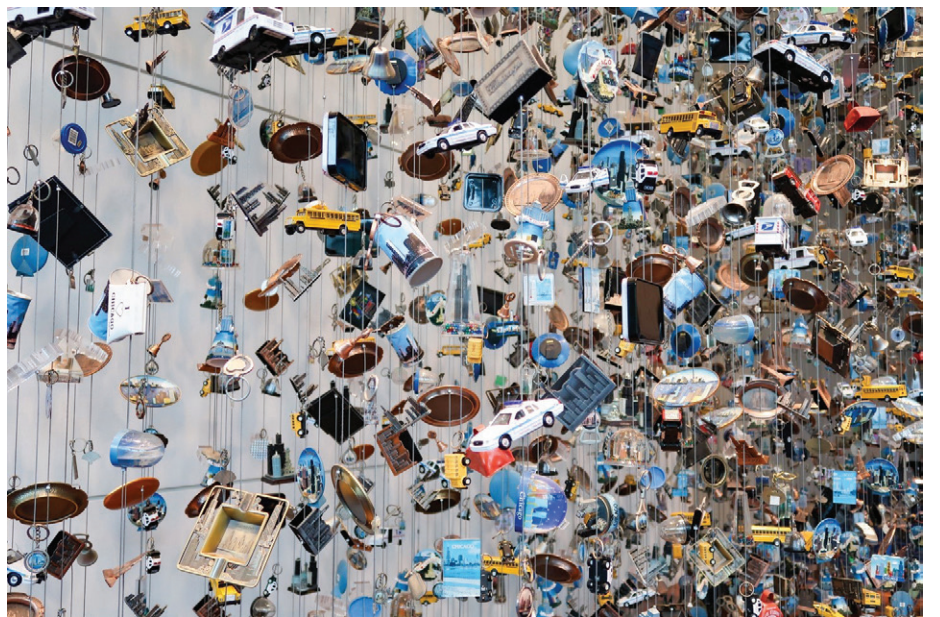
Nick Cave's *Universe* (2007)

Patrick Micelli's installation *Made in China* (2007) on Level 1, also requires a closer look. Micelli created the work by hanging thousands of pieces of Illinois memorabilia, including toy cars, bottle openers and key chains, from steel

cables.

The mural *A Twilight Dream* by Chicago native Dzine stretches 100 feet along a wall near the main walkway. Dzine, who got his start as a graffiti artist before turning to abstract painting, drew inspiration from the 1893 Columbian Exposition, also known as the Chicago World's Fair. Circular forms allude to the Ferris wheel unveiled at the fair, an event that helped propel Chicago into the ranks of the world's great cities.

Other inventive visions of the city include Sabrina Raaf's *Curtain Wall* (2007), a soaring, twisted abstraction of an architectural feature prominent in many of



Patrick Micelli's *Made in China* (2007)

Chicago's great modern skyscrapers.

The oil painting *Chicago* (2007) from William Conger, one of abstract art's towering figures, reimagines the city as a series of wheels and hubs, with lines and circles signifying highways, waterways and railroads.

Collection Features Artists Outside Illinois

The South Building maintains an emphasis on local artists while making space for contributions from artists outside Illinois. In renowned glass sculptor Dale Chihuly's *McCormick Place Chandelier* (1997), located on Level 4, tendrils of glass cascade out of a pile of ruby-red globes.

Dream Catcher (1997), a delicate monofilament sculpture from the late Canadian artist Micheline Beauchemin, serves as a kind of ephemeral companion piece to Chihuly's chandelier.

Other South Building highlights include Preston Jackson's *Bronzeville, a Moment in Metal* (2007), a stainless steel and cast bronze sculpture named after the historically African American neighborhood adjacent to McCormick Place. The sculpture references the Great Migration, when African Americans left the south for Chicago and other northern cities.

Migration is also a theme in Bo Bartlett's *Homeland* (1994), an oil painting that depicts dispossessed people returning to their home. *Homeland* displays Bartlett's characteristic juxtaposition of realistic figures in surreal settings.



Bo Bartlett's *Homeland* (1994)

"There's a little bit of everything in the collection. You'll see photography, painting and sculpture in both representational and abstract form. It's like walking around a museum."

Nicol Chervenak

In addition to the art in the West and South Buildings, McCormick Place hosts a rotating collection of outdoor sculptures. A curated collection of pieces from Chicago-based artists opened in 2017.

"We're lucky to have such a nice collection of art that's free for folks to take a look at," Rubio said.

For a complete guide to the art collection visit bit.ly/mccormick-art.

Special Recognition for In-Kind Support

RSNA would like to recognize the following companies for contributing equipment to the Educational Courses at RSNA 2019:

Bard
BD
Canon Medical Systems, USA, Inc
CIVCO Medical Solutions
Cook Medical, LLC*
FormLabs
GE Healthcare
Hitachi Healthcare
Hologic
IBM Watson Health
INRAD, Inc
Invivo Corporation
IZI Medical Products*
Konica Minolta Healthcare Americas, Inc

Mamotome*
Medtronic*
Mindray
Monarch Medical*
NeuWave Medical*
Parker Laboratories, Inc
Philips
Samsung
Siemens Healthineers
Sonoscaner US
SuperSonic Imagine
Stryker IVS*
TeraRecon
Ultimaker
Vital
Welch Allyn*

Special Recognition for unrestricted educational grants:

Hologic, Inc;
Unrestricted educational grant in support of the Breast Series: Emerging Technologies
Bayer;
Unrestricted educational grant in support of the MRI Safety Course (Gadolinium and Pace-makers)

*Companies not exhibiting

AI-Powered Ultra-Low-Dose CT Denoising Solution

- Superb Image Clarity with Preservation of Natural Texture
- Compatible with any CT Scanners using DICOM

FBP

Noise: 260 HU

120 kV 5 mAs ULD CT

ClariCT.AI

Noise: 57 HU

Visit **ClariPi** at RSNA booth #11110

Outstanding Educator and Researcher Awarded Today

Today RSNA will recognize Jocelyn Chertoff, MD, and Elizabeth Krupinski, PhD, for their contributions to education and research. The presentation will take place during the plenary session in Arie Crown Theater beginning at 8:30 a.m.

2019 Outstanding Educator

A powerful advocate for improving resident education, faculty development and workforce issues in radiology, Jocelyn D. Chertoff, MD, specializes in gastrointestinal imaging. A graduate of Brown University and the University of Vermont College of Medicine, Dr. Chertoff serves as radiology department chair and professor of radiology and obstetrics and gynecology at Dartmouth Hitchcock Medical Center, where she also directed the diagnostic radiology residency program from 1993 to 2010.

After receiving her medical degree, Dr. Chertoff completed a transitional internship at Hartford Hospital and a pediatric internship at the University of Connecticut Health Sciences Center. She worked for two years in a physician shortage area in New York State, then served as the medical director for Vermont EMS. She next turned her focus to medical imaging, completing a residency in radiology and a fellowship in cross-sectional imaging at the Medical Center of Vermont.

Dr. Chertoff was named a 2003-2004 fellow of the Hedwig van Ameringen Executive Leadership in Academic Medicine (ELAM) program.



Chertoff

Dr. Chertoff received a master's degree from the Center for the Evaluative Clinical Sciences at Dartmouth College in Hanover, NH, and a master's degree in health care delivery science from Dartmouth's Tuck School of Business. She is now a member of the Dartmouth-Hitchcock board of governors and board of trustees and serves on the board of advisors at Geisel School of Medicine at Dartmouth College.

Dr. Chertoff leads several educational programs for residents, faculty development courses, and initiatives addressing issues for women physicians. She is a past chair of the Association of American Medical Colleges' Group on Women in Medicine and Science and a past president of the Association of Program Directors in Radiology (APDR), Alliance of Clinician Educators in Radiology (ACER), the Association of University Radiologists (AUR) and the New Hampshire Radiological Society.

Widely recognized as a dedicated educator, Dr. Chertoff received the ACER Achievement Award in 2012. She served as an oral board examiner for the ABR for nine years and in 2013 was awarded its Distinguished Service Award. In 2017 she received both the APDR Achievement Award and an AUR gold medal.

2019 Outstanding Researcher

A professor and vice chair for research in the Departments of Radiology & Imaging Sciences, Psychology, and BioMedical Informatics at Emory University in Atlanta, Elizabeth A. Krupinski, PhD, is a renowned investigator in the arena of perception and cognition in medical imaging, studying how the image information, automated enhancements and human factors influence image interpretation. She has been the associate director of evaluation for the Arizona Telemedicine Program and co-director of the Southwest Telehealth Resource Center at the University of Arizona in Tucson where she leads multiple research initiatives on utilizing telemedicine to improve patients' access to care.

In her research, Dr. Krupinski has explored the effects of image manipulation on clinical observer performance and investigated conditions such as experience level and fatigue as factors that impact interpretive accuracy and efficiency. Her eye-tracking experiments have demonstrated how training levels and expertise, display type, and reading environment can affect performance.

Dr. Krupinski received her BA from Cornell University and her MA in experimental psychology from Montclair State University in New Jersey, where she was named Most Outstanding Psychology



Krupinski

Graduate Student and Most Outstanding Graduate Student in Arts and Sciences. She completed her postgraduate training at the University of Pennsylvania's Department of Radiology and received her PhD, also in experimental psychology, from Temple University in Philadelphia.

An experienced leader, Dr. Krupinski is a past chair of the Society of Photo-Optical Instrumentation Engineers (SPIE), Medical Imaging

Conference, past president of the American Telemedicine Association (ATA), president of the Medical Image Perception Society, and past chair of the Society for Imaging Informatics in Medicine (SIIM).

Dr. Krupinski has contributed to more than 280 peer-reviewed scientific publications, and she serves on a number of editorial boards and is co-editor of the *Journal of Telemedicine and Telecare*. She has served on the program committees of more than 30 academic societies, including SPIE and the American Association of Physicists in Medicine (AAPM).

Dr. Krupinski received the Academy for Radiology & Biomedical Imaging Research Distinguished Investigator Award in 2014 and the ATA President's Award for Individual Leadership in 2017.

Get the Most Out of RSNA 2019 with *Virtual Meeting*

Enjoy all the excitement of the meeting and get the content you need during and after RSNA 2019.

- 400+ live and on-demand courses
- CME credit for Cases of the Day and live and select on-demand courses
- Scientific presentations and education exhibits
- Access through April 30, 2020

Virtual Meeting
RSNA® 2019
SEE POSSIBILITIES
— **TOGETHER**



UPGRADE YOUR PACKAGE TO **STANDARD + VIRTUAL** AT [RSNA.ORG/REGISTER](https://rsna.org/register)

Monday Session Explores the Imaging of Depression

Neuroimaging makes inroads toward quantifying and treating the complex, widespread disease

By Evonne Acevedo

As depression continues to afflict millions of people worldwide, researchers in a number of medical disciplines — including radiology — are working together to accelerate progress in treating and diagnosing the crippling disease.

In a Monday Special Interest Session, *Paths to Recovery: What Can Neuroimaging Teach Us about Depression and Its Treatment*, experts in neuroimaging, psychoradiology and psychiatry will discuss the increasingly critical role neuroimaging plays in furthering the understanding of the complex disease that impacts more than 300 million people across the globe.

“Depression is a huge clinical problem,” said session moderator David B. Hackney, MD, a professor of radiology at Harvard Medical School and chief of neuroradiology at Beth Israel Deaconess Medical Center in Boston. “Millions of people have depression, and a substantial subset of those people have severe, ongoing depression that doesn’t get better with standard talk therapy and medication. This session will focus on how, when you can identify areas of the brain that respond to treatment, you can do these people a great service.”

“Imaging continues to be at the forefront of how we conceptualize what goes wrong in the brain in even the most complex behavioral disorders.”

Helen S. Mayberg, MD



Hackney



Mayberg



Gong

Presenters Helen S. Mayberg, MD, a professor of neurology, neurosurgery, psychiatry and neuroscience at Icahn School of Medicine at Mount Sinai in New York, and Qiyong Gong, MD, PhD, a professor of radiology at West China Hospital of Sichuan University, China, will demonstrate how

neuroimaging can guide antidepressant therapies like deep brain stimulation. (See sidebar.) Both presenters are currently associate editors of the *American Journal of Psychiatry*.

Dr. Mayberg is renowned for her study of brain circuits in depression. Dr. Gong is a leader in the new

field of psychoradiology, which explores interactions between what radiologists can see on imaging using purely anatomical techniques and understanding the brain function that underlies depression and other psychiatric diseases.

“Psychiatrists and physicians are good at making a diagnosis of depression, but we have limited knowledge of objective criteria for subtypes,” Dr. Mayberg said. “We can tell what symptoms are dominant, but we need biomarkers that can help stratify treatment outcomes.”

In mapping how the brain responds to treatment, imaging has helped conceptualize mental health issues as actual brain disorders and is taking research beyond brain lesions to brain circuits, Dr. Mayberg said.

“Imaging continues to be at the forefront of how we conceptualize what goes wrong in the brain in even the most complex behavioral disorders,” she said. “And imaging gives us some methodological anchors for building models of how the brain works, which will lead to better diagnoses and better treatment.”

The Promise of Deep Brain Stimulation

Unlike with movement disorders, brain stimulation techniques for depression are gradual rather than immediate, Dr. Hackney said.

“In people who have movement disorders, when you turn on the brain stimulators, the tremors disappear right away, and if you turn them off, the tremors come back right

away,” he said. “For people with depression, it can take weeks to months before results become apparent.”

Deep brain stimulation is true image-guided therapy, Dr. Hackney said.

“Targeting where you put the deep brain stimulator, and specifically the part of the brain you’re attempting to activate, is very much a combination of anatomy and functional neuroanatomy. It leads to an understanding of how that part of the brain is responsible for— or at least can be stimulated to help treat — severe depression.”

Dr. Mayberg, known for her pioneering work in deep brain stimulation research, will speak on the technique during the RSNA Special Interest Session. Dr. Mayberg is also a pioneer in minimally invasive interventional psychoradiology which may be achieved in the future through technical advances such as MR-guided focused ultrasound.

“I’m not a psychiatrist; I’m a neurologist who started doing imaging in the mid ‘80s as a research tool,” Dr. Mayberg said. “Imaging remains an important investigation tool to understand how the brain changes over time and to help select patients who can benefit from targeted therapies. The takeaway is that we’re working on quantitative ways to make diagnoses and customize treatments.”

Session Tackles Depression

The Special Interest Session: *Paths to Recovery: What Can Neuroimaging Teach Us about Depression and Its Treatment*, SPSI25, will be held Monday at 4:30 p.m. David B. Hackney, MD, will moderate.

Presentations are:

- *Depression 101: Current Approaches to Diagnosis and Treatment*, Helen S. Mayberg, MD
- *Current Psychoradiology for Depression*, Qiyong Gong, MD, PhD
- *Strategies to Develop Imaging Biomarkers for Treatment Selection*, Dr. Mayberg
- *Theory to Practice: Targeted Modulation of Depression Circuits using Deep Brain Stimulation*, Dr. Mayberg

Do You Image Wisely? Renew your pledge today!



Your pledge to Image Wisely® is an annual event that expires every Dec. 31.

Pledge for 2020

Ways to show you image wisely:

- Take the pledge every year
- Stay updated with *News and What We’re Reading*
- Earn CE with free radiation safety cases*
- Get free online materials for your patients at radiologyinfo.org
- Access RSNA radiation dose exhibits
- Visit imagegently.org for pediatric information

Be sure to visit:

**ACR Booth 3316,
South Hall A**
**RSNA Connections Center,
Membership & Resources**
**AAPM Booth 1109,
South Hall A**
**ASRT Booth 1112G & 2508,
South Hall A**

*Approved for AMA PRA Category 1 Credits™, Category A Credit and CAMPEP Credit

Learn more at imagewisely.org



More Daily Bulletin Online

Stay connected to all things RSNA 2019 through the print and online versions of *Daily Bulletin*, the official newspaper of the annual meeting. The digital edition is available on the RSNA 2019 meeting app and online at RSNA.org/Bulletin. Additional features include exclusive online content, video interviews and interactive quizzes and polls. On Friday, a special online-only edition of *Daily Bulletin* will cover meeting highlights from Thursday.

Get alerts on *Daily Bulletin* articles through social media at #RSNA19 on Facebook ([Facebook.com/RSNAfans](https://www.facebook.com/RSNAfans)), Instagram (RSNAgram) or Twitter (@RSNA).



Sunday's Physics Tip

Ensuring that copper filtration is utilized in all fluoroscopic scanning modes will reduce the risk of skin reactions during IR procedures.

American Association of
Physicists in Medicine

RSNA Virtual Meeting is Virtually Unmatched

BY MIKE BASSETT

Since 2011, the rapidly growing Virtual Meeting has emerged as model of success

When RSNA — which hosts the world's largest annual medical imaging meeting — took its first steps into the virtual world, the Society started small.

Launched in 2011, the first Virtual Meeting offered simultaneously with the onsite RSNA annual meeting in Chicago, included nine sessions with accompanying slides and videos of speakers, as well as an online technical exhibit. Over the years, the virtual meeting has expanded dramatically in terms of content and evolved significantly based on member input.

"The Virtual Meeting started out as an experiment: Could we deliver the same high-quality content virtually to those unable to attend the onsite meeting as we do those who attend the RSNA annual meeting in person?" said Curtis Langlotz, MD, PhD, professor of radiology and biomedical informatics at Stanford University, and RSNA Board of Directors liaison for information technology and annual meeting. "The technical hurdles were solved early and the virtual format rapidly became a part of the meeting that everyone valued, even those who attend the meeting but have a conflict with a particular session."

In less than a decade the RSNA Virtual Meeting — one of the first medical meetings to offer live-streaming sessions — has evolved into one of the most successful, influential virtual models in health care today, according to RSNA leaders.

In 2018, Virtual Meeting content was expanded to include 233 sessions (40% of the meeting program), including scientific and educational sessions. In 2019, this coverage will expand to 80% of the meeting program.

RSNA 2018 also marked the third consecutive year that a selection of on-demand courses offered CME credit upon evaluation and review. In 2018, 25 on-demand CME sessions were offered, roughly double the

number offered when on-demand CME sessions were introduced at RSNA 2016.

"And starting in 2020, RSNA's goal is to offer 100% of eligible meeting content through the Virtual Meeting, which is truly an amazing achievement," Dr. Langlotz said.

Virtual Component Adds Dual Value

Because RSNA's onsite meeting is so successful, there was some question about whether the virtual program would impact in-person attendance at the annual meeting. But that has not happened.

"That is a concern, so we have been monitoring the boots-on-the-ground component of the RSNA annual meeting as we have been expanding the virtual component, and in-person attendance has not changed," said Matthew Mauro, MD, the RSNA Board of Directors liaison for education.

The dual value of having an onsite and Virtual Meeting creates an added appeal for many attendees.

"One component of high value is the scientific and educational content," said Dr. Mauro, chair of the Department of Radiology, University of North Carolina, Chapel Hill. "Hence, the Virtual Meeting allows people who can't attend, or can only attend some of the meeting, to still have access to the premier scientific and education materials in our discipline."

On the other hand, the RSNA annual meeting is still the premier venue for science and education sessions, personal interaction with colleagues and access to a technical exhibits that is second to none, according to Dr. Mauro.

"We are still attracting a lot of people who attend for the trade component of the RSNA annual meeting, along with those seeking access to the thousands of onsite scientific and educational sessions, and personal interaction with their colleagues," Dr. Mauro said.

In fact, the number of Virtual Meeting attendees who physically attend the annual meeting in Chicago has been growing. Of the 6,298 total registrants for the Virtual Meeting in 2018, less than half (2,800) were virtual-only registrants.

Attendees Value Virtual Model

For those who can't travel to Chicago, the Virtual Meeting offers a welcome alternative. As a frequent attendee of the RSNA Virtual Meeting, Kashaf Ashrif, MBBS, of James Paget University Hospitals and Norfolk Imaging Alliance, Norfolk U.K., says the Virtual Meeting gives attendees access to sessions they might otherwise miss.

"The ability to access sessions virtually — such as with Cases of the Day — can make it easier for attendees who spend much of their time in Chicago running around from room to room to attend the talks," Dr. Ashrif said.

Richard Num, MD, a radiologist in private practice in Adelaide, Australia, who has attended the Virtual Meeting every year since its inception, said he uses the virtual model to access plenary sessions, case discussions and Cases of the Day. He also appreciates that live-streamed sessions are recorded for post-meeting access.

"After the meeting, we are able to revisit a particular session or, if we wish, view sessions we missed," Dr. Num said. "Virtual attendees can obtain a first-class education without the strain and cost of physically travelling to the other side of the world."

At RSNA 2019, more than 400 live-streamed sessions will be available on-demand within 24 hours and will be accessible to virtual meeting registrants through April 30, 2020.

To register for the Virtual Meeting, visit an Information Desk or go to [RSNA.org/Virtual](https://www.rsna.org/Virtual).

Meeting Essentials

Onsite Registration/Badge Pickup

Attendees can complete their registration at designated registration areas in McCormick Place or online at [RSNA.org/Register](https://www.rsna.org/Register).

Name badges can be picked up at any of the three designated registration locations or at designated hotels (see below). A valid photo ID is required.

Your badge serves as a virtual business card and is encoded with the demographic information you provided during registration. Upon request, exhibitors may scan your badge to access your contact information. Your badge contains beacon technology to verify your attendance, simplify the CME process and permit RSNA to gather data to better understand, in aggregate, the effectiveness of the meeting. Please visit any registration location if you have questions about beacon technology.

Registration/Badge Pickup Locations

North Building, Level 2
Saturday – Thursday, 7 a.m. – 5 p.m.

South Building, Level 1 and Lakeside Center East Building, Level 2
Saturday, 11:30 a.m. – 5 p.m.
Sunday – Thursday, 7 a.m. – 5 p.m.

Lakeside Center East Building Only
Friday, 7 a.m. – Noon

Badge Pickup Kiosks

Hilton Chicago, 720 S. Michigan Ave.

Hyatt Regency Chicago, 151 E. Wacker Dr.

InterContinental Hotel, 505 N. Michigan Ave.

Westin Michigan Avenue, 909 N. Michigan Ave.

Saturday, Noon – 8 p.m.

Sunday, 6 a.m. – 8 p.m.

Ribbon Pick Up

All badge ribbons for committee, council or group work are available at the self-serve ribbon wall located in Membership & Resources in the Connections Center.

Meeting Bag and Meeting Guide

Attendees can pick up the official meeting bag and Meeting Guide at the self-serve distribution areas in the Lakeside Center East, Level 2, the North Building, Level 2 and the South Building, Level 1.

The RSNA 2019 Meeting Guide includes course and event information, McCormick Place floor plans, transportation and dining. The full program is available online at [Meeting.RSNA.org](https://www.rsna.org).

Subspecialty Brochures

Available at kiosks throughout McCormick Place, subspecialty brochures highlight the sessions available in that topic.

Attendees can also filter by subspecialty in the online program at [Meeting.RSNA.org](https://www.rsna.org).

RSNA Keeps You Connected

RSNA Technology and Resources

From building your meeting schedule to charging your mobile device, RSNA offers the technology and onsite expertise to maximize your RSNA 2019 experience.

Meeting Central

Optimized for mobile devices, Meeting Central ([Meeting.RSNA.org](https://www.rsna.org)) is an essential resource for navigating RSNA 2019.

RSNA Meeting Program

Browse the listings of educational courses, scientific presentations, education exhibits and additional events. Search for courses, sessions and events by keyword, title or name of presenter, using helpful filters by day, session type and subspecialty.

Technical Exhibitors List

Learn about the companies unveiling the latest equipment and technology. Search the exhibitor listing by product category or name to find companies and



add them to your agenda. You can also schedule an appointment with exhibitors noted with the Featured Exhibitor icon.

Virtual Meeting Program

Browse virtual sessions available live or on-demand either onsite or virtually from anywhere across the globe.

My Agenda

Build your meeting calendar and stay organized with a handy schedule personalized to your needs —

perfect for planning ahead — and access Credit Eval.

Please note courses are seated on a first-come, first-served basis and adding a session to My Agenda does not reserve a seat.

RSNA 2019 Meeting App

Download the RSNA 2019 Meeting App for iPhone, iPad and Android smartphones to access and explore the Meeting Program even when you're offline. Browse the technical exhibitor list and customize your daily meeting schedule with My Agenda.



The RSNA 2019 Meeting App is available via the App Store and Google Play.

Stay Connected

Internet Stations

Computers will be available at internet stations throughout McCormick Place to access Meeting Central and Credit Eval.

Free Wifi

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

Charging Stations

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

Digital Support

RSNA technology experts are available to help you with Meeting Central, the meeting app, Virtual Meeting, Credit Eval, My Agenda and Diagnosis Live™. They can also help you with any connectivity issues and answer questions about iOS and Android functionality.

Sunday's Answer

[Question on page 9A.]

A One minute of digital subtraction angiography will impart about the same skin dose as 30 minutes of conventional fluoroscopy

Diagnosis Live™: Transforming Radiology Education

By Jennifer Allyn

In a world where even instant gratification isn't fast enough, the radiology community has embraced RSNA Diagnosis Live™, a mobile-based radiology teaching tool that allows users to compete against each other using an audience response system that provides immediate feedback to users about their responses and how well they answered compared to their peers.

Designed to help radiologists — trainees and seasoned professionals alike — sharpen their skills and learn new techniques while fostering a sense of competition, Diagnosis Live offers multiple-choice or image-based questions on a wide variety of radiology topics.

The technology was introduced at RSNA 2011, and the number of annual meeting sessions featuring Diagnosis Live has grown each year. During RSNA 2019, a wide variety of Diagnosis Live sessions and courses that use the technology will be offered. Two sessions focus on how to use Diagnosis Live to its fullest potential. (See sidebar.)

One of the most popular, and occasionally heated, sessions is the RSNA Diagnosis Live Residents Competition, held on Monday afternoon.

For the past two years, radiology residency programs have participated in the competition, answering board review-type questions. Moderated in a one-hour session, the competition is an

entertaining and animated, must-win for a residency program to earn bragging rights. Last year's winner, Brigham & Women's Hospital in Boston, will defend its title during this year's competition.

"The Diagnosis Live Residents Competition is fun because inherently it is a competition," said Omer Awan, MD, MPH, associate professor of radiology at University of Maryland Medical Center in Baltimore, and the moderator for this year's competition. "It is also a great avenue for residents to network, interact with incredible faculty and residents and also to see high yield board-type cases from institutions that they otherwise wouldn't have access to."

Outside of the annual meeting, Diagnosis Live is the most widely-used audience response system in radiology residency programs across the U.S.

"Diagnosis Live has been successful in the radiology classroom because the cloud-based platform facilitates an easily accessible real-time interactive learning experience," said Paul Chang, MD, who was instrumental in leading discussions about developing Diagnosis Live and is professor and vice-chairman of radiology informatics at the University of Chicago School of Medicine.



Omer



Chang



Flanders

"In addition, the available analytics component of Diagnosis Live helps teachers assess learning in real time."

Registered institutions can contribute to the Diagnosis Live website by uploading presentations and using custom tools to build a game that can be made public or private. Worldwide, 180 radiology residency programs hold Diagnosis Live licenses.

Diagnosis Live has also been widely accepted by seasoned radiology professionals looking to strengthen and grow their skills.

"Radiologists like to be challenged," said Adam E. Flanders, MD, an early collaborator on Diagnosis Live and a professor of radiology and rehabilitation medicine and vice chair of imaging informatics, Thomas Jefferson University Hospital, Philadelphia.

"I've been teaching the 7 a.m. 'eye-opener' courses at the meeting for years and have been shocked by the throngs of people who show up early just to participate in a little pre-meeting 'quiz' session," he added.

RSNA Diagnosis Live™ at RSNA 2019

Check out this year's roster of expert-moderated Diagnosis Live™ sessions featuring a series of case-based competitions to challenge your diagnostic skills. Session highlights include:

- **Radiology Stranger Things: A Journey into the Upside Down**
Monday 7:15 a.m. | SPDL20
Room: E451B
- **RSNA Diagnosis Live Resident Competition**
Monday 2 p.m.
Discovery Theater
- **Chest and Abdomen**
Monday 4:30 p.m. | SPDL21
Room: E451B
- **Houston, We Have a Problem**
Tuesday 7:15 a.m. | SPDL30
Room: E451B
- **Body Imaging Case Challenge**
Wednesday 7:15 a.m. | SPDL40
Room: E451B
- **Neuro and MSK**
Wednesday 4:30 p.m. | SPDL41
Room: E451B
- **Keeping Radiology Weird: Spot Diagnoses from the Pacific Northwest**
Thursday 7:15 a.m. | SPDL50
Room: E451B
- **Peds, IR, Potpourri**
Thursday 3 p.m. | SPDL51
Room: E451B
- **RSNA 2019 will feature sessions on the basics of using RSNA's web-based audience response system for educating residents:**
- **RSNA Diagnosis Live Interactive and Mobile Device Integrated Audience Response: Tips, Tricks, and How to Get Started**
Monday 2:30 p.m. | RCA24
Room: S401AB
- **Developing a Flipped Classroom Workshop: From Soup to Nuts**
Tuesday 3 p.m. | RC402
Room: S504AB
- **Using RSNA Diagnosis Live**
Tuesday 3 p.m. | RC402F
Room: S504AB

Add these courses to My Agenda at Meeting.RSNA.org.



RSNA
Radiological Society
of North America

Stay Informed with
Specialized CME that
Fits Your Needs.

Visit RSNA.org/Learning-Center
to get started today.



Everything
you need.



ALL IN ONE PLACE.

The Official RSNA 2019 Meeting App.

Don't RSNA without it!

- ✦ Meeting Program
- ✦ Agenda Planner
- ✦ Peer Finder
- ✦ Exhibitor List
- ✦ Transit Tracker
- ✦ McCormick Place Maps

Download it today!



Android Smartphone



MEDRAD® Stellant has a new FLEX Appeal.

The newest MEDRAD® Stellant FLEX CT Injection System from Bayer takes your contrast delivery to the next level with:

- › Updated scan room and control room technology
- › Flexible choice of a smaller, lower-cost syringe option with less environmental impact
- › New features designed for easy visualization of fluids
- › Automated, accurate documentation*

See how effortless it is to lower operating costs while enhancing imaging workflow. Explore our CT solutions at stellantflex.com.

*Requires additional software purchase.

**Visit us at RSNA 2019
Booth 2529**

MEDRAD® Stellant FLEX
CT Injection System

Bayer, the Bayer Cross, MEDRAD Stellant FLEX, MEDRAD, Stellant FLEX are trademarks owned by and/or registered to Bayer in the U.S. and/or other countries. © 2019 Bayer. This material may not be reproduced, displayed, modified or distributed without the express prior written consent of Bayer. PP-M-STE-F-US-004-1-1 March 2019



WHAT GETS YOU FASTER FROM QUESTION TO ANSWER?

Getting to answers faster is our obsession at Konica Minolta.

Because the shorter the path to answers, the better the outcome for patients. From pioneering technologies that accelerate diagnoses to efficient workflows that streamline care pathways, that's our vision for the future of healthcare.

Find out how Konica Minolta can get you there. Visit Booth #2538



KONICA MINOLTA

konicaminolta.com/medicalusa

©2019 Konica Minolta Healthcare Americas, Inc.
M1536 0919 RevA