3D CT Imaging Used to Evaluate Facial Aging

ALSO INSIDE:

Radiologists Urged to Focus on Daily Impact of Healthcare Reform

Mobile Radiology Unit Brings Hope for Fibroid Relief to Underserved Brazil

R&E Grant Serves as Catalyst for Merging Business, Research Opportunities

Post-mortem CT Aids in Detecting Suspected Elder Abuse

Education, Infrastructure Key to Information Security

Virtual RSNA 2010 Available at RSNA.org See Page 24
The William R. Eyler Editorial Fellowship provides an opportunity for radiologists in mid-career to further their experience in radiologic journalism. Get firsthand experience with manuscript preparation, peer review, manuscript editing, journal production, printing, electronic publishing and more.

**Work one-on-one with:**

- **Editor of Radiology**  
  Boston, Massachusetts, for 2 weeks
- **Editor of RadioGraphics**  
  Bethesda, Maryland, for 3 days
- **RSNA Publications Department**  
  Oak Brook, Illinois, for 2 days

The fellow will also assist the editors and attend editorial meetings during the RSNA annual meeting.

One fellow will be selected each year and awarded a stipend of **$10,000**.

**Eligibility**

Candidate must:
- Be an RSNA member
- Have accomplished at least 3 years of attending-level work at an academic institution
- Have served as a reviewer for a major imaging journal
- Be affiliated with a national radiologic society in his or her country

**Applications**

Download (PDF) application at: RSNA.org/Publications/editorial_fellowships.cfm

**Application Deadline:**  
**May 1, 2011**

Sponsored by the RSNA Publications Council and the Committee on International Relations and Education (CIRE).
Funding Announced for 12 QIBA Projects

As a result of the contract awarded to RSNA by the National Institute of Biomedical Imaging and Bioengineering (NIBIB) in October 2010, the Steering Committee of the Quantitative Imaging and Biomarkers Alliance (QIBA) has announced funding for 12 projects in three modality areas, CT, MR and nuclear medicine (NM), for an approximate total of $1,170,000.

The projects, developed through a competitive request for proposals issued to the QIBA community, were identified as those that most clearly support QIBA goals and priorities. It is expected that additional projects will be funded in the next six months. For more information about QIBA and its activities, go to RSNA.org/Research/QIBA.

Recipients are:

- CT
  - University of California, Los Angeles
  - MD Anderson Cancer Center
- MR
  - University of Washington
- NM
  - Columbia University VirtualScopics
  - Johns Hopkins University
- Duke University
  - University of Texas Southwestern Medical Center
  - University of Chicago, Pritzker School of Medicine

Feinstein Receives Chicago Radiological Society Award

Kate A. Feinstein, M.D., section chief of pediatric radiology and a professor of radiology and surgery at the University of Chicago, received the Chicago Radiological Society’s Distinguished Service Award at the society’s annual meeting in February. Dr. Feinstein has served on RSNA’s Local Services Committee and Scientific Program Committee’s Pediatrics Subcommittee. She is currently a manuscript reviewer for Radiology, the American Journal of Roentgenology and Pediatric Radiology.

ASTRO Publishes New Journal

The American Society for Radiation Oncology (ASTRO) has published its first issue of Practical Radiation Oncology (PRO), a new journal aimed at improving the quality of radiation oncology practice.

The editor-in-chief is W. Robert Lee, M.D., M.S., M.Ed., a professor of radiation oncology and program director at Duke University in Durham, N.C. PRO defines a clinical or practice journal, documenting the current practice and providing background for those in training or the continuing education of practitioners. PRO will initially be published quarterly in print and online at www.practicalradonc.org.

Medical Isotopes Bill Introduced in Senate

The American Medical Isotopes Production Act of 2011 (S.99), which aims to promote sustainable domestic production of Molybdenum-99 (Mo-99), was introduced in the U.S. Senate last month. Sponsors are Sen. Jeff Bingaman (D-N.M.), chair of the Senate Committee on Energy and Natural Resources, and Sen. Lisa Murkowski (R-Alaska).

The American Society for Radiation Oncology (ASTRO) welcomes the development of a new journal aimed at improving the quality of radiation oncology practice.

While the part-time position (40 to 50 percent) does not require relocation to Tucson, Ariz., (although desirable), regular travel is required. It is anticipated that the new AED-MP will work alongside the current AED-MP in late 2011 and assume full responsibility in early 2012.

For further information, go to www.theabr.org/about/careers.html.

KLEIN NAMED RADIOGRAPHICS EDITOR

Jeffrey S. Klein, M.D., will be the new editor of Radiographics beginning in January 2012. He succeeds William W. Olmsted, M.D., who will retire as editor at the end of this year.

Dr. Klein is the Jack and Betty Oldham William P. Tatum Chair and Associate Dean for Continuing Medical Education in the University of Vermont College of Medicine and chief of thoracic radiology at Fletcher Allen Health Care in Burlington, Vt.

“Dr. Klein brings vast experience in radiologic education—with an emphasis on continuing medical education—critical for the editor of RSNA’s education journal. Dr. Klein’s experience includes dozens of lectures delivered, courses co-directed and discussions moderated in visiting professorships and at premier chest radiology meetings and congresses worldwide for more than 20 years,” said senior executive editor of the Journal of Thoracic Imaging Janice A. Tucci, M.D., for the past 20 years under Dr. Olmsted, Radiographics has become the primary journal for continuing medical education in radiology, Dr. Klein said.

“My goals are to continue the editorial excellence that Dr. Olmsted has established during his distinguished tenure as Radiographics editor and to help guide the journal through its transition to a more interactive electronic publication that meets the emerging educational needs of our trainees, radiologists, radiation physicists and radiation oncologists worldwide,” Dr. Klein said.

ASTRO and BAR Seeks to Fill Medical Physics Position

The American Board of Radiology (ABR) is accepting applications for the position of Associate Executive Director, Medical Physics (AED-MP).

The AED-MP reports to the ABR executive director and works closely with the executive team to coordinate and operationalize the strategic and tactical policies and plans made by the ABR Board of Trustees. The AED-MP also works with the ABR staff director of Certification Services, Information Technologies, Standards (including Communications, Psychometrics and Digital Imaging), Board Affairs and Financial Services on operational matters, systems analysis and quality improvement.

The AED-MP also works with the ABR executive team to coordinate policy and the specifics of implementation across disciplines.

The AED-MP participates as a representative of ABR leaders and representatives in various public in-person and virtual discussions.

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“I am extremely honored to be chosen by the RSNA Board of Directors to serve as the next editor of Radiographics and to have the opportunity to guide the journal in the coming years,” Dr. Klein said.

In addition to his expertise in lung cancer staging and diagnosis, Dr. Klein brings vast experience in radiologic education—with an emphasis on continuing medical education—critical for the editor of RSNA’s education journal. Dr. Klein’s experience includes dozens of lectures delivered, courses co-directed and discussions moderated in visiting professorships and at premier chest radiology meetings and congresses worldwide for more than 20 years.”

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Society of French Radiology Honors Schnyder

The Society of French Radiology has awarded its first radiology lab in Paris in 1897. Dr. Schnyder brings vast experience in radiologic education—with an emphasis on continuing medical education—critical for the editor of RSNA’s education journal. Dr. Klein’s experience includes dozens of lectures delivered, courses co-directed and discussions moderated in visiting professorships and at premier chest radiology meetings and congresses worldwide for more than 20 years.”

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RSNA Selects IVP 2012 Destinations

Destinations have been selected for the 2012 RSNA International Visiting Professor (IVP) Program that annually sends teams of North American professors to lecture at national radiology society meetings and host with radiology residency training programs at selected host institutions in developing nations. Destinations for 2012 are:

• Nepali Radiology Association/Radiological Society of South Asian Association for Regional Co-Operation Countries, Kathmandu, Nepal—January 2012
• Asociación Salvadoreña de Radiología, San Salvador, El Salvador—October 2012
• Vietnamese Society of Radiology and Nuclear Medicine, Hanoi, Viet Nam—April 2012
• Sociedad Mexicana de Radiologia e Imagen, A.C., Mexico City, Mexico—September 2012

For more information about the RSNA IVP program, please go to RSNA.org/International/CRPP/ivp.cfm.

NCRP Addresses Dose Management for Fluoroscopically-Guided Interventional Medical Procedures


According to NCRP, the report is particularly intended for physicians and medical support staff who currently participate in fluoroscopically-guided interventional procedures but lack sufficient training in practical radiation protection aspects—for example, knowledge of equipment operation, optimal imaging techniques, dose management for patients and medical staff, benefit-risk tradeoffs and the potential for early or late detrimental radiation effects.

The report also targets policymakers who can mandate radiation-dose management requirements with regard to:

• Optimizing imaging protocols
• Managing procedure time
• Utilizing available radiation protective equipment and dose-management features

Tracking and trending radiation dose to patients and medical staff
• Credentialing and privileging physicians to use the fluoroscopic equipment for those specialized procedures

To view the report, go to NCRP publications.org.

My Turn

Diagnostic Radiology and Radiation Oncology: Turning Collaboration into Education

Diagnostic radiologists play a key role in cancer diagnosis and treatment monitoring. Radiation oncologists have a wealth of clinical experience and knowledge about cancer biology. Both groups intersect around imaging and both have much they can share with each other, to their mutual benefit and that of their patients.

Sarah S. Donaldson, M.D., now chairman of the RSNA Board of Directors, suggested a few years back that RSNA and the American Society for Radiation Oncology (ASTRO) collaborate on an oncologic imaging meeting that emphasizes the two-way interaction between diagnostic radiology and radiation oncology. There is no point in the course of a patient’s cancer where imaging does not play a crucial role in decision making and therapy—imaging figures prominently in screening and cancer detection, remains paramount throughout staging and prognostic determinations, and is an integral part of targeting therapy, assessing response and detecting relapse.

Anthony Zietman, M.D., a professor of radiation oncology at Massachusetts General Hospital, and I are heading up the collaboration that Dr. Donaldson envisioned. We look forward to “Cancer Imaging and Radiation Therapy Symposium: A Multidisciplinary Approach,” to be held April 29–30 in Atlanta. Four morning sessions are scheduled—new radiographic techniques in oncology, matching pathology with imaging, imaging and outcome prediction, and image-guided therapy—featuring speakers from both disciplines.

In the afternoons we’ll address four specific cancer sites—breast, prostate, lung and central nervous system—spanning a variety of issues from diagnosis to therapy, from remission to relapse. Speakers will highlight points of intersection between the two specialties and encourage us to learn from one another as we go.

Keynote speakers are Brian Ross, Ph.D., who will talk about molecular imaging in oncology and David Jaffay, Ph.D., who will address image-guided cancer therapeutics. With its focus on the “nuts and bolts” of anatomic and metabolic imaging in contemporary cancer care, this collaborative meeting has also attracted nearly 150 research abstract presentations.

IN MEMORIAM

Theodore E. Keats, M.D.

Renowned radiology educator, author and editor Theodore E. Keats, M.D., died Dec. 10, 2010. He was 86.

Dr. Keats received his medical degree from the University of Pennsylvania in 1955. After completing a residency in radiology at the University of Michigan, he was served as a captain in the Army Medical Corps and was stationed in Japan during the Korean War. He went on to serve the University of Virginia (UVA) Department of Radiology for 47 years, including 29 as chair.

The best known of Dr. Keats’ nine textbooks, “Atlas of Normal Roentgen Variants That May Simulate Disease,” is about to be published in its 9th edition and has been translated into more than six languages. He served as editor for four journals simultaneously—Skeletal Radiology, Current Problems in Diagnostic Radiology, Applied Radiology and Emergency Radiology.

Dr. Keats received the gold medals of the American College of Radiology and the American Society of Emergency Radiology and was an honorary member of the Australasian College of Radiology. The Theodore E. Keats Professorship in Radiology at UVA was founded in 1992 by his residents, colleagues and friends. That same year, Dr. Keats delivered the RSNA Annual Oration in Diagnostic Radiology, “Normal Variants of the Spine that Simulate Disease.”

RSNA and ASTRO are proud to host this important multidisciplinary event and I am very honored to have been invited to participate. Our unique program offers something for every RSNA member: he or she a radiologist, radiation oncologist, physicist or resident. I hope to see you in Atlanta.

Suresh K. Mathurji, M.D., F.A.C.R., is a professor and chief of neuroradiology and head & neck radiology and a professor of radiology, otolaryngology head & neck surgery, radiation oncology, pediatrics and oral medicine at the University of Michigan Health System.

For more information regarding the RSNA-ASTRO meeting, go to www.cancerringandrtsymposium.org.

NEWS YOU CAN USE

UPFRONT

N 85.3

Average health-related quality of life score reported by Brazilian women receiving uterine fibroid embolization via a mobile unit, one-year post-treatment. Average score pre-treatment was 41A. Learn more about how “angiomovel” is bringing new hope to low-income women, for more about how “angiomovel” is bringing new hope to low-income women, for more about how “angiomovel” is bringing new hope to low-income women, for more about how “angiomovel” is bringing new hope to low-income women, for more about how “angiomovel” is bringing new hope to low-income women.
Researchers who devised a way to use CT imaging to objectively evaluate the effect of muscles on facial aging say the results could be applied to plastic surgery procedures, such as rejuvenation surgery and facelifts, as well as exercise designed to prevent facial aging.

“IT IS NECESSARY to understand the anatomy of facial muscles and physiological changes to understand facial aging,” said Itsuko Okuda, M.D., of the Department of Diagnostic Radiology, International University of Health and Welfare, Mita Hospital in Tokyo, who presented findings in an education exhibit at RSNA 2010. “3D CT images allow the depiction of the state of facial muscles and facial aging.”

The researchers set out to answer the question, “Why are there differences in facial aging among different people?” Dr. Okuda said.

The goal of the study—performed in cooperation with the departments of radiology, aesthetic plastic surgery and anatomy at Mita Hospital—was to present clinical, radiographic and anatomic features of aging in both the young and old, Dr. Okuda said. Shiraide Yuuki, M.D., a plastic surgeon, also participated in the research.

The six-month research project involved 50 case studies, with subjects ranging from 15 to 80 years old. The retrospective study used 3D CT images obtained from previous multidetector CT and MR imaging studies. “Previous studies have used ultrasound techniques to measure muscle thickness; however, 3D CT imaging provides much more detail,” Dr. Okuda said.

After discussing the anatomy of the muscles used in facial expression with Kazuaki Hirata, M.D., an anatomy professor at Mita Hospital, the pair began researching muscle activity, Dr. Okuda said.

Creating facial 3D volume renderings based on CT images of patients young and old, Dr. Okuda and colleagues compared those images with the patients’ original CT and MR images and evaluated the changes in facial structure that cause aging.

“We also researched the anatomy of the subcutaneous soft tissue, which contributes to facial features, and then analyzed how these structures varied with aging,” Dr. Okuda explained.

“Based on anatomical knowledge and facial aesthetic plastic surgical knowledge, we began interpreting facial images—using CT and MR imaging—in detail again. By comparing those images and researching previous studies, researchers determined that facial aging is caused not only by age-related changes in the skin, but also changes in muscles, subcutaneous soft tissue and adipose tissue,” Dr. Okuda plans to continue this research over the next two years. The research will include an additional 100 case studies.

3D CT Imaging Used to Evaluate Facial Aging

Researchers at Mita Hospital in Tokyo set out to answer the question, “Why are there differences in facial aging among different people?”

The facial expression muscles contributing to facial aging are mainly distributed around the eyes and mouth. Fat tissue also contributes to the level of facial aging. Malar fat pads are maximal fat pads in cheeks. Facial 3D images indicate the level of the malar CT slices (a,b,c).

Researchers at Mita Hospital in Tokyo set out to answer the question, “Why are there differences in facial aging among different people?”

Although incidents of elder abuse are increasing as America ages, it is difficult to determine whether such abuse is contributing cause of death without a full conventional autopsy—even where allegations of abuse are limited to nonphysiologic issues, said Barry Daly, M.D., who discussed the study, “Utility of Whole-body Post-Mortem Computed Tomography Imaging in Detection of Elder Abuse and Neglect: Comparison with and Potential Substitution for Standard Autopsy,” during an RSNA 2010 presentation.

“PMCT can assist the medical examiner in investigating suspected elder abuse and help determine if a full autopsy is required, or may be avoided, on the basis of PMCT and other investigations,” said Dr. Daly, a professor of radiology, chief of abdominal imaging and vice-chair of research at the University of Maryland Medical Center in Baltimore, which has a new, $56 million forensic medicine center on its campus.

“Elder abuse is not well understood,” Dr. Daly said. “We’re concerned that it is underdiagnosed and under-reported.”

The Office of the Chief Medical Examiner is legally allowed to determine whether a conventional autopsy is necessary in every case; however many families would prefer to forgo the procedure if possible, Dr. Daly said. While ordinary X-rays may be used to detect elder abuse, CT offers greater sensitivity, he added.

“There’s no question that we found CT to be a very helpful substitute for autopsy in detecting injuries suggestive of elder abuse and/or neglect,” Dr. Daly said. “We think this is a reliable triage tool that may help the medical examiner determine the need for conventional autopsy when allegations of elder abuse are made.”

While the law requires suspected child abuse to be reported, the law should include adult abuse, said David Fowler, M.D., Maryland’s Chief Medical Examiner and a collaborator on the study.

Post-mortem CT Aids in Detecting Suspected Elder Abuse

Whole-body post-mortem CT (PMCT) can detect or exclude suspicious skeletal injuries indicative of elder abuse and may be used as a triage tool to help determine the need for conventional autopsy, according to a new study.

Poster authors Barry Daly, M.D., and colleague Paul Hettler, M.D., at the University of Maryland Medical Center in Baltimore, presented the study, “PMCT Concordant with Conventional Autopsy,” during an RSNA 2010 meeting.

In the study of 52 deceased men and women with associated allegations of elder abuse, PMCT and subsequent conventional autopsy were performed within 24 hours of death. The 12 men and 40 women in the study ranged from 52 to 93 years of age.

Using conventional autopsy as the standard of reference, radiologists experienced in interpreting images identified the scans for potentially suspicious injuries, evidence of potential neglect and other major findings.

Results showed that PMCT was concordant with conventional autopsy for evidence of or absence of elder abuse in all cases. Dr. Daly said. PMCT found multiple previously unreported fractures of varying age consistent with elder abuse in one of the 52 cases.

Recent fractures consistent with cardiac resuscitation or typical accidental trauma were detected on PMCT in 18 out of 52 cases and five out of 52, respectively. As conventional autopsy, those fractures were undetected in seven of the 18 cardiac resuscitation cases, and four of the five accident cases, respectively.

Findings also showed that PMCT misinterpreted an undischarged cervical fracture in the setting of severe degenerative disease and identified decubitus ulcers in 14 out of 52 cases, nine of which were unreported at conventional autopsy.

The cause of death was determined by PMCT in 24 out of 52 cases whereas conventional autopsy made the determination in 50 out of 52 cases, results showed.

“We did not see enough positive cases to adequately test for the possibility of false negative results on the PMCT studies,” Dr. Daly said.

“It is necessary to understand the anatomy of facial muscles and physiological changes to understand facial aging,” said Itsuko Okuda, M.D., of the Department of Diagnostic Radiology, International University of Health and Welfare, Mita Hospital—was to present clinical, radiographic and anatomic features of aging in both the young and old.

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These articles were adapted from stories that appeared in the RSNA 2010 Daily Bulletin. Coverage of RSNA 2010 is available at RSNA.org/news.
Early in his career, Dr. Peterfy, an internationally recognized researcher in musculoskeletal imaging, developed the “self-financing” structures that funneled revenue back into musculoskeletal clinical trials, fracture healing and other musculoskeletal disorders. In 1998, Dr. Peterfy co-founded CCBR-SYNARC and served as chief medical officer until leaving to form Spire Sciences, Inc., based in San Francisco, Calif. in 2009. “Researchers who are trying to do something new also need to find novel ways of funding their ideas,” Dr. Peterfy said. “It may seem daunting at first, but it’s really quite liberating.”

A two-year, $90,000, Nycomed (now GE Healthcare)/RSNA Research Scholar Grant in 1994 served as a catalyst for merging his business and research interests, he said.

**Pharmacology Tied to Arthritis Research**

After earning his doctorate in pharmacology and toxicology along with his medical degree from McGill University in Montreal, Dr. Peterfy began his imaging research career at the University of California, San Francisco (UCSF). He worked alongside Harry K. Genant, M.D., co-founder of CCBR-SYNARC, and professor emeritus of radiology, orthopedic surgery, medicine and epidemiology at UCSF. “Through my background in pharmacology and radiology, I had long contemplated using imaging to advance drug development,” Dr. Peterfy said. “It was in this context that Harry Genant was using imaging in clinical trials in osteoporosis. I sought him out with the hope of working with him at UCSF and emulating his service in osteoporosis within other therapeutic areas.”

Because osteoarthritis and rheumatoid arthritis were two highly prevalent and debilitating diseases lacking effective treatments as well as serious attention from radiology researchers at the time, Dr. Peterfy opted to focus on those areas: “Those fields were trapped in the past, using last century’s imaging,” he said. “Somehow they hadn’t found a way to leverage modern imaging technologies to benefit their patients, so I targeted them—especially in terms of MR applications.”

Dr. Peterfy led the arthritis division of Dr. Genant’s Osteoporosis Research Group. As new techniques emerged, the group’s name was changed to the Osteoporosis and Arthritis Research Group.

**Business Model Springs from R&E Grant**

Dr. Peterfy’s R&E-funded project laid the foundation for the Whole-Organ MR Imaging Score (WORMS) method, widely used in arthritis imaging research and clinical trials today. “R&E grants are extremely important in helping young investigators like Dr. Peterfy find their place and establish a foundation for building further research support,” Dr. Genant said. “Dr. Peterfy has gone on to become a major force in introducing MR imaging to rheumatoid arthritis and osteoarthritis.”

“That project also helped move me to be more dedicated to—and to derive my income primarily from—clinical research,” Dr. Peterfy said. Dr. Peterfy’s necessary interface with the pharmaceutical industry led to his creation of a business model that funneled revenue back into research. Just four years after receiving the R&E-funded grant, Dr. Peterfy worked with Dr. Genant and other UCSF team members to found CCBR-SYNARC, a leader of medical image analysis services to pharmaceutical and biotechnology industries. “The company grew pretty quickly, peaking at around 200 employees worldwide with 17 offices in 11 countries on four continents,” Dr. Peterfy said. “Over the years, we helped bring more than 20 new therapies into clinical use, and today those therapies are used by hundreds of millions of people around the world.”

In 2009, Dr. Peterfy left CCBR-SYNARC to found Spire Sciences, which he says is unique in its exclusive focus on image analysis as opposed to image data management. The company employs in-house radiologists who specialize in clinical trials. “By image analysis,” Dr. Peterfy explained, “I mean designing imaging protocols that allow multiple imaging facilities around the world to acquire and store images using a variety of methods specialized for clinical trials research.”

**World Health Focus of Clinical Trials**

In addition to the WORMS method, Dr. Peterfy helped introduce numerous methods currently used in clinical trials—the fixed-flexion knee radiography technique, the SynaFlexer positioning device and projection phantom for reproducible knee radiography and fixed-location joint-space width measurement for monitoring osteoarthritis progression. He also co-developed the Rheumatoid Arthritis MR Imaging Score (RAMRIS) and Poietic Arthritis MR Imaging Score (PAMRIS) as part of the Outcome Measures in Rheumatology Clinical Trials (OMERACT) working group. Dr. Peterfy also invented the X-frame and M-frame positioning devices designed to reduce errors in radiography and create reproducible MR imaging in arthritis clinical trials.

In addition, Dr. Peterfy chairs the Imaging Working Group of the National Institutes of Health Osteoarthritis Initiative and co-founded the International Society for Extremity MRI in Rheumatology.

**Our overall objective is to improve world health by helping bring new therapies into clinical use faster, particularly for chronic diseases like osteoporosis, osteoarthritis, rheumatoid arthritis, cancer and Alzheimer disease, all of which still have huge untapped medical needs that could benefit from direct and specialized attention from radiology.”** Dr. Peterfy said.

**Serial MRI in Rheumatoid Arthritis**

Serially acquired MR images of the wrist of a patient with rheumatoid arthritis from a clinical trial show development of bone erosions in the radius (center) and loss of cartilage between the radius and lunate in only three months. Over the following three months, these erosions have enlarged and a new erosion has developed in the lunate. The scoring methods that R&E Foundation grant recipient Charles Peterfy, M.D., Ph.D., helped develop, RAMRIS and MRI-JSN, provide standardized ways of quantifying such changes in clinical trials and thus testing the efficacy of putative new therapies.

Dr. Peterfy, Olex, DiCarlo, et al. European League Against Rheumatism 2010

**GRANTS IN ACTION:**

**NAME:** Charles Peterfy, M.D., Ph.D.

**GRANT RECEIVED:** 1994 two-year, $90,000 Nycomed (now GE Healthcare)/RSNA Research Scholar Grant.

**STUDY:** “Quantitative Applications of MRI in the Evaluation of Arthritis.”

**CAREER IMPACT:** Serving as a catalyst for merging Dr. Peterfy’s business and research interests, the study funded by the R&E grant laid the foundation for the Whole-Organ MR Imaging Score (WORMS) method widely used in arthritis imaging research and clinical trials today, and led to the creation of two successful image analysis companies.

**CLINICAL IMPLICATIONS:** In addition to the WORMS method, Dr. Peterfy helped design and execute more than 50 multi-site clinical trials in rheumatoid arthritis, osteoarthritis, fracture healing and other musculoskeletal disorders. For more information on all R&E Foundation grant programs, go to RSNA.org/Foundation or contact Scott Walker, M.S., Assistant Director, Grant Administration at 1-630-571-7816 or swalter@rsna.org.

**“Researchers who are trying to do something new also need to find novel ways of funding their ideas. It may seem daunting at first, but it’s really quite liberating.”**

Charles Peterfy, M.D., Ph.D.
Radiologists Urged to Focus on Daily Impact of Healthcare Reform

Radiologists facing new provisions under the sweeping healthcare reform law are advised to look at them from the viewpoint of their effect on what one team of experts calls the three P’s: payment, practice and patients.

“There is no question that medical imaging is of substantial added value in diagnosis and that insuring a greater percentage of the population will lead to greater demand for imaging services.”

Christopher Buckle, M.D.

The unpopular but mandated cuts in physician Medicare compensation—deferred by Congress since 2003—present another financial challenge. A permanent solution to the problem would cost more than $300 billion and require bipartisan support. Instead, President Obama in December 2010 signed a law creating a one-year delay of the 21 percent Medicare physician payment cuts originally scheduled to take effect on Jan. 1.

Skysrcking costs are driving healthcare reform, Dr. Buckle said. He cited statistics showing how significantly Medicare spending on medical imaging has exceeded growth in other medical services, doubling between 2000 and 2008 to $14 billion.

“The rapid growth in the volume and cost of such imaging services makes advanced imaging a prime target for cuts,” he said. “For instance, the Deficit Reduction Act of 2005 cut technical fees for freestanding outpatient MR imaging by 55 percent according to some estimates.”

Reimbursement, Compensation Rates Impacted

Medicare reimbursement for each CT and MR study will decrease in anticipation of an expected increase in the equipment utilization rate, from 50 to 75 percent. The higher the utilization rate assumption—the amount of time scanners are pre-sumed to be used during business hours—the lower the per scan reimbursement.

Traditionally, radiology practice would simply increase imaging volume to compensate for falling reimbursement, but new approaches may be neces-sary, according to Dr. Baron. “Increasing demand, more appropriate utilization and an aging population will reward radiologists who are continuing education and technological innovation to improve the efficiency and expertise of their practice,” he said.

Imaging is central to 11 of the top 100 priorities, including, for example, the frequency and indica-tions for using PET/CT in cancer patients. “While comparative effectiveness research may reveal over-utilization and put further pressure on some radiol-ogy practices, it provides an opportunity for radiologists to find better ways to demonstrate the value and cost effectiveness of new imaging methods,” Dr. Baron said. “High quality radiology research will be critical to our success.”

While some may argue that anti–self-referral language in the healthcare reform bill doesn’t go far enough, the new provision is at least a start, Dr. Buckle said.

“Clinicians who have a financial interest in imaging equipment must disclose that interest to their patients,” Dr. Buckle said. “This legislation does not eliminate the ‘in-office’ loophole, but it is a step in the right direction.”

On the heels of a movement toward federal regulation of self-referral, the Maryland Court of Appeals in January upheld provisions of the state’s self-referral law prohibiting physicians from referring patients for MR imaging, CT and radiation therapy services to providers within their own group practice—a verdict Dr. Buckle calls “an encouraging precedent on the costly self-referral issue that will hopefully be adopted by other states.”

Radiologists will Rise to the Challenge

While the current healthcare reforms are the most significant in Medicare’s history, the news is not all “doom and gloom” for radiology, Dr. Buckle said. “There is no question that medical imaging is of substantial added value in diagnosis and that insuring a greater percentage of the population will lead to greater demand for imaging services,” he said.

Concurred Dr. Baron: “Radiology is a field defined by its ability to adapt to new technology, processes and workflows. Healthcare reform will challenge us to use this skill to deliver quality imag-ing that improves patient care.”

This article was adapted from a story that appeared in the RSNA 2010 Daily Bulletin. Coverage of RSNA 2010 is available at RSNA.org/bulletin.
**Mobile Radiology Unit Brings Hope for Fibroid Relief to Underserved Brazil**

**A mobile uterine fibroid embolization (UFE) program implemented in Brazil achieved significant quality of life improvement and nearly 100 percent patient satisfaction, according to results presented at RSNA 2010.**

Dr. Kisilevzky said he was surprised by the reaction and feedback from the patients. "They improved their quality of life and were tremendously happy and grateful," he said. "It seemed they had never expected to have access to medical technology and once they were treated, they noticed how important it was to their lives."

"Hope is certainly the most important feeling we can provide to these people," said Nestor Kisilevzky, M.D., who presented results of a feasibility study.

"We hypothesized that due to acupuncture's sustained effect, use of the typical block-designed model-based analysis may focus on misleading endpoints," Dr. Tian said. Such studies, which focused only on the relationship between acupuncture and spatial patterns, may have missed an important part in defining its mechanism, Dr. Tian said. He and his colleagues adopted the non-repeated, event-related design paradigm, combined with several data-driven analyses, to explore the spatial-temporal characteristics of acupuncture.

Dr. Kisilevzky said, "We know that UFE is a very straightforward procedure that could be efficiently and safely performed using modern state-of-the-art C-arms. This represented a good model for running our feasibility study."
Education, Infrastructure Key to Information Security

It’s every researcher’s worst nightmare. In 2007, someone hacked into a University of North Carolina (UNC) server holding the personal information of 180,000 mammography patients. The data—including approximately 114,000 Social Security numbers—was part of the National Institutes of Health Carolina Mammography Registry, a 15-year project compiling and analyzing data in an effort to improve breast cancer screening.

Although university officials say no one has been charged in the hacking—which was not discovered until 2009—and the university does not believe any information was ultimately removed, the incident nearly cost the primary investigator her job. In lieu of termination, however, university officials opted instead to demote her to associate professor and cut her pay in half. She is appealing the decision before the UNC Board of Trustees, said Karen McCall, UNC spokes-

A perfect storm. While researchers need to get educated, Dr. Chang said. Researchers tend to focus on IRB requirements, often overlooking HIPAA and the Health Information Technology for Economic and Clinical Health Act (HITECH Act) that ramped up HIPAA compliance requirements, especially with respect to security.

What HIPAA and IRB both address patient privacy in a roughly similar way, HIPAA encompasses security as well. “Many investigators are under the common misconception that getting HIPAA training, that is often inadequate and may not keep up with the law’s rate of change,” Dr. Chang said.

Another critical step is involving IT staff early and keeping the department involved throughout the process. “Researchers realize they need to contact a statistician when designing a research project, for example, but many never talk to an IT person about HIPAA security,” Dr. Chang said.

The bottom line is that researchers who store patient information on any server “always run the risk of having it compromised,” Dr. Chang said.

Most institutions lack appropriate IT infrastructure to support modern-day, HIPAA-compliant research,” Dr. Chang said. “Researchers are not IT experts. We need to get away from saddling them with the burden of data security.”

Virtual Database Offers Protection

An obvious way to thwart a security risk is to eliminate personal information from patient data. In 2009, UCMC created its Human Imaging Research Office (HIRO), to acquire, analyze, collect, distribute and anonymize image data for UCMC investigators and research staff. This includes access and support for the University’s Electronic Honest Broker Systems, which allow investigators to obtain HIPAA- and IRB-compliant clinical research data automatically and electronically.

Researchers essentially make data requests to HIRO, which strips out personal information such as names and Social Security numbers, replacing them with an IRB identifying code number. “We give researchers back the list of research subject identifier numbers and say, ‘Here are your research subjects... anytime you want the data you can access it through the website,’” Dr. Chang said.

“All of the information is protected and individual investigators never have to build their own databases,” Dr. Chang said. “No data is stored locally and the burden is no longer on researchers. They are free to concentrate on their jobs.”

Currently available only through UCMC’s Imaging Institute, Dr. Chang is working with others at the university to expand the program throughout the enterprise. He also encourages other institutions to invest in the IT systems that are beneficial not only for patients and researchers but also the institutions that have a lot to lose in the event of a security breach.

In the wake of the UNC incident, the university paid $250,000 to notify roughly 180,080 patients and set up a call center to field questions about the breach, McCall, UNC’s spokeswoman said.

“Investments that turn off the kind of money up front to build the appropriate system won’t get in these problems to begin with,” Dr. Chang said.

“Heightening awareness is becoming critical as researchers grapple with healthcare privacy and security requirements and data breaches become commonplace.”

Paul Chang, M.D.
The following donors made gifts to the RSNA Research & Education Foundation between November 20 and December 10, 2010. They were:

- Companies supporting endowments and term funding for named grants
- Vanguard Program
- A giving program for private practices and academic departments

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**Annual Donors**

- Those who give $5,000 or more per year for quality for the RSNA Presidents Circle. Their names are shown in bold face.

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**RSNA News**

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**Visionary Donor Program**

- Individuals recognized for cumulative lifetime donations

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**Exhibitors Circle**

- Companies who give annual unrestricted gifts at four levels from $2,500 to $25,000

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**Microsurgical Medical List**

- RSNA News

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**Microsurgical Medical List**

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**Visionaries in Practice**

- A giving program for private practices and academic departments

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**Greenwelds Radiology, Greensboro, N.C.**

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**Continued on next page**
“MR imaging mapping of skeletal muscle denervation in entrapment and compressive neuropathies.”

**Journal Highlights**

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

### Radiology

- MR Imaging Mapping of Skeletal Muscle Denervation in Entrapment and Compressive Neuropathies

Although using MR imaging to diagnose or compressive entrapment or demonstrating nerve compression lesions with MR imaging is sometimes difficult. Nevertheless, even in these cases, MR imaging may show denervation-associated changes in specific muscles innervated by the affected nerves.

In the March-April issue of *Radiology (RSNA.org/Radiology)*, Jolene Kim, MD, of Seoul National University College of Medicine, Seoul, Korea, and colleagues described MRI imaging patterns of denervated muscles caused by specific entrapment or compressive neuropathies in upper and lower extremities and demonstrated the essential utility of MRI for diagnosing those neuropathies by mapping muscle denervation. Specifically, the authors detail:

- Typical MRI findings of muscle denervation in different stages
- Normal anatomy and variants

Advantages of MR imaging mapping of muscle denervation in managing patients with peripheral neuropathies:

- The relevant area of the peripheral nerves is crucial to understanding the MRI imaging patterns of muscle denervation caused by specific neuropathies, the authors write.

Muscle denervation may be the only MR imaging sign of an entrapment or compressive neuropathy and thus can be useful for the diagnosis and localization of muscle denervation. Therefore, mapping muscle denervation may also help determine the level of affected nerve and assist in surgical planning and management of patients.

### Radiologic Intervention and Imaging for Gastrointestinal and Hepatic Applications: Implications of Hematopoietic Stem Cell Transplantation

Abdominal imaging and intervention play an important role in early, minimally invasive diagnosis and treatment of graft-versus-host disease (GVHD) and veno-occlusive disease—unique and deadly complications of hematopoietic stem cell transplantation. Urgent and accurate diagnosis of these diseases may be life-saving, especially in the acute phase or in clinically ambiguous cases. Abdominal plain radiography, ultrasound and CT imaging generally reveal nonspecific signs of disease, but understanding the diagnostic and therapeutic implications of findings within the clinical setting may guide management, according to an article in the March issue of *Radiology (RSNA.org/Radiology)*, by Samuel M. Magrighfer, MD, Hebrew University Medical Center, Jerusalem, Israel, and colleagues.

- In cases where the diagnosis is unclear and liver biopsy is required, image-guided transvenous liver biopsy may be a safer and more practical option than the transcutaneous approach, according to researchers.
- “Image-guided interventions, including intraoperative steroid-injection therapy in severe, systemic steroid-refractory GVHD and transjugular intrahepatic portosystemic shunt placement in veno-occlusive disease with portal hypertension, have shown some promise in small, uncontrolled series,” researchers concluded. Larger, controlled studies need to define the role of these invasive procedures in this patient population, they said.

### Plain abdominal anteroposterior radiograph in a 34-year-old woman with acute gastrinomas.

**Distal ulcer nerve denervation pattern in a 40-year-old man with Sydenham syndrome.** Distal short inversion-time inversion-recovery (STIR) MRI image (4828/30) of the left hand shows abnormal hypersensitivity of the muscles innervated by the distal ulnar nerve. + flexor digiti minimi, * z opponens digiti minimi, + adductor pollicis, — interosseous muscles.

Future angle determinations made by using a PACS angle tool will differ from the actual angles at which the phantoms were shot. In an in vitro study, Les R. Folio, D.O., M.P.H., of the Uniformed Services University of the Health Sciences in Bethesda, Md., and colleagues evaluated the accuracy of CT-based ballistic wound path identification in phantoms by determining the agreement between actual shooting angles and trajectory angles determined by using MCT with either a PACS measurement tool or x, y, z coordinates of the entrance and exit points. Results demonstrated the feasibility of consistent wound path identification and the accuracy of trajectory angle determination in models with use of MCT.

“Based on our findings, we can be 95 percent confident that future angle determinations made by using a PACS angle tool will differ from the actual shooting angles by no more than 4.5°,” the researchers concluded.

Media Coverage of RSNA

In January 2011, media outlets carried 4,175 RSNA-related news stories. These stories reached an estimated 2.6 billion people.


Broadcast coverage included CNN, CNN Headline News, WGN America, FOX News Channel, CBS Radio Network, WNYW-TV (New York), WLS-TV (Chicago), WBBM-AM (Chicago), WJZ-TV (Baltimore), KMOV-TV (St. Louis), WMAG-TV (Atlanta), WFAA-TV (Dallas) and WIP-TV (Philadelphia).


For Your Benefit

Cases of the Day Now Online

One of the most popular programs at RSNA annual meetings, Cases of the Day from RSNA 2010 are now available online—an option that offers a unique set of benefits for participants.

“Cases of the Day generate a lot of conversation and excitement at annual meeting, but in some ways, they are better online,” said Claire E. Bender, M.D., chair of the RSNA Education Exhibits Committee.

“When you view them online you can still test your skills, but you don’t have to wait to get the answer.”

In the Cases of the Day area at the annual meeting, image-based case scenarios in 14 different radiology subspecialties are presented to participants who submit diagnoses for five consecutive days and check for the correct answer the following morning.

In the online format, participants who view the RSNA 2010 cases and submit diagnoses can immediately see the correct answer and view the discussion for each case.

Residents Want Help Finding Fellowships, Transitioning to Practice

With available radiology fellowships currently posted on a variety of websites, pulling all the information together in a central location would help applicants find the opportunities that best match their experience and interest, said many participants in a recent RSNA survey.

Fifty residents and fellows responded to the survey conducted in the Residents Lounge at RSNA 2010. They noted that having to search multiple websites for fellowship postings can be frustrating, such as when they discover a fellowship after the application deadline has passed or are unable to identify opportunities in their subspecialty.

Residents and fellows also expressed a desire to be better prepared to go into practice, with its complicated process of signing contracts, credentialing and other issues.

Also addressed in the survey were the Graduated Dues Program, Research & Education Foundation grants, Resident Learning Portfolios and medical student membership.

RSNA is currently working with its Resident and Fellow Committee to use the survey results to develop and enhance programs that best meet the needs of members in training.
RSNA Introduction to Research for International Young Academics

The RSNA Committee on International Relations and Education (CIRE) seeks nominations for this program that encourages young radiologists from countries outside North America to pursue careers in academic radiology by:

• Introducing residents and fellows to research early in their training
• Demonstrating the importance of research to the practice and future of radiology
• Sharing the excitement and satisfaction of research careers in radiology
• Introducing residents to successful radiology researchers, future colleagues and potential mentors

The program consists of a special four-day seminar held during the RSNA Scientific Assembly and Annual Meeting. CIRE recommends 15 international young academics for consideration by the RSNA Board of Directors each year. Complimentary registration, shared hotel accommodation for the duration of the program and a stipend to help defray travel expenses are awarded to successful candidates.

Eligible candidates are residents and fellows currently in radiology training programs or radiologists not more than two years out of training who are beginning or considering an academic career. Nominations must be made by the candidate’s department chairperson or training director. Fluency in English is required. Nomination forms are available at RSNA.org/RBIA.

Web Tool Assists French Residents

EAST IN HIS CAREER as a French radiology resident, Julien Savatovsky, M.D., parlayed his membership in the Association Parisi- enne des Internes en Radiologie (APIR) into a Web tool that connects French radiology residents with another resource critical for radiologists: RSNA membership.

In 2003, the APIR president asked Dr. Savatovsky to find out whether RSNA journals Radiology and RadioGraph- ics were accessible to French radiology residents. “After a quick look at the RSNA website, I found the member-in-training section and contacted RSNA to see whether it was applicable to overseas residents,” Dr. Savatovsky said. “It was.” Because of the language barrier and differences in medical degrees, Dr. Savato- vsky had some difficulty understanding portions of the online membership application. “We felt that more French residents would bene- fit from RSNA membership if we promoted it and found an easier way for them to apply,” he said.

Soon after, Dr. Savatovsky created a tool on the APIR website (www.apir-radio.com) that answers frequently asked questions about completing RSNA’s online membership application and explains parts of the process that could be misunderstood by non-American residents. Dr. Savatovsky also assisted RSNA in translating the application into French. Now on staff at the Fondation Adolphe de Rothschild Ophthalmol- ogy in Paris, Dr. Savatovsky has attended four RSNA annual meetings and con- tinues to tout the benefits of membership. “Although France has the Société Française de Radiol- ogy and subspecialty societies that offer high-quality publi- cations and annual meetings, residents are especially lucky to have access to the amazing additional educational free resources from RSNA.”

For more information about RSNA membership, go to RSNA.org or contact the Membership Department at 1-877-RSNA-MEM (1-877-776-2666) or membership@rsna.org.

RSNA Clinical Trials Methodology Workshop

Over the course of this 6½-day workshop, each trainee will be expected to develop a protocol for a clinical study, ready to include in an application for external funding. Participants will learn how to develop protocols for the clinical evaluation of imaging modalities. A dynamic and experienced faculty will cover topics including:

• Principles of clinical study design
• Statistical methods for imaging studies
• Design and conduct of multi- institutional studies
• Sponsorship and economics of imaging trials
• Regulatory processes

Applicants will undergo a competitive selection process for course entrance. Once successful, trainees will participate in advance preparation, didactic sessions, one-on-one mentoring, group discussions, self-study and individual protocol development. Familiarity with basic concepts and techniques of statistics and study design is required of all applicants.

For more information, contact Fiona Millar at 1-630-590-7741 or fmillar@rsna.org. Learn more about projects conducted by alumni of the Clinical Trials Methodology Workshop in the April issue of RSNA News.

RSNA Clinical Trials Methodology Workshop

Application Deadline—April 15

January 14-20, 2012
Scottsdale/Phoenix, Ariz.
Applications due June 6

RSNA News | March 2011

For Your Benefit

Savatovsky

For Education and Funding Opportunities

RSNA Eyler Editorial Fellowship

Candidates are sought for the RSNA Eyler Editorial Fellowship, sponsored by the RSNA Publications Council and the Committee on International Relations and Education (CIRE). Named after William R. Eyler, M.D., a former editor of Radiology, the fellowship is designed to provide an opportunity for a mid-career radiologist to further his/her experience in radiologic journalism. Working with Radiology and Radiographics editors and RSNA publications staff, the fellow will learn about manuscript preparation, peer review, manuscript editing, journal produc-

For more information on eligibility requirements and to apply, go to RSNA.org/Publications/editorial Fellowships.cfm.

RSNA Clinical Trials Methodology Workshop

For more information, contact Fiona Millar at 1-630-590-7741 or fmillar@rsna.org. Learn more about projects conducted by alumni of the Clinical Trials Methodology Workshop in the April issue of RSNA News.
RSNA 2011 Registration

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Important Dates

- **March 31**: Deadline for abstract submission
- **May 4**: RSNA/AAPM member registration and housing open
- **June 1**: General registration and housing open
- **July 6**: Course enrollment opens
- **October 21**: Deadline for international mailing
- **November 4**: Deadline for housing and discounted registration
- **Nov. 27 – Dec. 2**: RSNA 97th Scientific Assembly & Annual Meetng

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

RSNA News

**COMING IN APRIL**

Mentors can produce more successful practicing radiologists, guide them into academic practice and research and cultivate future leaders. Next month, RSNA News examines the key role mentors play in guiding residents through all phases of their careers and compares the success of self-selecting versus being assigned a mentor.

**Virtual RSNA 2010 Available at RSNA.org**

The virtual annual meeting at RSNA.org/virtual2010.cfm allows visitors to experience, or revisit, portions of RSNA 2010:

- **More than 1,200 education exhibits and scientific posters in numerous subspecialties (access limited to RSNA 2010 attendees and RSNA members)**
- **Handouts for select RSNA 2010 refresher courses**
- **Award-winning education exhibits**

A searchable meeting program is also available through the virtual meeting site. The site will be updated with new content throughout the year.

**ISR Virtual Congress Opens in April**

The third International Society of Radiology (ISR) virtual congress will be launched on the society’s website (www.isradiology.org) in April.

Patterned after the first two virtual congresses in 2007 and 2009, the third congress also offers special features from national radiology societies in Korea, France, Russia and Brazil and contains scientific lectures, case studies and electronic posters. The virtual congresses in English have been the best received educational presentations on the ISR website and will remain on the site indefinitely.

Radiologists who wish to participate can fill out an electronic application on the ISR website. Enrollees will be added to an ISR electronic list and sent notices of new website features.

**Announcement**

Seema Salehi-Bird, M.B.C.H.B., M.R.C.S., of the Department of Radiology at University Hospital North Staffordshire in Stoke-on-Trent, Staffordshire, United Kingdom, is the winner of the $500 voucher good toward the purchase of airfare to attend RSNA 2011. RSNA 2010 attendees who booked air travel through Gant Travel by Oct. 1, 2010, were entered into a drawing to receive the travel credit.

**Wayfinders Post Impressive Numbers**

Finding their destination was easier than ever for RSNA 2010 attendees thanks to the new “wayfinding” units located throughout public areas and exhibit floors at McCormick Place. Introduced at RSNA 2010, the technology scored big with attendees who occasionally formed lines to use the navigational machines. “I prefer it to the big book, it’s less cumbersome,” said Amy Chambers, a lawyer from Grand Rapids, Mich., a general counsel for a large radiology service who was searching for a room location. More than a dozen of the interactive digital units featured touch screens that helped guide attendees with interactive maps, search engines for exhibitors, sessions and posters, and facility information and schedules. Wayfinders were used 582,268 times, including 12,709 exhibitor searches, 134 requests for information, 3,198 session searches and 548 poster locator searches. A total of 1,367 maps were printed at RSNA 2010.

**RSNA 2011 Registration**

The easy-to-use online system helps the Scientific Program Committee and Education Exhibits Committee evaluate submissions more efficiently. For more information about the abstract submission process, contact the RSNA Program Services Department at 1-877-776-2227 within the U.S. or 1-630-590-7774 outside the U.S.

Submit Abstracts by March 31

The online system to submit abstracts for RSNA 2011 is now active. New this year, the submission deadline is 12:00 p.m. Central Time on March 31. Abstracts are required for scientific presentations, education exhibits, applied science and quality storyboards.

To submit an abstract online, go to RSNA.org/abstracts.

**RSNA 2011 AIRFARE WINNER OF RSNA**

Trent, Staffordshire, United Kingdom, is the winner of the 2011 airfare voucher good toward the purchase of airfare to attend RSNA 2011. RSNA 2010 attendees who entered into a drawing to receive the travel credit.

**Impressive Numbers**

- 1,367 maps printed at RSNA 2010.
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**Wayfinding**

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**Registration Fees**

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- RSNA/AAPM Member Presenter: $0
- RSNA Member-in-Training, RSNA Student Member and Non-Member Student: $0
- Non-Member Presenter: $0
- Non-Member Resident/Trainee: $145
- Radiology Support Personnel: $165
- Non-Member Radiologist, Physician or Physician: $750
- Hospital or Facility Executive, Commercial Research and Development Personnel, Healthcare Consultant and Industry Personnel: $750
- One-day registration to view only the Technical Exhibits: $300

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**RSNA.org**

**WINNER OF RSNA 2011 AIRFARE ANNOUNCED**

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To submit an abstract online, go to RSNA.org/abstracts.
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