### PRESIDENT'S LETTER

# RSNA 2016



#### Dear Colleagues,

I am honored to welcome you to RSNA 2016 where together we will witness the many opportunities available for our specialty's growth related to our meeting theme, "Beyond Imaging."

Looking beyond the image to consider how we can maximize radiology's role in patient care helps us positively affect our patients' lives. Your presence at RSNA 2016 demonstrates your dedication to growing and learning to ultimately benefit your patients. Your



Board and many of your colleagues have volunteered their time, expertise and energy to organize and present a wide-ranging program of relevant science, education, business and social opportunities. Full participation in the RSNA meeting can earn you up to  $100.25 \text{ AMA PRA Category 1 Credits}^{TM}$ .

Visit the new RSNA Connections Center for additional educational, informational and social experiences. The McCormick Place Lakeside Center East has been transformed to reflect the diverse needs of RSNA attendees, including more interactive spaces, a Discovery Theater for short presentations, and lounge areas for recharging – both yourselves and your devices. Connect with old and new friends over a cup of coffee or a glass of wine.

I encourage you to consider the many courses available to you, including special offerings such as the Netherlands and Turkey Presents sessions. Due to popular demand, the Virtual Meeting offerings have increased by 25 percent. All real-time Virtual Meeting courses offer CME credit, and select on-demand courses will be eligible for CME. We have heard from past meeting attendees that they find value in adding the Virtual Meeting to their registration to bolster their learning opportunities.

The ever popular RSNA Diagnosis Live™ courses using gaming technology continue to increase. These popular question-and-answer sessions allow you to use your mobile device to respond to imaging cases and course challenges while you monitor your performance in real time.

The RSNA Technical Exhibits are second to none. Be sure to stop by at least a few exhibitors' booths to witness some of the remarkable technology advances on display. You may also be interested in the special all-day International Liver Symposium on Friday. There are just too many stimulating courses and presentations to cover them adequately here. Peruse this program book or visit *Meeting.RSNA.org* to help plan your meeting experience.

It is a privilege to serve as the president of your Society and to preside over RSNA 2016. I hope to meet many of you during this week, and I wish you all a very productive conference and enjoyable time in my hometown of Chicago.

Sincerely,

Richard L. Baron, MD

RSNA President



# PROGRAM DEDICATION

#### HERBERT L. ABRAMS, MD 1920-2016

RSNA dedicates The RSNA Meeting Program of the 102nd Annual Meeting and Scientific Assembly to the memory of Herbert L. Abrams, MD. Dr. Abrams, who died Jan. 20, 2016, was a pioneer and renowned authority on cardiovascular imaging, a devoted teacher and a passionate advocate for peace.

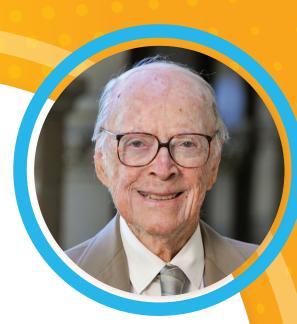
A founding father of the specialty of interventional radiology, he produced and edited the first comprehensive textbook of this new discipline, Abrams Angiography, which is still in print today.

Born in New York, Dr. Abrams attended medical school at the Long Island College of Medicine and completed his residency in internal medicine at Long Island College Hospital and Montefiore Hospital in New York.

Dr. Abrams completed his radiology residency at Stanford Medical Center, where he later rose to director of diagnostic radiology. In 1967 he returned east to Harvard Medical School and the Brigham and Women's Hospital and Dana Farber Cancer Center where he grew the radiology department and developed an outstanding teaching center. He returned to Stanford in 1985 to focus on research.

Dr. Abrams' growing concern about the health threat of nuclear policies led him to become the founding vice president of the International Physicians for the Prevention of Nuclear War, an organization that was awarded the Nobel Peace Prize in 1985.

Dr. Abrams was married to Marilyn for 73 years. The couple had two children, three grandchildren and three great-grandchildren.



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### INSPIRE INNOVATE INVEST

The Campaign for Funding Radiology's Future®

The R&E Foundation launched *Inspire–Innovate–Invest: The Campaign for Funding Radiology's Future®* just two short years ago at RSNA 2014. We continue to move steadily toward the Campaign goal of \$17.5 million, thanks to the support of individuals, private practice groups and our corporate colleagues. We are thrilled with our progress and invite everyone to join us in continuing this momentum of generosity.

As we gather to attend RSNA 2016, two things are abundantly clear: the Foundation exemplifies this year's meeting theme "Beyond Imaging" as R&E grant recipients pursue projects that surpass traditional imaging and touch every area of healthcare diagnosis and delivery. And, with the support of our entire community, the Foundation makes our specialty stronger.

This year, the Foundation is supporting a record-breaking 101 research and education grant projects totaling \$4 million, representing a 30% funding rate of the ever-increasing grant applications. The 2016 recipients represent 54 different institutions throughout North America and abroad, demonstrating a true commitment to the research and education endeavors of so many inspiring individuals impacting our collective futures.

Contributing to the R&E Foundation is the single most important way to directly support the future of our specialty. Please visit the R&E Foundation Booth (Lakeside Center, Level 3) to learn more about the 2016 grant recipients and their projects. While there, please take the time to directly impact the future of our specialty by making your own investment in radiology's future.



### Burton P. Drayer

Burton P. Drayer, MD R&E Foundation Board of Trustees Chairman



Burton P. Drayer, MD

#### WAYS TO GIVE

- Stop by the booth and make a donation of \$300 or more to enjoy the benefits of the Donor Suite
- Become a Presidents
  Circle donor with a gift
  of \$1,500 or more
- Learn more about becoming a Centennial Pathfinder at RSNA.org/Campaign

# GENERAL INFORMATION

The RSNA® Scientific Assembly and Annual Meeting is the official meeting of the Radiological Society of North America. RSNA is a registered trademark of the Radiological Society of North America.

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#### **Accreditation and Designation Statements**

The Radiological Society of North America (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 100.25  $AMA\ PRA\ Category\ 1\ Credits^{TM}$ . Physicians should claim only the credit commensurate with the extent of their participation in the activity.

The Commission on Accreditation of Medical Physics Education Programs (CAMPEP) has approved the direct transfer of *AMA PRA Category 1 Credit*™ to Medical Physics Continuing Education Credit (MPCEC) on a credit-for-credit basis for medical physicists.

RSNA is an ARRT®-approved Recognized Continuing Education Evaluation Mechanism Plus (RCEEM+) and will provide Category A/A+ continuing education credits for radiologic technologists and radiologist assistants.

#### **Continuing Education**

#### **CE Credit**

In order to record and obtain Category A/A+ continuing education (CE) credits, all ARRT registered technologists and radiologist assistants must follow ARRT guidelines. Failure to do so will result in no credits being awarded.

- Attendance will be verified with a check-in and check-out process for all courses and events; therefore, all registrants looking to obtain Category A/A+ credit must be present for the duration of the course or event.
- ARRT Attendance Documentation Cards will be available at the door for all courses and events that are approved for Category A/A+ credit.
- Attendee must obtain an ARRT Attendance Documentation Card at the beginning of the session, complete the card, and return it to the room attendant at the end of the session.
- Additionally, attendees must evaluate the session using RSNA's Credit Eval Claim Center.
- An attendee arriving late or departing early will not obtain credit.
- Any attendee who forgoes submitting the ARRT Attendance Documentation Card at the close of the session will not obtain credit.

### AT THE CONCLUSION OF THIS LIVE ACTIVITY, PARTICIPANTS WILL BE ABLE TO:

- Access the results of new research, and assess their potential applications to clinical practice.
- 2. Improve basic knowledge and skills relevant to clinical practice.
- 3. Practice new techniques.
- Assess the potential of technological innovations and advances to enhance clinical practice and problem solving.
- **5.** Apply principles of critical thinking to ideas from experts and peers in the radiologic sciences.



The ACCME requires that RSNA, as an accredited provider of continuing medical education, obtain signed disclosure statements from annual meeting faculty, including committee members, program planners, presenters, and authors. The intent of this policy is not to prevent an individual with a financial relationship from participating; however, in accordance with ACCME standards, RSNA has developed policies and procedures to manage identified conflicts of interest.

The ACCME further requires that RSNA provide disclosure information to all attendees prior to the educational activity. Individuals who have or have had an affiliation or financial relationship with any commercial interest (within the previous 12 months or at the time the research was conducted) are noted with a star ( $\star$ ) after their names in the program book. Financial disclosure statements for these individuals are reported after each individual's name in the disclosure index at the back of the program book (p 289). All other individuals have indicated they have nothing to disclose.

#### **CME Credit**

#### **Science and Plenary Sessions and Education Courses**

All sessions/courses have been approved for AMA PRA Category 1 Credit $^{\rm TM}$ . To register attendance, claim credit, and evaluate the sessions, visit the RSNA's Credit Eval Claim Center.

### Science Posters, Education Exhibits and Quality Storyboards

AMA PRA Category 1 Credit<sup>TM</sup> is available for digital poster presentations, quality storyboards, and selected education exhibits on Sunday, 12:30–1:30 PM, and Monday–Thursday, 12:15–1:15 PM. At the conclusion of discussions with the presenters, document your attendance by using the RSNA's Credit Eval Claim Center.

Education exhibits at RSNA 2016 will include the popular Cases of the Day feature. Each day, from Sunday through Thursday, a new



# GENERAL INFORMATION

**EMERGENCY/** FIRST AID

FOR FIRE, MEDICAL, OR POLICE ASSISTANCE, DIAL 6060 FROM ANY HOUSE PHONE IN THE McCORMICK PLACE CONVENTION CENTER OR 1-312-791-6060.

FULLY EQUIPPED FIRST AID STATIONS, STAFFED BY LICENSED MEDICAL PROFESSIONALS, ARE LOCATED IN THE GRAND CONCOURSE, LEVEL 2.5, WEST OF THE BUSINESS CENTER, AND IN THE LAKESIDE CENTER, LEVEL 1, NEAR THE BANK OF TELEPHONES.

FACILITIES FOR NURSING MOTHERS ARE AVAILABLE AT CAMP RSNA.

case in each of 15 categories will be posted. Attendees will be able to submit a diagnosis for each case on the computer presentation system, at nearby Internet Zone computers, or via any Web browser. For each correct diagnosis submitted online, participants will earn .50 AMA PRA Category 1 Credit™.

New this year is "CME Learning Checkpoint"—11 award-winning hard copy exhibits from RSNA 2015 will be featured. Attendees can study the hard copy exhibit and then access a corresponding guiz on their mobile device or laption. Attendees receive 0.5 AMA PRA Category 1 Credit<sup>TM</sup> for each completed quiz.

#### **QR Codes**



Look for the QR codes accompanying plenary and science sessions and education courses listed in this program. Use your smartphone to scan the code and automatically down-

load abstract information for the session or course. Information can also be downloaded by using the codes on signs outside meeting rooms at the McCormick Place Convention Center.

#### References to Abstracts in the Online 2016 RSNA Meeting Program

To cite an abstract from the 2016 online meeting program, go to RSNA2016.RSNA.org to access the complete online program. Search for and access the text of the specific abstract you wish to cite, and then click on the box labeled "Cite this Abstract" to access the specific abstract citation information for that particular

The general format for citing an online RSNA 2016 abstract is as follows:

Author XX, Author XX, Author XX, et al. Title of the Specific Abstract. Presented at: Radiological Society of North America 2016 Scientific Assembly and Annual Meeting, November 27-December 2, 2016, Chicago, IL. archive.rsna.org/2016/00000000. html. Accessed Month day, 2016.

To obtain permission to reprint abstracts from the RSNA Meeting Program, go to http://www2.rsna.org/rsnarights. For additional information, contact permissions@RSNA. org, or send a fax to 1-630-590-7724. Direct inquiries by

mail to Permissions, RSNA, 820 Jorie Blvd, Oak Brook, IL 60523. Requests should include the title, first author, year of meeting presentation, and intended use of the material.

#### **RSNA 2016 Virtual Meeting**

The meeting is not only at McCormick Place. The RSNA 2016 Virtual Meeting allows users to experience the world's premier medical imaging event from anywhere in the world via the Internet with a computer or mobile device. Participants can access nearly 90 live streaming courses, digital posters and cases of the day. CME credit is available during the live sessions, plus a select number of CME-eligible courses on demand! "On demand" is available through Friday (December 23). Visit RSNA2016.RSNA.org to register.

#### **Subspecialty Content**

Customizing your RSNA 2016 itinerary is easy through the enhanced sorting capability of the online RSNA Meeting Program. Go to RSNA2016.RSNA.org and click on Meeting Program to search for scientific presentations and other events by radiologic subspecialty. Choose a subspecialty of interest to you, view all of the meeting content in that subspecialty, and download and print it to facilitate your daily meeting plan. Printed brochures will also be

available onsite at the convention



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# GOLD MEDALISTS



#### Paul J. Chang, MD

Chicago, Illinois

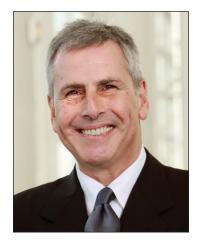
Dr. Chang is an internationally recognized expert in the field of imaging informatics. He is professor and vice chairman of radiology informatics at the University of Chicago (UC) School of Medicine, and he also serves as medical director of enterprise imaging and of service oriented architecture (SOA) infrastructure at UC Hospitals. Dr. Chang received his medical degree from Stanford University. Concurrent with medical school training, he also received a master's degree in engineering-economic systems from Stanford. Dr. Chang completed his residency and fellowship training in diagnostic radiology at Stanford University Hospital. He has spearheaded numerous research and development projects related to imaging informatics as well as enterprise-wide informatics challenges. Under his leadership and in collaboration with RSNA informatics staff, Diagnosis Live<sup>TM</sup>, a novel cloud-based interactive educational platform featuring gamification and deep analytics was developed.

#### Robert J. Stanley, MD

Birmingham, Alabama

Dr. Stanley is a world renowned abdominal radiologist and was a leading authority in the early development of body CT imaging. He earned his medical degree at St. Louis University, where he also completed a straight medicine internship and a year of surgery residency before completing his radiology residency. He joined the faculty at the Mallinckrodt Institute of Radiology (MIR), Washington University, St. Louis, spending his final 11 years at MIR as director of the abdominal radiology section before leaving for the University of Alabama at Birmingham in 1982 to serve as professor and chair of the Department of Radiology at the University of Alabama School of Medicine in Birmingham. Prior to leaving MIR, Dr. Stanley and his co-authors, Dr. Stuart S. Sagel and Dr. Joseph K. T. Lee, completed the first edition of their landmark CT textbook, *Computed Body Tomography with MRI Correlation*, currently in its fourth edition. He served as editor-in-chief of the *American Journal of Roentgenology*.





Burton P. Drayer, MD

New York, New York

Internationally known for his research using anatomic, physiologic and functional imaging of the aging brain, Dr. Drayer is CEO of the Mount Sinai Doctors Faculty Practice and Dean for Clinical Affairs, The Icahn School of Medicine at Mount Sinai Medical Center in New York, and also serves as the Dr. Charles M. and Marilyn Newman professor and system chairman of the Department of Radiology, Icahn School of Medicine. He received his medical degree from Chicago Medical School, completed a medical internship and neurology residency at the University of Vermont in Burlington, and a radiology residency at the University of Pittsburgh. Dr. Drayer is the recipient of many awards and honors, including the Cornelius G. Dyke Award from the American Society of Neuroradiology (ASNR). He received the ASNR gold medal in 2011 and served as ASNR president in 1996-1997. He is a fellow of both the ACR and the American Academy of Neurology and served on the Board of Chancellors of the ACR from 2009-2015. Dr. Drayer served as RSNA president in 2011 and is currently chair of the RSNA Research & Education Foundation.

See a list of past Gold Medalists at: RSNA.org/Awards.aspx

# HONORARY MEMBERS



#### Carlo Bartolozzi, MD

Pisa, Italy

Dr. Bartolozzi is a preeminent researcher, educator and innovator. He earned his medical degree from the University of Padua in 1972 and completed his residency in 1977. He quickly ascended the ranks, rising to the position of associate professor of radiology at the University of Florence in 1980 and radiology professor and chair of the Department of Radiology at the University Hospital of Pisa in 1990 — a position he held until his retirement in 2015. Also at the University Hospital of Pisa, Dr. Bartolozzi served as director of the Department of Diagnostic and Interventional Radiology and Nuclear Medicine from 2004 to 2015, and as the director of the Department of Oncology, Transplants and Advanced Technologies in Medicine from 1999 to 2007. As a researcher, Dr. Bartolozzi has contributed enormously to the advancement of gastrointestinal and abdominal radiology by developing a number of innovative techniques such as microbubbles in ultrasound. He is also widely recognized for his devotion to educating and mentoring the next generation of radiologists in his native Italy and beyond.

#### Luis Donoso-Bach, MD, PhD

Barcelona, Spain

Dr. Donoso-Bach is a celebrated diagnostic radiologist, researcher and inventor, who has earned an international reputation as a leader in building relationships with radiologic societies across the globe and as a pioneer in creating the virtual radiology conference. Dr. Donoso-Bach earned his medical degree and PhD from the School of Medicine of the Autonomous University of Barcelona. After working as a staff radiologist for several years at Hospital de la Santa Creu i Sant Pau, Barcelona, he was appointed chair of the Department of Radiology at the UDIAT Diagnostic Centre, Sabadell, Spain, and became executive director in 1998. Currently, Dr. Donoso-Bach serves as the director of the Diagnostic Imaging Department at the Hospital Clinic of Barcelona and as professor of radiology at the University of Barcelona — positions he has held since 2006. His research initially focused on abdominal imaging before shifting to digital imaging and the implementation of IT in diagnostic radiology.





#### Osamu Matsui, MD, PhD

Kanazawa, Japan

Dr. Matsui is a world-renowned researcher, educator and innovator who has significantly advanced the detection and treatment of liver cancer. He earned his medical degree from Kanazawa University Faculty of Medicine, Japan 1972, and his PhD from the university in 1986. He spent his entire career at Kanazawa, beginning as an assistant professor and holding the positions of associate professor, full professor and chair of the Department of Radiology, Kanazawa University Hospital and Faculty of Medicine. He served as vice president of Kanazawa University Hospital and dean of Kanazawa University Graduate School of Medical Sciences before officially retiring in 2013. He remains on staff as a professor emeritus and a research professor in the Department of Advanced Medical Imaging at Kanazawa University. Dr. Matsui is the first editor-in-chief of the Japanese Journal of Radiology and serves as associate editor of Radiology.

# PLENARY SESSIONS

# **OPENING SESSION**Sunday, November 27 • 8:30 am • Arie Crown Theater



Richard L. Baron, MD
Beyond Imaging: Ensuring
Radiology Impact in Clinical
Care and Research



Keith J. Dreyer, DO, PhD When Machines Think: Radiology's Next Frontier



Robert M. Wachter, MD Hope, Hype, and Harm as Medicine Enters the Digital Age: Lessons From (and For) Radiology

### ANNUAL ORATION IN DIAGNOSTIC RADIOLOGY

Monday, November 28 • 1:30 pm • Arie Crown Theater



Vivian S. Lee, MD, PhD Health Care Transformation: Driving Value through Imaging

#### **NEW HORIZONS** LECTURE

Tuesday, November 29 • 1:30 pm • Arie Crown Theater



Hedvig Hricak, MD, PhD, Dr(hc)
Beyond Imaging: Radiology of
Tomorrow

### ANNUAL ORATION IN RADIATION ONCOLOGY

Wednesday, November 30 • 1:30 PM • E450A



Colleen A. Lawton, MD
Prostate Cancer: Improving the
Flow of Research





#### RSNA/AAPM SYMPOSIUM

Thursday, December 1 • 1:30 pm • E450A

Daniel C. Sullivan, MD
Precision Medicine: Optimizing Imaging Strategies

Maryellen L. Giger, PhD

Quantitative Radiomics, Big Data, and Deep Learning in Precision Medicine

# OUTSTANDING RESEARCHER/EDUCATOR AWARDS

The RSNA Outstanding Researcher Award and Outstanding Educator Award annually recognize and honor one individual in each award category who has made significant contributions to the field of radiology or radiologic sciences throughout a career of research, or teaching and education.

The RSNA Board of Directors is proud to present the 2016 Outstanding Researcher Award to Clifford R. Jack Jr., MD, and the 2016 Outstanding Educator Award to Kristen K. DeStigter, MD.

The awards will be presented during the opening session of the RSNA Scientific Assembly and Annual Meeting, Sunday at 8:30 am in the Arie Crown Theater, Lakeside Center, Level 2.



Clifford R. Jack Jr., MD Mayo Clinic, Rochester, Minn.



Kristen K. DeStigter, MD University of Vermont Medical Center, Burlington

#### **Associated Sciences Consortium**

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