President’s Letter

WELCOME TO
RSNA 2014

IT IS MY GREAT HONOR TO PRESIDE OVER THIS HISTORIC EVENT,
our 100th Scientific Assembly and Annual Meeting. For a cen-
tury, RSNA has set the standard of excellence in science, educa-
tion, and technology. Our annual meeting is the largest showcase
of the discoveries and innovations our community brings from
around the world.

I am so pleased that you could join us this year. Some of you are
longtime veterans of the meeting, with many years or even de-
cades under your belts. You have witnessed the evolution of our
specialty and seen astonishing new breakthroughs unveiled here
over the course of your careers.

For others, this may be your first year attending the RSNA annual meeting. I assure you it will be an
experience like no other. No matter where you are in your career, your presence demonstrates your
commitment to staying abreast of the latest developments, keeping your skills sharp, and delivering
the best care to your patients.

This year, we have a number of exciting events planned for this "Celebration of a Century." Visit our
Centennial Showcase in the Lakeside Center Ballroom for an experience that lets you see, hear, and
touch the advancements that shaped radiology.

Our scientific and educational program has always been the finest in the world, and this year's is
no exception. RSNA 2014 offers hundreds of courses and thousands of scientific presentations and
digital posters in every subspecialty.

While you are here, be sure to make time to attend our featured offerings. "Canada Presents: Beyond
Diagnosis" and "Korea Presents: Exploring Evidence in Cardiovascular Imaging" will feature the lat-
est developments from our Canadian and Korean colleagues. Also, make time to see the technical
exhibits, where you will find the latest technology for your practices and see what's on the horizon
in the years to come.

Our continuing education opportunities are unparalleled. Full participation in the RSNA 2014 educa-
tional program can earn you up to 93.00 AMA PRA Category 1 Credits™.

This week, as we reflect on the accomplishments of our specialty over the last century, we should also
look to the future. Be sure to take advantage of the outstanding community of colleagues you have
convening here in Chicago. Start the important discussions that will carry us into the next 100 years.

On behalf of the RSNA Board of Directors, I wish you an unforgettable week.

N. Reed Dunnick, MD

2014 RSNA President
## 2014 RSNA at a Glance

### Saturday, November 29, 2014

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>12:00–2:00 PM</td>
<td>SPPH01 AAPM/RSNA Physics Tutorial for Residents • Room E351</td>
</tr>
<tr>
<td>1:00–5:00 PM</td>
<td>SPSP01 Sesión del Colegio Interamericano de Radiología en Español • Room E451A</td>
</tr>
<tr>
<td></td>
<td>SPGW01 NIH Grantsmanship Workshop • Room E253AB</td>
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<tr>
<td></td>
<td>SPRW01 RSNA/ARR Study Section Reviewers Workshop • Room E253CD</td>
</tr>
<tr>
<td>2:15–4:15 PM</td>
<td>SPPH02 AAPM/RSNA Tutorial on Equipment Selection • Room E351</td>
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### Sunday, November 30, 2014

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>8:30–10:15 AM</td>
<td>PS10 Opening Session • Arie Crown</td>
</tr>
<tr>
<td>10:15–10:35 AM</td>
<td>Business Session • Arie Crown</td>
</tr>
<tr>
<td>10:30 AM–3:30 PM</td>
<td>VSPD11 Pediatric Radiology Series • Room S100AB</td>
</tr>
<tr>
<td>10:45 AM–12:15 PM</td>
<td>VSPD11 Pediatric Radiology Series • Room S100AB</td>
</tr>
<tr>
<td>11:00 AM–12:30 PM</td>
<td>SSA Scientific Paper Sessions</td>
</tr>
<tr>
<td>12:30–1:30 PM</td>
<td>Poster Discussions</td>
</tr>
<tr>
<td>1:30–5:15 PM</td>
<td>VSI011 Interventional Oncology Series • Room S405AB</td>
</tr>
<tr>
<td>2:00–3:30 PM</td>
<td>RC100s Refresher/Informatics Courses</td>
</tr>
<tr>
<td></td>
<td>VSPD12 Pediatric Radiology Series • Room S102AB</td>
</tr>
<tr>
<td>4:00–4:10 PM</td>
<td>Report of the RSNA Research &amp; Education Foundation • Arie Crown</td>
</tr>
<tr>
<td>4:00–5:30 PM</td>
<td>Informatics Courses</td>
</tr>
<tr>
<td>4:00–5:45 PM</td>
<td>PS12B Image Interpretation Session • Arie Crown</td>
</tr>
</tbody>
</table>
Monday, December 1, 2014

7:15–8:15 AM
SPSH-SPSC  Hot Topics/Controversies Sessions

8:30–10:00 AM
MSAS21  Associated Sciences Refresher Course • Room S105AB
MSCM21  Case-based Review of Magnetic Resonance • Room S100AB
MSMC21  Cardiac CT Mentored Case Review • Room S406A
MSRO21  BOOST: Lung—Oncology/Anatomy • Room S103AB
MSRO21  BOOST: GI—Oncology/Anatomy • Room S103CD
MSMI21  Molecular Imaging Symposium • Room S405AB
RC200s  Refresher/Informatics Courses

8:30 AM–12:00 PM
VSBR21  Breast Series • Arie Crown Theater
VSCA21  Cardiac Series • Room S404CD
VSER21  Emergency Radiology Series • Room N230
VSGI21  Gastrointestinal Series • Room E350
VSGU21  Genitourinary Series • Room N228
VSIR21  Interventional Radiology Series • Room S406B
VSMK21  Musculoskeletal Radiology Series • Room E451B
VSNR21  Neuroradiology Series • Room N227
VSNM21  Nuclear Medicine Series • Room S505AB
VSPD21  Pediatric Radiology Series • Room S102AB
VSN121  Radiology Informatics Series • Room E351

10:30 AM–12:00 PM
Informatics Courses
MSAS22  Associated Sciences Refresher Course • Room S105AB
MSCM22  Case-based Review of Magnetic Resonance • Room S100AB
MSRO22  BOOST: Lung—Integrated Science and Practice • Room S103AB
MSRO25  BOOST: GI—Integrated Science and Practice • Room S103CD
MSMI22  Molecular Imaging Symposium • Room S405AB
SPEP21  Estate Planning Today for a Better Tomorrow • Room E253AB
SPPH21  AAPM/RSNA Basic Physics Lecture for the Radiologic Technologist • Room S402AB

1:30–2:45 PM
PS20  New Horizons Lecture • Arie Crown Honorary Members

1:30–3:00 PM
MSAS23  Associated Sciences Refresher Course • Room S105AB
MSCM22  Case-based Review of Thoracic • Room S100AB
MSMI23  Molecular Imaging Symposium • Room S405AB
MSMC23  Cardiac CT Mentored Case Review • Room S406A

1:30–5:45 PM
SPPH22  Physics Symposium • Room S102C

1:30–6:00 PM
VSIO21  Interventional Oncology Series • Room S406B

2:30–4:00 PM
Informatics Courses

3:00–4:00 PM
SSE  Scientific Paper Sessions

3:00–4:15 PM
MSRO23  BOOST: Lung—Case-based Review • Room S103AB
MSRO26  BOOST: GI—Case-based Review • Room S103CD

3:00–5:30 PM
SPEP21  Estate Planning Today for a Better Tomorrow • Room E253AB

3:30–5:00 PM
MSAS24  Associated Sciences Refresher Course • Room S105AB
MSMI24  Molecular Imaging Symposium • Room S405AB
MSCM22  Case-based Review of Thoracic • Room S100AB

3:30–5:30 PM
MSMC24  Cardiac CT Mentored Case Review • Room S406A

4:30–6:00 PM
SPDL21  RSNA Diagnosis Live™: (Chest, Abdomen and Neuro) • Room E451A

4:45–6:00 PM
SSE  Scientific Paper Sessions
Informatics Courses

4:45–6:00 PM
MSRO29  BOOST: GI Hands-On Contouring • Room S101A
2014 RSNA at a Glance

Tuesday, December 2, 2014

7:15–8:15 AM
SPSH-SPSC  Hot Topics/Controversies Sessions
SPDL31  RSNA Diagnosis Live™  •  Room E451B

8:30–10:00 AM
MSAS31  Associated Sciences Refresher Course  •  Room S105AB
MSCC31  Case-based Review of Nuclear Medicine  •  Room S406A
MSES31  Essentials of Radiology Course  •  Room S100AB
MSQI31  Quality Improvement Symposium  •  Room S406B
MSRO31  BOOST: Head and Neck—Oncology/Anatomy  •  Room S103AB
MSRO34  BOOST: Gynecology—Oncology/Anatomy  •  Room S103CD
RC300s  Refresher/Informatic Courses

8:30 AM–12:00 PM
VSBR31  Breast Series  •  Arie Crown Theater
VSCH31  Chest Series  •  Room S405AB
VSGI31  Gastrointestinal Series  •  Room N230
VSR31  Interventional Radiology Series  •  Room E353A
VSMK31  Musculoskeletal Radiology Series  •  Room E450A
VSNM31  Nuclear Medicine Series  •  Room S505AB
VSPD31  Pediatric Radiology Series  •  Room S102AB
VSV31  Vascular Imaging Series  •  Room E352

10:30 AM–12:00 PM
Informatics Courses
SPCP31  Canada Presents  •  Room E353C
MSAS32  Associated Sciences Refresher Course  •  Room S105AB
MSCC32  Case-based Review of Nuclear Medicine  •  Room S406A
MSES32  Essentials of Radiology Course  •  Room S100AB
MSQI32  Quality Improvement Symposium  •  Room S406B
MSRO32  BOOST: Head and Neck—Integrated Science and Practice  •  Room S103AB
MSRO35  BOOST: Gynecology—Integrated Science and Practice  •  Room S103CD
SSG  Scientific Paper Sessions

12:15–1:15 PM
Poster Discussions

12:30–2:00 PM
Informatics Courses

1:30–2:45 PM
PS30  Annual Oration in Diagnostic Radiology  •  Arie Crown Gold Medal Presentations

1:30–3:00 PM
MSAS33  Associated Sciences Refresher Course  •  Room S105AB
MSCC33  Case-based Review of Nuclear Medicine  •  Room S406A
MSES33  Essentials of Radiology Course  •  Room S100AB
MSQI33  Quality Improvement Symposium  •  Room S406B

1:30–6:00 PM
VSI031  Interventional Oncology Series  •  Room S405AB

2:30–4:00 PM
Informatics Courses

3:00–4:00 PM
SSJ  Scientific Paper Sessions

3:00–4:15 PM
MSRO33  BOOST: Head and Neck—Case-based Review  •  Room S103AB
MSRO36  BOOST: Gynecology—Case-based Review  •  Room S103CD

3:00–6:00 PM
VSPD32  Pediatric Radiology Series  •  Room S102AB

3:30–5:00 PM
MSAS34  Associated Sciences Refresher Course  •  Room S105AB
MSCC34  Case-based Review of Nuclear Medicine  •  Room S406A
MSES34  Essentials of Radiology Course  •  Room S100AB

4:30–6:00 PM
RC400s  Refresher/Informatic Courses

4:45–6:00 PM
MSRO39  BOOST: Gynecology Hands-On Contouring  •  Room S101A
## Wednesday, December 3, 2014

### 7:15–8:15 AM
- **SPSH-SPSC** | Hot Topics/Controversies Sessions
- **SPDL41** | RSNA Diagnosis Live™ • Room E451B

### 8:00–9:00 AM
- **MSRT41** | ASRT@RSNA 2014 • Room N230

### 8:30–10:00 AM
- **MSRO41** | BOOST: CNS—Oncology/Anatomy • Room S103CD
- **MSCS41** | Case-based Review of Musculoskeletal Radiology • Room S406A
- **MSES41** | Essentials of Radiology Course • Room S100AB
- **MSSR41** | RSNA/ESR Emergency Symposium • Room S402AB
- **RC500s** | Refresher/Informatics Courses

### 8:30 AM–12:00 PM
- **VSIR41** | Interventional Radiology Series • Room E352
- **VSNR41** | Neuroradiology Series • Room E451B

### 9:20–10:20 AM
- **MSRT42** | ASRT@RSNA 2014 • Room N230

### 10:30 AM–12:00 PM
- **MSRO42** | BOOST: CNS—Integrated Science and Practice • Room S103CD
- **MSCS42** | Case-based Review of Musculoskeletal Radiology • Room S406A
- **MSSR42** | RSNA/ESR: Emergency Symposium • Room S402AB
- **SSK** | Scientific Paper Sessions

### 10:40–11:40 AM
- **MSRT43** | ASRT@RSNA 2014 • Room N230

### 12:15–1:15 PM
- **MSRT45** | ASRT@RSNA 2014 • Room N230

### 1:00–2:00 PM
- **MSRT44** | ASRT@RSNA 2014 • Room N230
- **PS40** | Annual Oration in Radiation Oncology • Arie Crown

### 1:30–3:00 PM
- **MSCU41** | Case-based Review of US • Room S406A
- **MSES43** | Essentials of Radiology Course • Room S100AB
- **MSSR43** | RSNA/ESR Emergency Symposium • Room S402AB

### 2:20–3:20 PM
- **MSRP41** | RSNA Resident and Fellow Symposium • Room E451B
- **SPHA41** | Hospital Administrators Symposium • Room S103AB
- **VSIO41** | Interventional Oncology Series • Room S405AB

### 3:00–4:00 PM
- **MSRO43** | BOOST: CNS—Case-based Review • Room S103CD
- **MSCU42** | Case-based Review of US • Room S406A
- **MSES44** | Essentials of Radiology Course • Room S100AB
- **MSSR44** | RSNA/ESR Emergency Symposium • Room S402AB

### 3:40–4:40 PM
- **MSRT46** | ASRT@RSNA 2014 • Room 2014 N230
# 2014 RSNA at a Glance

## Thursday, December 4, 2014

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<thead>
<tr>
<th>Time</th>
<th>Event/Session</th>
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<tbody>
<tr>
<td>7:15–8:15 AM</td>
<td>Hot Topic/Controversies Sessions</td>
</tr>
<tr>
<td>8:00–9:00 AM</td>
<td>ASRT@RSNA 2014 • Room N230</td>
</tr>
<tr>
<td>8:30–10:00 AM</td>
<td>Case-based Review of Neuroradiology • Room S100AB</td>
</tr>
<tr>
<td>8:30–12:00 PM</td>
<td>Emergency Radiology Series • Room S405AB</td>
</tr>
<tr>
<td>8:30–12:00 PM</td>
<td>Interventional Radiology Series • Room N228</td>
</tr>
<tr>
<td>8:30–12:00 PM</td>
<td>Musculoskeletal Radiology Series • Room E451B</td>
</tr>
<tr>
<td>8:30–12:00 PM</td>
<td>Pediatric Series • Room S102D</td>
</tr>
<tr>
<td>8:30–12:00 PM</td>
<td>Vascular Imaging Series • Room S405AB</td>
</tr>
<tr>
<td>9:15–10:15 AM</td>
<td>Business Session • Room S403B</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>ASRT@RSNA 2014 • Room N230</td>
</tr>
<tr>
<td>10:30–11:30 AM</td>
<td>Case-based Review of Pediatric Radiology • Room S406A</td>
</tr>
<tr>
<td>10:30–12:00 PM</td>
<td>Essentials of Radiology Course • Room S406B</td>
</tr>
<tr>
<td>11:45 AM</td>
<td>Scientific Paper Sessions</td>
</tr>
<tr>
<td>12:15–1:15 PM</td>
<td>Poster Discussions</td>
</tr>
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## Friday, December 5, 2014

<table>
<thead>
<tr>
<th>Time</th>
<th>Event/Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30–10:00 AM</td>
<td>RSNA Diagnosis Live™ (MSK/Peds/IR) • Room E451B</td>
</tr>
<tr>
<td>8:30–12:00 PM</td>
<td>Scientific Paper Sessions</td>
</tr>
<tr>
<td>10:30 AM</td>
<td>Informatics Courses</td>
</tr>
<tr>
<td>11:45 AM</td>
<td>Scientific Paper Sessions</td>
</tr>
<tr>
<td>12:30–3:00 PM</td>
<td>Friday Imaging Symposium • Room E253BCD</td>
</tr>
</tbody>
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Program Dedication

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

The committee members who develop the annual meeting program and all RSNA activities

The faculty and attendees for educational courses

The investigators and attendees for scientific sessions

The authors, reviewers, and readers of our journals

The developers and users of informatics technology

The grantees who conduct radiologic research and the donors who support them

The members all over the world who, inspired by our Society’s mission and vision, have spent their lives improving the care of their patients

The residents and fellows who will pursue our Society’s mission and help realize its vision into its next century.
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Meeting Highlights

RSNA Centennial

Technical Exhibits Grand Opening
Come to the Grand Concourse on Sunday at 11:00 AM to witness a ceremony opening the Technical Exhibits in style. RSNA leaders and industry partners will celebrate the technology and innovation that changed the world of radiology.

Centennial Showcase
In honor of the Society’s 100th scientific assembly and annual meeting, RSNA presents an unforgettable onsite experience that lets you see, hear and discover the advancements that shaped radiology. Visitors will be welcomed by Wilhelm Roentgen, a virtual presenter will share an account of the events that sparked a specialty—and how RSNA changed the way medicine is practiced. Don’t miss the Milestones timeline and the Centennial Gallery featuring discoveries and developments in Community, Education, Research, Innovation, and Patient Care. Stop by Cases of the Century to test your hand at diagnosing vintage images from years past, and visit the Art & Science area to see a remarkable compilation of cutting-edge and artistic medical images. Be sure to leave your own mark on history by sharing your favorite RSNA memory or your predictions for the future of the specialty in the Memory Book.

Meeting App
Download the RSNA 2014 app for iPhone, iPad and Android smartphones and access the Meeting Program even when you’re offline. The app also offers maps for navigating McCormick Place, online help during the annual meeting, a QR code scanner for interactive exhibits and drawings, an agenda planner and exhibitor list access, and a notification center with important meeting alerts. Available via the App Store and Google Play, the RSNA 2014 app is sponsored by Siemens.

Credit Eval Center
Evaluate RSNA 2014 courses and sessions and claim credits online, via your own laptop or mobile device, or at any of the Internet Kiosks within McCormick Place. The Credit Eval Center allows you to begin your evaluations as early as 10 minutes after courses begin, claim your credits onsite, and walk away with printed certificates in hand. You will also receive links via e-mail that allow you to print certificates at home. For RSNA members, credits are automatically added to the RSNA CME Repository. After the meeting, attendees will still be able to evaluate courses and claim credit for 1 week. Should you need assistance, stop by the Mobile Connect booth in the RSNA Services area.

Virtual Meeting
With the vast offerings RSNA 2014 provides, it’s impossible to see it all at McCormick Place. This year’s Virtual Meeting offers 50 percent more content than last year and—new this year—provides the opportunity for radiologic technologists to obtain continuing education credit. With the Virtual Meeting, you can tune in to a full slate of live and on-demand sessions during RSNA 2014 and on-demand sessions through December 19. The opportunity to earn CME credits is available for live activities.

Mock Trial
Witness a mock trial of a case involving incidentalomas and failure to diagnose. On Sunday, 10:30 AM to 3:30 PM, in Room S406A, watch how a judge presides over the case, the techniques used by the plaintiff’s attorneys and defense attorneys to present their respective clients’ cases, and stay tuned for the verdict.

Self-assessment Modules (SAMs)
The American Board of Radiology (ABR) granted approval to RSNA for SAM Deemed Status. This allows RSNA to develop and implement, without prior ABR review, enduring SAMs and in-person (“live”) SAMs that satisfy ABR Part II MOC requirements. Select RSNA courses have been approved for SAMs. Each RSNA in-person SAM is available for up to 1.50 SAM credits and 150 AMA PRA Category 1 Credits™. The RSNA annual meeting in-person SAMs are accredited by the MOC program of the Royal College of Physicians and Surgeons of Canada and approved by the Canadian Association of Radiologists. SAM-approved courses are marked with $ in the course listings. SAMs are free for RSNA members and $50 per SAM for nonmembers.

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

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

Resident and Fellow Symposium
This program is tailored specifically for radiology trainees. To be held Wednesday from 1:30 PM to 5:00 PM in Room E451B, the program will address the radiology job market and optimizing the job search and interviewing process, as well as compare and contrast academic and private practice. Learn keys to financial success and hear tips from recent hires.
Pediatric and Nuclear Medicine/Molecular Imaging Campuses

Separate Pediatric and Nuclear Medicine/Molecular Imaging campuses feature many components—including refresher and series courses, scientific presentations, and education exhibits—of these subspecialties, to facilitate focused study during the week. The Pediatric Campus is located in Rooms S101A and S101B of McCormick Place. The Nuclear Medicine/Molecular Imaging Campus is located in S503AB, S504CD and S505AB.

Lunch hour presentations of scientific posters and education exhibits in the Pediatric and Nuclear Medicine/Molecular Imaging subspecialties will take place in the campuses.

Korea Presents and Canada Presents

These celebrations of international partnership include scientific sessions highlighting the latest science from the respective countries and featuring esteemed speakers. “Korea Presents: Exploring Evidence in Cardiovascular Imaging” will be held Monday from 10:30 AM to 12:00 PM. “Canada Presents: Beyond Diagnosis—How Cardiovascular Imaging Research in Canada Is Improving Clinical Outcomes” will be held Tuesday from 10:30 AM to 12:00 PM. Both will be held in Room E353C.

Visit the Korean Society of Radiology in Booth 1118 and the Canadian Association of Radiologists in Booth 1218 (both in South Building, Hall A) to learn more about the radiology communities in these countries and the contributions from Korean and Canadian radiologists to the RSNA annual meeting. In addition, the booths will host “Navigating RSNA 2014” discussions in Korean and French, offering the opportunity to learn tips for getting around the meeting. Visit the booths or Global Connection in RSNA Services to learn more.

Cases of the Day

Visit the Learning Center, Hall D, Level 3, Lakeside Center, to diagnose challenging cases and earn CME credit. Each day, Sunday through Thursday, 15 new cases are featured. For each submitted correct answer, the submitter can receive 0.5 AMA PRA Category 1 Credit™. Revealed cases remain on display for continued self-study.

CIR Spanish Program

Nuevos Horizontes en Diagnostico por Imagen Desde el CIR: Sesión del Colegio Interamericano de Radiología (CIR) en Español/New Horizons in Diagnostic Imaging from CIR: Session of the Interamerican College of Radiology (CIR) offers a series of presentations in Spanish with available simultaneous English translation. The session is Saturday from 1:00 PM to 5:00 PM in Room E451A.

Hospital Administrators Symposium

The Hospital Administrators Symposium on Wednesday in Room S103AB, 1:30 PM to 4:45 PM, encompasses diverse topics, including a Medicare RBRVS update, dealing with radiology benefit management companies, radiology and hospital co-management, and moving radiology toward value-based compensation.

Special Interest, Controversies and Hot Topics

These sessions, offered throughout the week, address important radiology-related topics that are late-breaking or particularly controversial, or require in-depth analysis. These 1–1½-hour sessions are approved for AMA PRA Category 1 Credit™. No tickets are required.

Quality Essentials Certificate

RSNA will award Quality Essentials Certificates of Completion to RSNA 2014 attendees who successfully participate in any of the Quality Improvement Symposium sessions on Tuesday. Participants who achieve a score of 80% or higher on the SAM test questions will be eligible to receive the certificates.

Academy of Radiology Leadership and Management

More than three dozen courses at RSNA 2014 count toward the Certificate of Achievement offered by the Academy of Radiology Leadership and Management (ARLM). Go to www.radiologists.org to learn how to obtain the Certificate of Achievement. ARLM-eligible courses are designated with a TM in the Meeting Program.

Estate Planning Program

Estate Planning Today for a Better Tomorrow will focus on the fundamentals of conventional estate planning for any financial situation, including planning strategies for retirement needs, Roth conversions, and charitable gifts. Also to be discussed are strategies for leveraging taxable gifts and transferring wealth to lower generations. The program is Monday, 3:00 PM–5:30 PM, in Room E253AB. CME is not offered for this course.

QR Codes

Look for the QR codes accompanying scientific sessions and multisession and refresher courses listed in this program. Use your smartphone to scan the code and automatically download abstract information for the session or course. Information can also be downloaded using the codes on signs outside meeting rooms at McCormick Place. All abstract information is available in the RSNA Meeting Program online at RSNA2014.RSNA.org/Program.

5k Fun Run

Enjoy a 5k event with your colleagues along Chicago’s beautiful Lake Michigan shore, and help fuel critical research to enable the best care for our patients. Check-in and warm-up start at 6:00 AM and the race officially begins at 6:30 AM on Tuesday at Arvey Field in South Grant Park, Chicago. Onsite at McCormick Place, sign up as a runner or walker for the 5k Fun Run. The sign-up donation of $40 will benefit the RSNA R&E Foundation and is fully tax deductible. Participants receive a commemorative T-shirt. Get your Fun Run team together! Last year, more than 650 registrants raised over $26,960 for radiology’s future leaders, and we need you to beat that number this year!

RSNA Services

Stop by RSNA Services, Level 3 of the Lakeside Center, to ask questions, get answers, and see demonstrations of RSNA’s exceptional services and new initiatives: Career Connect; RSNA Store; Membership, Journals, News & RadiologyInfo.org; Mobile Connect, Radiology Cares; Virtual Meeting; the Research & Education Foundation Donor Lounge, and Global Connection. You can also stop by our Professional Head Shot area for a complimentary photo for use on your CV or social media profiles.
Integrating the Healthcare Enterprise (IHE®)
Visit the Integrating the Healthcare Enterprise (IHE®) exhibit in Booth 1336 in South Building, Hall A, for demonstrations by care sites and commercial vendors’ methods for sharing image-enabled electronic health records and radiation dose information. Demonstrations take place regularly during exhibit hours.

Opening Session
SUNDAY
8:30 AM, Arie Crown Theater

Presentation of Outstanding Educator and Outstanding Researcher Awards
Theodore S. Lawrence, MD, PhD, Outstanding Researcher
Paula J. Woodward, MD, Outstanding Educator

Dedication of the RSNA 2014 Meeting Program
President’s Address
Reflect on the Past; Prepare for the Future
N. Reed Dunnick, MD

The history of RSNA and radiology are intertwined such that our Centennial is a celebration of medical imaging and image-guided therapy. There have been enormous advances in the past 100 years—safer radiography and fluoroscopy, cross-sectional imaging modalities useful not only for diagnosis but also to guide treatment, and radiotracers to evaluate patients at the cellular level. It is hard to imagine the next 100 years, but to reach our full potential, we must continue to innovate and apply our imaging and interventional tools appropriately. This requires not only the funding of our own Research & Education Foundation and the National Institutes of Health but also a culture that values research. “Our future is so bright, I gotta wear shades!”

Special Lecture
Exceptional Opportunities in Biomedical Research
Francis S. Collins, MD, PhD

In this Special Lecture, the Director of the National Institutes of Health (NIH) will help celebrate the RSNA’s centennial meeting by examining the exceptional opportunities that scientific and technological breakthroughs offer for biomedical research. With particular focus on NIH-supported imaging research, the talk will examine recent advances in fundamental knowledge about biology—and highlight the ways in which that knowledge is serving to improve human health. Topics may include the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative; the Accelerating Medicines Partnership (AMP); and affordable technologies to extend imaging insights to low-resource settings. Dr Collins will conclude with a discussion of future challenges, such as training the next generation of researchers; supporting the development of innovative research, programs, and partnerships; and encouraging broader appreciation and support for the biomedical research enterprise.

Oncodiagnosis Panel
Breast Cancer
SUNDAY
10:45 AM–12:15 PM, Room E353C

In this session, attendees will learn how to sequence multimodality imaging and interventions to provide specific diagnoses and map disease extent, as well as assess responses to breast cancer therapies. Also to be covered are principles of radiation therapy; specific imaging modalities and techniques for radiation therapy planning to maximize target coverage; and novel radiation therapy modalities and new techniques to reduce dose to normal tissue. Participants will also learn about controversial aspects of coordinated local treatment of breast cancer and different approaches to nodal staging and management of the axilla in patients with positive lymph nodes, and gain a better understanding of the pros and cons of neoadjuvant and adjuvant systemic therapies based on breast cancer subtypes.

Report of the RSNA Research & Education Foundation
The R&E Foundation: A Transformative Force in Radiology
SUNDAY
4:00–4:10 pm, Arie Crown Theater
James P. Borgstede, MD

The RSNA 2014 theme is “A Century of Transforming Medicine.” For 30 years of that century, the R&E Foundation has played a significant role in advancing the RSNA mission to promote excellence in patient care and health care delivery through education, research and technologic innovation. In celebration of 100 years, the Foundation is launching Inspire-Innovate-Invest: The Campaign for Funding Radiology’s Future®. This bold campaign seeks to raise $17.5 million to fund grants in radiologic research and education, bridging the gaps in funding for promising investigators and educators. The need is great and the time is now; if the Foundation reaches its campaign goal of $17.5 million, it will keep pace with the growing demand for funding and help ensure that critical discoveries by radiologic investigators come to fruition.

In 2014, the Foundation will fund 94 grants totaling $3.6 million. This means the R&E is funding 25% of our ever increasing number of outstanding grant applications. Of these individuals, who will start their academic career research with an R&E grant, and what will grow from this initial funding? What advances will emanate from their research? How can radiologists support these investigators and educators as they pursue their chosen career paths in an effort to make the specialty even stronger?

Visit the R&E Foundation Booth, located on Level 3 of Lakeside Center, to learn more about how you can be a part of the campaign and support the R&E Foundation and the future of our specialty.

Image Interpretation Session
SUNDAY
4:10–5:45 pm, Arie Crown Theater
Moderator: Jeffrey C. Weinreb, MD

This popular session leads attendees through identifying abnormal imaging findings, constructing differential diagnoses based on those findings, and making recommendations for further procedures or treatment.
patients and referring physicians than at present. 5 years radiology will be considered a high-value specialty more helpful to developing closer ties to primary care physicians. With these changes, within available around the clock rather than outsourcing night and weekend studies, and communicate results to patients. Radiologists must also be the appropriateness of imaging requests, supervise performance of the Radiologists must become true consulting physicians who actively assess from the current volume-based practice model to a value-oriented one. that much imaging is unnecessary. Countering the threats means moving reimbursements, and termination of groups by hospitals to the perception Radiology faces many threats, ranging from commoditization, declining medical imaging omics in oncology as a biomarker and the potential benefits leading to improved outcomes. Also to be addressed are the benefits and challenges of advanced and high-throughput image analysis from large databases at multiple centers. This presentation will describe the motivation underlying medical imaging analyses of tumor heterogeneity and response to therapy, and the role of medical images to RT.

Tuesday Plenary Session 1:30–2:45 pm, Arie Crown Theater

Presentation of Gold Medals
Gary J. Becker, MD, Tucson, AZ
Allen S. Lichter, MD, Alexandria, VA
Etta D. Pisano, MD, PhD, Charleston, SC

Annual Oration in Diagnostic Radiology
Transitioning from Volume-based to Value-based Practice: A Meaningful Goal for All Radiologists or a Meaningless Platitude?
David C. Levin, MD

Radiomics: From Clinical Images to Omics
This presentation will describe the motivation underlying medical imaging analyses of tumor heterogeneity and response to therapy, and the role of medical images to RT.

Wednesday Plenary Session 1:30–2:45 pm, Arie Crown Theater

Annual Oration in Radiation Oncology
"Error Bars" in Medical Imaging: Stealth and Treacherous
Lawrence B. Marks, MD

While medical imaging has markedly improved radiation therapy, limitations remain. Clinicians must remember, for example, how cancer often extends beyond the radiologically defined lesion and consider the likely patterns of cancer spread when defining targets for adjuvant therapy. Physiologic state also influences the validity of medical images for radiation planning; “good” diagnostic images may require breath hold, while therapy is usually not delivered in this state. Dose volume histograms, a cornerstone of modern radiation oncology, typically ignore inter- and intra fraction motion and discard all spatial information. Meanwhile, physician-radiologist communication is often ambiguous and ripe for the standardization that EHRs can provide. We must acknowledge and minimize the error bars associated with the application of medical images to RT.

Thursday Plenary Session 1:30–2:45 pm, Arie Crown Theater

RSNA/AAPM Symposium
Radiomics: From Clinical Images to Omics
This presentation will describe the motivation underlying medical imaging analyses of tumor heterogeneity and response to therapy, and the role of medical images to RT.

Friday Imaging Symposium
A Guided Tour for Managing Incidental Findings: Adnexal, Thyroid, Pediatric, Adrenal and Chest
2:30–3:00 pm, Room E253CD
Moderator: Lincoln L. Berland, MD

This presentation will help attendees to appreciate the scope, variety and nature of the problem of incidental findings on imaging studies in multiple contexts and the special challenges each present. Specific cases to be addressed include managing incidental adnexal lesions, including when to follow or further evaluate lesions based on their features, size and patient factors; and applying criteria for diagnosing and following incidental adrenal lesions. Also to be addressed is how new knowledge and techniques developed since publication of the Fleischner criteria in 2008 will lead to changes for managing incidental pulmonary lesions.
Dear Friends and Colleagues,

Since 1984, the Foundation has awarded $44 million to 1,100 educators and investigators. As the bedrock of radiologic research, an R&E grant is a pathway to greater funding from sources such as the National Institutes of Health (NIH).

In recent years, with grant funding dwindling from other sources, the Foundation has seen grant applications increase by 76 percent. To meet this growing need, the R&E Foundation is embarking on the Inspire-Innovate-Invest Campaign for Funding Radiology’s Future®.

The Foundation strives to raise $17.5 million, so that it can continue to fund more grants for individuals whose innovations are advancing radiology, from research to education to practice.

Look for the icon throughout the program book to see many of these bright minds sharing their research, knowledge and experience by teaching refresher courses, lecturing in plenary and scientific session and sharing their ideas on posters.

Visit the R&E Foundation in RSNA Services to see the current projects being funded, learn about grant opportunities, and make an investment in the future of your profession by supporting The Campaign for Funding Radiology’s Future®.

William G. Bradley Jr, MD, PhD
Campaign Co-Chair

R. Nick Bryan, MD, PhD
Campaign Co-Chair

David C. Levin, MD
Campaign Co-Chair
General Information

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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 93.00 AMA PRA Category 1 Credits™. 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.

Content Codes

To help participants better organize their CME records, two-letter content codes have been indicated throughout the program. The key to the codes follows:

- BG: Biomarkers/Quantitative Imaging
- BR: Breast (Imaging and Interventional)
- CA: Cardiac Radiology
- CH: Chest Radiology
- CT: Computed Tomography
- DM: Digital Mammography
- ED: Education
- ER: Emergency Radiology
- GI: Gastrointestinal Radiology
- GU: Genitourinary Radiology
- HM: Head and Neck
- HP: Health Policy
- IN: Informatics
- IR: Interventional
- LM: Leadership & Management
- MI: Molecular Imaging
- MK: Musculoskeletal Radiology
- MR: Magnetic Resonance Imaging
- NM: Nuclear Medicine
- NR: Neuroradiology
- OB: Obstetric/Gynecologic Radiology
- OI: Oncologic Imaging
- OT: Other
- PD: Pediatric Radiology
- PH: Physics and Basic Science
- PR: Professionalism
- RO: Radiation Oncology
- RS: Research and Statistical Methods
- SQ: Safety and Quality
- US: Ultrasound
- VA: Vascular

Learning Objectives

At the conclusion of this live activity, participants will be able to:

1. 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.
4. 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.

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 Claim Center Credit Eval.
- 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.

CME Credit

Scientific Paper and Plenary Sessions, Refresher Courses, Multisession Courses, Series Courses, and Informatics Courses

All sessions/courses have been approved for AMA PRA Category 1 Credit™. To register attendance, claim credit, and evaluate the sessions, visit the RSNA’s Credit Eval Claim Center.

Education Exhibits, Scientific Digital Poster Presentations, and Quality Storyboards

AMA PRA Category 1 Credit™ is available for digital posters 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
Emergency Information/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 25, 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.

of discussions with the presenters document your attendance by using the RSNA’s Credit Eval Claim Center.

Education exhibits at RSNA 2014 will include the popular Cases of the Day feature. Each day, from Sunday through Thursday, a new 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™.

CME Disclosure

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 (*) 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 421). All other individuals have indicated they have nothing to disclose.

This icon indicates discussion of uses not approved by the FDA. RSNA recognizes that at educational meetings, faculty may discuss the application of some devices, materials, or pharmaceuticals that are not FDA approved. In keeping with the highest standards of professional integrity and ethics, RSNA requires that faculty fully disclose to their audiences that there will be discussion of the unlabeled use of a commercial product, device, or pharmaceutical that has not been approved for such purpose by the FDA.

Authors of scientific abstracts at RSNA 2014 have guaranteed that human research was conducted following institutional review board (IRB) approval, under a waiver from the IRB, or in accordance with the World Medical Association Declaration of Helsinki, and that animal research was conducted following approval by the institutional animal care and use committee or in accordance with the National Institutes of Health Public Health Service Policy on Humane Care and Use of Laboratory Animals.

References to Abstracts in the Online 2014 RSNA Meeting Program

To cite an abstract from the 2014 online meeting program, go to RSNA2014.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” at top left to access the specific abstract citation information for that particular online abstract.

The general format for citing an online RSNA 2014 abstract is as follows: Author XX, Author XX, Author XX, et al. Title of the Specific Abstract. Presented at: Radiological Society of North America 2014 Scientific Assembly and Annual Meeting, November 30–December 5, 2014, Chicago, IL. rsna2014.rsna.org/program/details/?emID= … Accessed Month day, 20--.

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 2014 Virtual Meeting

The meeting is not only at McCormick Place. The RSNA 2014 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 60 live streaming courses, digital posters and cases of the day. Many offerings are available for CME credit during the live sessions, and content will be available “on demand” through Friday (December 19). No CME credits are awarded for viewing on-demand sessions. Visit RSNA2014.RSNA.org to register.

Subspecialty Content

Customizing your RSNA 2014 itinerary is easy through the enhanced sorting capability of the online RSNA Meeting Program. Go to RSNA2014.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 center.

QR Codes

Look for the QR codes accompanying plenary and scientific sessions and special, multisession, series, and refresher courses listed in this program. Use your smartphone to scan the code and automatically download 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.
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- **Ronald L. Arenson, MD**
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  - San Francisco, CA

The list of the Past Presidents of the RSNA is available online at: [http://www.rsna.org/RSNA_Past_Presidents.aspx](http://www.rsna.org/RSNA_Past_Presidents.aspx).

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Gold Medalists

Gary J. Becker, MD

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

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

“Dr Becker has worked to improve the field of radiology through research and education,” said 2014 RSNA President N. Reed Dunnick, MD. “As RSNA Board Liaison for Science, he recognized that imaging must become quantitative if it is going to become a useful biomarker and was instrumental in developing the Quantitative Imaging Biomarkers Alliance.”

“The RSNA’s unparalleled culture, policies, programs, and services are the soul of radiology,” Dr Becker said. “Although I have been privileged to serve the RSNA in many capacities, I can say without a doubt that I have gained both personally and professionally far more than I have given to RSNA. I am deeply honored and humbled to accept this award.”

A renowned expert in interventional radiology, Dr Becker was an early pioneer of transcatheter thrombolytic therapy and later of endografting for the treatment of aortic aneurysm. As a researcher, Dr Becker developed new metallic stents for the treatment of coronary, peripheral, and carotid arterial disease, a field in which he holds 10 patents.

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

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

Dr Becker’s lengthy ABR association includes serving six years on the ABR Board of Trustees followed by two years as associate executive director for diagnostic radiology and subspecialties. In addition to overseeing the transition in certification exam format, as ABR executive director Dr Becker established two new ABR exam centers and introduced the continuous certification process for ABR’s maintenance of certification program.

In addition, he successfully guided ABR’s proposal for a new primary certificate in interventional radiology and diagnostic radiology (IR/DR certificate) through the approval process at the American Board of Medical Specialties.

An RSNA member since 1979, Dr Becker joined the Board of Directors in 2001, serving as secretary-treasurer designate for one year and then Board Liaison for Science for four. He then served as Board chairman, president-elect and president. Prior to joining the Board, Dr Becker had served the Society in many other capacities, including Radiology Editorial Board member, consultant to the Radiology Editor, and member of the Research Development Committee and Public Information Advisory Board. Dr Becker was the opening session speaker at two annual meetings and a panelist of the Image Interpretation Session, and at RSNA 2000 delivered the Annual Oration in Diagnostic Radiology, “The Future of Interventional Radiology.” Dr Becker served as a trustee of the RSNA Research & Education Foundation from 2007 to 2009.

Dr Becker has served in leadership roles with the Academy of Radiology Research, American Roentgen Ray Society, American College of Radiology, Association of University Radiologists, and numerous local radiologic societies. His 28 years of involvement with the Society of Interventional Radiology (SIR) included nine years on the executive council. In 1995, SIR renamed its award for the outstanding paper presentation by a young investigator, “The Dr Gary J. Becker Young Investigator Award.” He received the SIR gold medal in 2008.

Founding editor of the Journal of Vascular and Interventional Radiology, Dr Becker has served as a manuscript reviewer, editorial board member, associate editor, and editor for more than 20 journals. He has published 226 articles, 36 book chapters, and one book.

In recognition of his contributions to the field of interventional radiology and his accomplishments as a radiologic leader, RSNA is proud to present Gary J. Becker, MD, with its Gold Medal.
Allen S. Lichter, MD

With his career of world-renowned achievements in cancer research, education, and clinical care, there has been no one in a better position than Allen S. Lichter, MD, to lead his peers—some 30,000 physicians and health professionals in oncology—in their trademark goal of “conquering cancer.” Dr Lichter has served as chief executive officer of the American Society of Clinical Oncology (ASCO) since 2006.

With research focusing on breast cancer treatment, Dr Lichter was an early advocate of the breast-conserving approach and while at the National Cancer Institute (NCI) conducted one of the trials that found the use of lumpectomy and radiation therapy to be as effective as the traditional treatment of mastectomy. This work, along with other trials conducted in the United States and Europe, subsequently revolutionized breast cancer treatment standards.

"Few people have made as many and as varied contributions to our field as Allen Lichter, MD," said 2014 RSNA President N. Reed Dunnick, MD. "His research using lumpectomy and radiation therapy to treat breast cancer gave women an alternative to mastectomy. He pioneered the development of 3D therapy."

"I am deeply honored to receive this recognition from RSNA," Dr Lichter said. "The imaging sciences are a fundamental part of cancer care. I have been privileged to work at that intersection and look forward to seeing the collaboration between oncology and radiology increase even more in the years ahead."

Dr Lichter earned bachelor’s and medical degrees from the University of Michigan in Ann Arbor. He trained in radiation oncology at the University of California, San Francisco, before joining the faculty at the Johns Hopkins University and later the NCI.

Dr Lichter served as the director of the Radiation Therapy Section of the NCI’s Radiation Oncology Branch. His research and development of three-dimensional treatment planning led to a gold medal from the American Society for Therapeutic Radiology and Oncology (ASTRO, now the American Society for Radiation Oncology). In 2002 he was elected to membership in the Institute of Medicine of the National Academies of Science.

Dr Lichter returned to the University of Michigan to serve as chair and professor of radiation oncology from 1984 to 1998 and as dean of the medical school from 1998 to 2006. He was named the first Isadore Lampe Professor of Radiation Oncology and also served as the Newman Family Professor of Radiation Oncology. Dr Lichter introduced an innovative curriculum, oversaw creation of a new Biomedical Science Research facility, and was known as a prolific fundraiser in support of the medical school mission, with more than 70 endowed professorships established during his tenure. During his time at Michigan, Dr Lichter was also credited with establishing a network of faculty to provide service around the state.

Dr Lichter’s tenure with ASCO has been no less impressive. While leading the Alexandria, Virginia-based organization—which marks its 50th anniversary this year—Dr Lichter has overseen projects including a rapid learning system called CancerLinQ™, clinical practice guidelines, and a quality care symposium. He also has led the development of the Quality Oncology Practice Initiative, an oncologist-led, practice-based quality assessment and improvement program. His tenure also has seen the launch of ASCO International and the renaming of the society’s philanthropic arm as the Conquer Cancer Foundation, of which Dr Lichter was founding chairman. Prior to assuming the CEO position, Dr Lichter served in many volunteer roles with ASCO, including as president.

Dr Lichter served as coeditor of Oncology from 1999 to 2005 and in editorial positions with the Journal of the National Cancer Institute; International Journal of Radiation Oncology, Biology, Physics; and Journal of Clinical Oncology. He is an honorary member of the American Association of Physicists in Medicine and the Belgium Society for Therapeutic Radiology.

Dr Lichter presented the Annual Oration in Radiation Oncology, “The Cost of Cancer Care: Near-Term Strategies and Long-Term Solutions,” at RSNA 2007. RSNA is pleased to welcome Allen S. Lichter, MD, back to the annual meeting and present him with the RSNA Gold Medal in recognition of his contributions to cancer research, education and clinical care, and his leadership of his peers in clinical oncology.
Gold Medalists

Etta D. Pisano, MD

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

Dr Pisano, a world-renowned breast imaging expert, has broken down barriers in her professional career, becoming the first woman dean of the College of Medicine at the Medical University of South Carolina (MUSC) in 2010; but her biggest contributions to radiology have been the research and testing she has done to integrate emerging technology into breast imaging. Her groundbreaking study, Digital Mammographic Imaging Screening Tool (DMIST), was the largest clinical trial ever led by a radiologist and provided essential information about the efficacy of digital mammography.

“A physician, radiologist, investigator, teacher, wife and mother, Etta Pisano, MD, is a wonderful role model for professional men and women,” said 2014 RSNA President N. Reed Dunnick, MD. “Her successful research has played a major role in improving the quality of care radiologists provide.”

“I am humbled and deeply honored to receive the RSNA Gold Medal,” Dr Pisano said. “I have been very fortunate to have enjoyed a fulfilling and stimulating career in radiology and am grateful for the support of my colleagues, mentors, and family throughout the years.”

Dr Pisano served MUSC as vice-president for medical affairs and dean of the College of Medicine from 2010 to 2014. Prior to coming to MUSC, Dr Pisano served in numerous positions at the University of North Carolina at Chapel Hill, including vice-dean for academic affairs in the School of Medicine, Kenan Professor of Radiology and Biomedical Engineering, founding director of the Biomedical Research Imaging Center (BRIC), and director of the Translational and Clinical Sciences Institute. From 1989 until 2005 she served as founding chief of breast imaging at UNC Hospitals.

Dr Pisano received an undergraduate degree in philosophy from Dartmouth College and earned her medical degree from Duke University. She completed her radiology residency at Beth Israel Hospital of Harvard Medical School and remained at the institution as chief of breast imaging and instructor in radiology for one year. In 2003, she was appointed the first director of the UNC BRIC, a core facility that develops and commercializes new imaging technologies. She successfully raised over $20 million from private donors, industry and the university to support its activities, and helped to persuade the State of North Carolina to fund the building of the Marsico Building where the BRIC is housed.

Dr Pisano gained international attention as the principal investigator of DMIST, a study which enrolled 49,528 women to compare digital to film mammography. The results of the $26 million study, published in 2005 in the New England Journal of Medicine, showed that digital mammograms are as reliable as film mammograms and are better at finding breast cancer in young women and those with dense breast tissue.

The work led to a host of accolades for Dr Pisano, including the Alice Ettenger Distinguished Achievement Award from the American Association for Women Radiologists (AAWR) and the Helen Taussig Living Legacy Award given by the National Women’s History Museum.

An RSNA member since 1989, Dr Pisano has served as a refresher course faculty member and plenary session moderator for numerous RSNA annual meetings. She has also served RSNA as a member of the Research Study Section for the Research & Education Foundation Grant Program, and the Quantitative Imaging and Imaging Biomarkers Task Force. Dr Pisano currently serves on the RSNA Public Information Advisors Network.

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

Dr Pisano, who holds four patents, co-founded her own company, NextRay, Inc, which will commercialize a device she and the other co-founders invented. The technology creates medical images using X-rays through diffraction enhanced imaging. With superior image quality at a dose substantially lower than currently available, the technology will be targeted to children, young adults, and young women undergoing breast cancer screening.

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

For her groundbreaking contributions that have revolutionized the early detection and diagnosis of breast cancer, RSNA is proud to award its Gold Medal to Etta D. Pisano, MD.
Honorary Members

Markus Schwaiger, MD

Markus Schwaiger, MD, is an internationally known researcher, educator, author, and editor whose work has shaped the development of multimodal molecular imaging, particularly in cardiology.

Dr. Schwaiger is director of the Department of Nuclear Medicine at the Technische Universität of Munich, Germany. He also serves as an adjunct professor of radiology at the University of Michigan in Ann Arbor.

"One of the pioneers of cardiac nuclear medicine, Dr. Schwaiger has advanced the field by enabling physicians to assess cardiac function noninvasively," said 2014 RSNA President N. Reed Dunnick, MD. "He was a pioneer in characterization of the hibernating myocardium and mapping myocardial sympathetic innervation with radionuclides. Recognizing the importance of combining the physiologic imaging of nuclear medicine and the anatomic definition of cross-sectional imaging, he is one of the leading investigators in PET/MR."

"Multimodal imaging technology not only advances detection and staging of disease, but also brings physicians and scientists of different subspecialties together to advance the use of imaging in 'precision medicine,'" Dr. Schwaiger said.

After receiving medical training at the Medical School of the Free University of Berlin, Germany, Dr. Schwaiger completed postdoctoral training at the University of Cincinnati, German Heart Centre Munich and the University of California, Los Angeles (UCLA).

In addition to his 748 peer-reviewed publications in international scientific journals and 108 book chapters and proceedings, Dr. Schwaiger serves on the editorial board and/or as a reviewer for more than a dozen scientific publications, including the Journal of Nuclear Cardiology, Journal of Nuclear Medicine, European Heart Journal, and Journal of Cardiovascular Magnetic Resonance.

Dr. Schwaiger’s academic appointments began as assistant professor of radiological sciences at UCLA and as a professor of medicine and director of cardiovascular nuclear medicine at the University of Michigan. He joined the Technische Universität of Munich in 1993. In addition to his current role, he has served as associate dean and as dean of the School of Medicine.

Dr. Schwaiger has given more than 500 invited presentations. He has overseen the work of a dozen research fellows from Hungary, Japan, Denmark, Iran, Brazil and the United States. He also has volunteered with a spectrum of professional societies and administrative entities for more than 20 years, including service as president of the European Association of Nuclear Medicine 2008 Congress in Munich. He serves on the RSNA Molecular Imaging Committee.

Among the numerous awards Dr. Schwaiger has received are fellowship in the American Heart Association, American College of Cardiology, American Society of Nuclear Cardiology, and the European Academy of Cancer Sciences. He received the Distinguished Scientist Award of the Academy of Molecular Imaging, the von Hevesy Medal of the Hungarian Society of Nuclear Medicine, the Paul C. Aebersold Award of the Society of Nuclear Medicine, and the Federal Cross of Merit of Germany.

For his outstanding, wide-ranging contributions to the molecular imaging subspecialty, RSNA is pleased to present Markus Schwaiger, MD, with honorary membership.
Kaori Togashi, MD, PhD, has spent more than 30 years researching and publishing studies expanding the horizon for MR imaging as it applies to gynecology. Dr Togashi’s pioneering work has garnered attention from radiology and bioengineering entities.

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

“Dr Togashi has been a pioneer and leader in magnetic resonance imaging of the female pelvis,” said 2014 RSNA President N. Reed Dunnick, MD. “Her work as a radiologist, investigator, and teacher has been recognized by professional societies around the world.”

“I am extremely privileged and honored to receive RSNA Honorary Membership,” Dr Togashi said. “Attending RSNA is the biggest motivation to do research for radiologists around the world, including me. RSNA has always been the center of my career, providing me with education, motivation, and opportunities to encounter dedicated scientists and generous mentors.”

Dr Togashi earned her medical degree at Kyoto University in 1979. After completing her residencies, she attended the Graduate School of Medicine at Kyoto University from 1983 to 1987 and received her doctorate in medical science.

While working on her doctorate, Dr Togashi was involved in very early studies of body MR imaging. She authored several articles including “Uterine Cervical Cancer: Assessment with High-Field MR Imaging,” published in Radiology in 1986. Since then, she has published several books and nearly 300 articles in peer-reviewed journals in English.

Dr Togashi’s recent areas of interest are functional body MR imaging, including cine MR to evaluate uterine peristalsis, diffusion-weighted images in oncology, and diffusion-tensor imaging of the uterus. Cine MR for the uterus has attracted interest not only from the radiology and gynecology specialties, but also from the bioengineering realm as a new tool to elucidate the biomechanics of uterine function.

In addition to her published papers, Dr Togashi has been a reviewer for many journals, including Radiology and RadioGraphics. Her efforts have resulted in multiple awards as a distinguished reviewer. She has also accumulated a string of awards at annual meetings of RSNA, the European Congress of Radiology (ECR), and the International Society for Magnetic Resonance in Medicine (ISMRM). At RSNA’s annual meeting, she has received numerous Certificates of Merit and Excellence in Design Awards.

Dr Togashi received honorary membership in the European Society of Radiology (ESR), fellowship in ISMRM, and the gold medal of the European Society of Urogenital Radiology.

A member of RSNA since 1996, Dr Togashi serves on the RSNA International Advisory Committee and also has served on the Education Exhibit Awards Committee in Uroradiology at the RSNA annual meeting.

In recognition of her impressive contributions to MR imaging in the gynecologic field, her pioneering role as a female radiologist, and her assiduous efforts to encourage and train young academic radiologists, especially in MR imaging research, RSNA is proud to present Kaori Togashi, MD, PhD, with honorary membership.
Honorary Members

Zheng-Yu Jin, MD

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

"Dr Jin is an innovative radiologist who has advanced our field through his work in cardiac imaging and intervention," said 2014 RSNA President N. Reed Dunnick, MD. "As chair of the Department of Radiology at the Peking Union Medical College, he has presided over the construction of a new state-of-the-art department, which has become one of the leading radiology departments in China."

"It is a tremendous honor and brings me great happiness to receive such an award from RSNA, the biggest radiologic organization in the world," Dr Jin said. "This is an honor not for me but for all Chinese radiologists. I give thanks for the support and the encouragement my team has given me, for my friends all over the world and for every person who has ever helped me during my academic life."

Currently, Dr Jin is a professor of interventional radiology and diagnostic radiology and chair of the Department of Radiology at Peking Union Medical College Hospital (PUMCH), Beijing, where he has spent the majority of his career. After graduating as a medical doctor in 1984, Dr Jin joined PUMCH, where he quickly ascended the ranks from resident, chief resident and attending physician to associate professor by 1993. Dr Jin has held his current position since 1996. From 1990 to 1991, Dr Jin completed advanced studies at Loma Linda University Medical Center, California, where he trained under renowned interventional radiologist Francis Y. K. Lau, MD. Dr Jin trained in cardio-intervention and neuro-intervention, as well as peripheral intervention, which was very rare in China at that time.

As an educator for more than 30 years, Dr Jin has devoted his mind and spirit to clinical radiologic education of Chinese medical students and postgraduate residents. He also has served as a mentor to 63 radiologists who obtained their doctorates under his supervision. For his passion and creativity, Dr Jin has repeatedly been rated as Best Teacher at PUMCH, and his groups also received numerous education awards from the hospital, the college, and the Beijing and Chinese governments. Dr Jin also has fostered international relationships and advances young radiology scholars through his work with the Chinese Society of Radiology, Chinese Medical Association, and Beijing Society of Radiographers and Radiological Technologists.

With wide research interests including vascular interventions, multidetector CT and MR, Dr Jin has authored and coauthored over 200 national and international peer-reviewed publications, along with authoring and compiling award-winning teaching materials and atlases including two bilingual atlases. He has given more than 200 scientific presentations at numerous national and international scientific meetings, including about 100 invited lectures. He also serves as chief editor, vice-chief editor or editor of 13 national scientific journals.

An RSNA member since 1996, Dr Jin has served as president of the Beijing Society of Radiology since 2009. He served as chief secretary and vice-president of the Chinese Society of Radiology from 2006 to 2010 and 2010 to 2014, respectively. As vice-president, Dr Jin promotes collaborations between CSR and other international radiology societies, including RSNA, the American Roentgen Ray Society, Asian Oceanian Society of Radiology, French Society of Radiology, and Korean Society of Radiology. He also supported the meeting of the International Society for Strategic Studies in Radiology in Beijing in 2013 and promoted collaborations between the Chinese Society for Magnetic Resonance in Medicine and the International Society for Magnetic Resonance in Medicine.

Dr Jin has twice been awarded the National Prize for Progress in Science and Technology, as well as the Ministry of Health Prize for Progress in Science and Technology and the Chinese Medical Science and Technology Prize. RSNA is pleased to add honorary membership to the accolades bestowed on Zheng-Yu Jin, MD.
Plenary Sessions

RSNA 2014 Plenary Sessions
All lectures will be presented in the Arie Crown Theater.

SPECIAL LECTURE
SUNDAY, NOVEMBER 30 • 8:30 AM
Exceptional Opportunities in Biomedical Research
Francis S. Collins, MD, PhD

NEW HORIZONS LECTURE
MONDAY, DECEMBER 1 • 1:30 PM
Future of Ultrasound
Jonathan M. Rubin, MD, PhD

ANNUAL ORATION IN DIAGNOSTIC RADIOLOGY
TUESDAY, DECEMBER 2 • 1:30 PM
Transitioning from Volume-based to Value-based Practice: A Meaningful Goal for All Radiologists or a Meaningless Platitude?
David C. Levin, MD

ANNUAL ORATION IN RADIATION ONCOLOGY
WEDNESDAY, DECEMBER 3 • 1:30 PM
"Error Bars" in Medical Imaging: Stealth and Treacherous
Lawrence B. Marks, MD

RSNA/AAPM SYMPOSIUM
THURSDAY, DECEMBER 4 • 1:30 PM
The Radiology Reading Room of the Future
Robert J. Gillies, PhD

Radiomics in Oncology: Pathway to Precision Medicine
Hedvig Hricak, MD, PhD, Dr hc
Outstanding Awards

2014 Outstanding Researcher/Educator Awards

The RSNA Outstanding Researcher Award and Outstanding Educator Award annually recognize and honor one senior 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 2014 Outstanding Researcher Award to Theodore S. Lawrence, MD, PhD, and the 2014 Outstanding Educator Award to Paula J. Woodward, MD.

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

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