

## Combining Academics and Business:

Grant Recipient Develops Imaging Reporter Genes for Cellular Immunotherapy

**Shahriar Yaghoubi, Ph.D., M.B.A.**, merged the fields of cellular immunotherapy for autoimmune diseases and molecular imaging to develop imaging reporter genes, which can help customize treatment for patients.

With a 2003 Agfa HealthCare/RSNA Research Fellow grant and the guidance of three scientific advisors at Stanford University, including world renowned molecular imaging expert **Sanjiv “Sam” Gambhir, M.D., Ph.D.**, and immunology experts **C. Garrison Fathman, M.D.** and **Remi J. Creusot, Ph.D.**,

Dr. Yaghoubi was able to pioneer this new combined field.

“The fellowship allowed me to work on a clinical trial that for the first time demonstrated imaging of cells in humans with a reporter gene technology. My interests have always been in academia, however, Dr. Gambhir and I both recognized that pairing business with science and following a path of entrepreneurship would suit me well,” said Dr. Yaghoubi. It was that thinking that launched a startup company

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(Above) During the period of RSNA funding, Dr. Yaghoubi began work that led to the first Investigational New Drug approval from the United States FDA for an imaging reporter probe: [18F]FHBG.

[18F]FHBG has been used to image expression of therapeutic transgenes and location of therapeutic cells in cancer patients.

Figure: [18F]FHBG head PET images superimposed over corresponding MRI images of therapeutic Targeted Cytolytic T Cells (CTL) illustrating increased [18F]FHBG accumulation after CTL infusions at the recurrent glioma tumor resection site. Images acquired approximately 2 hours after bolus intravenous [18F]FHBG injection.

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to commercialize molecular imaging technologies for the cell and gene therapy industries.

That startup company is now known as CellSight Technologies, Inc., a privately held biotechnology company based in San Francisco. CellSight enables cell and gene therapies in living subjects through the use of imaging technologies, and offers custom imaging research services and prepackaged molecular

imaging kits targeted at companies and academic institutions with the need for molecular imaging—Dr. Yaghoubi serves as the Chief Scientific Officer.

CellSight is developing and providing mainly PET imaging technologies for tracking cell and gene expression kinetics in pre-clinical as well as clinical studies. Currently, the pre-clinical studies are all translational and CellSight's clients and collaborators are hopeful they will form the basis for imaging studies

in clinical trials. Right now most of the projects are related to cancer, but the technologies are generally applicable to other diseases, such as cardiovascular and autoimmune diseases.

Dr. Yaghoubi remains active in research, currently serving as principal investigator on a joint National Institutes of Health (NIH) R01 grant between CellSight and the University of California, Los Angeles.

## Past Grant Recipient Named Michigan State University Department Chair

On August 1, 1993 Nycomed Inc./RSNA Research Seed Grant and 1996 Fuji Photo Film/RSNA Research Scholar Grant recipient **Suresh K. Mukherji, M.D.**, was named professor and chairperson of the Michigan State University Department of Radiology and holds the W. F. Patenge Endowed Chair. Prior to his chairmanship at Michigan State, Dr. Mukherji served as division director of neuroradiology at the University of Michigan.

Dr. Mukherji has been active in RSNA and R&E activities the past two decades, including most recently as a member of the RSNA Oncologic Imaging and Therapies Task Force and Co-Chairman of the ASTRO Symposium Program Planning Committee. He currently serves on the R&E Foundation Public Relations Com-



**Suresh K. Mukherji, M.D.**

mittee and the Neuroradiology/Head and Neck Scientific Program Committee.

Dr. Mukherji also graciously lent his expertise to the R&E grant review



Dr. Mukherji shown here receiving his award with past RSNA President and 1996 R&E Board of Trustees Chair Robert G. Parker, M.D.

process by serving as a member of the Research Study Section and continues to support the Foundation as a Presidents Circle donor.

## Research Scholar Takes Leadership Role

Research Scholar Grant recipient **David R. Piwnica-Worms, M.D., Ph.D.**, has been named Chair of Cancer Systems Imaging and deputy division head for research affairs at the Division of Diagnostic Imaging at The University of Texas MD Anderson Cancer Center. Dr. Piwnica-Worms began his research career with a Squibb Diagnostics/RSNA Research Scholar Grant in 1989 when he investigated uptake mechanisms of Tc-99m based myocardial perfusion

agents in heart cells. Since that time, Dr. Piwnica-Worms has become the foremost expert in combining functional genomics with molecular imaging to capture molecular processes in action.

"Molecular imaging is a set of tools and strategies to take a noninvasive, repetitive and dynamic look at



**David R. Piwnica-Worms, MD Ph.D.**

cancer in its native state," Piwnica-Worms said. "We will still do microscopy and conventional molecular biology, but our long-term goal is to drive our inquiries to the whole animal and even into patients to understand what cancer cells are doing in the host."



# R&E Education Grants Fuel the Development of Unique Online Resources

*ContrastRxn* is a web-based program designed to teach contrast reaction management through interactive simulated scenarios for both trainees and practicing radiologists who need a refresher on how to manage contrast reactions.

With an RSNA/AUR/APDR/SCARD Education Research Development Grant, **Carolyn Wang, M.D.**, Clinical Assistant Professor at the University of Washington has shown this interactive teaching module to be as effective as the more expensive hands-on, high-fidelity simulation training.

“Due to the rarity of allergic-like reactions to contrast media agents, there is a lack of standardization in the training of radiologists in the management of these potentially life-threatening events,” said Dr. Wang. This web-based program is designed to enhance the training

received by radiology residents and fellows using simulations of clinically relevant contrast reaction scenarios. The user navigates through various scenarios, determining the type of contrast reactions and deciding various treatment options, including administration of medication, and experiences real-time changes in patient status based on his/her choices. By exposing radiologists to simulations of contrast reactions they are less likely to compromise the safety of patients in the hospital and out-patient settings. It also has the potential to aid radiology residency programs to meet the milestone requirements for contrast reaction training in a widely available, cost-effective, and time efficient manner.

*ContrastRxn* can be viewed at <http://depts.washington.edu/rxnmgmt/>.

*“Due to the rarity of allergic-like reactions to contrast media agents, there is a lack of standardization in the training of radiologists in the management of these potentially life-threatening events.”*

**Carolyn Wang, M.D.**

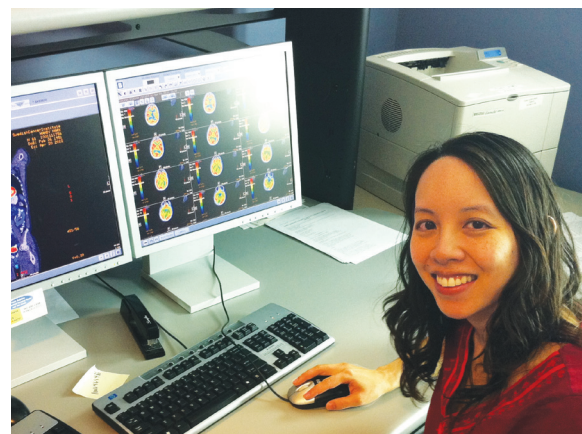
*Value of Imaging* ([valueofimaging.com](http://valueofimaging.com)) is an educational repository and a one-stop-shop for Economics of Diagnostic Imaging, a project under development by GE Healthcare/RSNA Education Scholar Grant recipient **Saurabh Jha, M.D.**, Assistant Professor of Radiology at the Hospital of the University of Pennsylvania. The purpose is to introduce radiologists in training and practice, and others involved with medical imaging, to the fundamental principles in assessing the value of a diagnostic test.

“With the spotlight on medical imaging shining more ferociously than ever, it would be wise for the imaging community to take the lead in answering the following questions:

- When is a medical imaging test worth doing?
- When is a medical imaging test not worth doing?
- How do we assign a value to a worthwhile medical imaging test?
- How do we reduce the use of medical imaging tests that are not worth doing?

The educational material here will provide a framework to answer these questions,” said Dr. Jha. “It is hoped that it will, at least, convince imagers that these questions need to be answered and answered by us rather than for us.”

Dr. Jha’s website is dynamic and will evolve as feedback and commentary is received.




*Dr. Carolyn Wang’s program serves as a resource for contrast reaction management by using simulated scenarios.*



*Dr. Saurabh Jha’s project addresses the economics of imaging.*

Interested individuals are invited to share comments with Dr. Jha directly via email at [saurabh.jha@uphs.upenn.edu](mailto:saurabh.jha@uphs.upenn.edu).

# R&E Grant Recipients Play Integral Role in RSNA 2013 Programming

When RSNA meeting attendees peruse the course offerings for this year's assembly in Chicago, they will see the R&E Foundation logo  throughout the program book. The familiar logo is placed beside current and past grant recipients presenting at the annual meeting.



**Paul M. Harari, M.D.**

Nearly 300 R&E grant recipients continue to support and lead our specialty by sharing their knowledge through programming. From session authors, presenters,

and moderators to scientific paper and poster presenters, the impact of grant recipients is evident in so many of the lecture rooms in McCormick Place.

Notably, on Wednesday, December 4, 1993 Research Scholar Grant recipient **Paul M. Harari, M.D.** will deliver the prestigious Annual Oration in Radiation Oncology – Beneficial Liaisons: Imaging and Therapy.

Additional sessions featuring R&E grants recipient include:

## **Sunday, December 1**

LL-PDS-SU5A

*Maturation of White Matter and Grey Matter is "Out-Of-Sync" in Premature Born Infants*

**Ashok Panigrahy, M.D.**



## **Monday, December 2**

VSMK21-10

*Association of ACL and Anterior Horn Lateral Meniscus Root Ligament Anatomy and Pathology: 11.7 T MRI Anatomic Study with Retrospective Review of 500 Knee MRIs*

**Christine B. Chung, M.D.**

## **Tuesday, December 3**

SSJ15-05

*Axonal Degeneration in Alzheimer Disease: Functional Investigation with Dynamic Manganese-enhanced MR Imaging*

**Christopher A. Potter, M.D.**

## **Wednesday, December 4**

SSK20-09

*Analysis of Treatment Response of Bladder Cancers on CT Scans: Comparison of Computerized Volume Estimation with WHO and RECIST Criteria*

**Elaine M. Caoili, M.D., M.S.**

## **Thursday, December 5**

LL-ROS-TH2B

*Neurocognitive Outcomes following Total Body Irradiation and a Cranial or Craniospinal Boost Prior to Stem Cell Transplantation in Pediatric Leukemia Patients with CNS Involvement*

**Susan M. Hiniker, M.D.**

## R&E Interactive Donor Search

At the 2013 Scientific Assembly and Annual Meeting and online throughout the year, you can view the names, photos, logos, and quotes from the generous individuals, corporations, practice groups, academic groups, and foundations who support our mission. During RSNA 2013, please visit the R&E Foundation in the Lakeside Center at McCormick Place or visit our website today at [RSNA.org/donorsearch](http://RSNA.org/donorsearch).





# Keep Radiology Research at the Forefront by Running on the Lakefront

Keep your RSNA annual meeting active and support radiology research by participating in the 2013 Fun Run! Whether you run or walk, or field a team of colleagues and friends, you will be sure to enjoy a breathtaking morning along Chicago's stunning Lake Michigan shoreline.



The event will take place on Tuesday, December 3, at 6:30 a.m. Register as a runner or walker during online registration or onsite at McCormick Place.

Don't want to run? Participate with a donation instead. Every tax-deductible \$40 registration will benefit the R&E Foundation, and participants will receive a commemorative t-shirt.



## Congratulations, Dr. McLoud!

Past RSNA President and R&E Board of Trustees Immediate Past Chair **Theresa C. McLoud, M.D.** will receive the RSNA Gold Medal during the 2013 Annual Meeting and Scientific Assembly in Chicago. The Gold Medal is RSNA's highest honor. It is awarded annually by the Board of Directors to those persons who have rendered unusual service to the science of radiology. Thank you, Dr. McLoud for your incredible commitment to the specialty and to the RSNA!

*"I am deeply honored to receive the Gold Medal of the Radiological Society of North America. I am most proud of two choices I made in my professional life: becoming a radiologist and having the privilege of serving the RSNA. Much gratitude is due to all my mentors and professional colleagues."*

**Theresa C. McLoud, M.D.**



Dr. McLoud to receive RSNA's highest honor

# R&E Fund Development Committee Meets to Plan for the Future

In July, the R&E Foundation Fund Development Committee (FDC) met at RSNA Headquarters to discuss fundraising and stewardship initiatives for the upcoming year.

Chaired by **Stephen R. Thomas, Ph.D.**, the Committee works to develop and implement R&E Foundation fundraising efforts including corporate giving, individual giving and practice and academic group giving. The FDC reviews benefits and recognition levels, identifies opportunities for new sources of support, and monitors the financial viability of the Foundation's programs—keenly aware that ongoing and increased donor support is critical to keep pace with the Foundation's ever-increasing grant applications.

As his term as chair winds down, Dr. Thomas shared his thoughts on the role he has held so impressively.

*"It has been my pleasure and honor to have served on the Fund Development Committee, most recently in the position of Chair. I am highly impressed with the dedication and enthusiasm that both the volunteer members of the FDC and the RSNA staff bring to the task of identifying sources and securing funds in the quest to increase the capacity of the Foundation to support young investigators. Through the innovative research of these individuals, many new developments within radiological technology have been channeled into clinical practice. The cornerstone of the Foundation's mission is to improve patient care by supporting research and education. The FDC plays a critical role in helping to achieve this initiative."*

**Stephen R. Thomas, Ph.D.**



*Members of the Fund Development Committee at RSNA headquarters in July*

To create a coordinated approach, members of the FDC include the chairs of the Foundation's three fundraising subcommittees: Individual Giving, Corporate Giving and Visionaries in Practice (VIP) Giving, two additional at large members and the chairs of the upcoming fundraising campaign.

When the FDC meets during RSNA 2013 it will also be the last meeting for one of the Foundation's greatest supporters and leaders. For the past three

years, past RSNA President and R&E Board of Trustees Chair **Ernest J. Ferris, M.D.** has served as Chair of the FDC's Individual Giving Subcommittee. Under Dr. Ferris' leadership the Foundation has greatly enhanced its planned giving program. The Fund Development Committee is incredibly grateful for Dr. Thomas and Dr. Ferris' leadership and the many contributions they have made to the Foundation.



*Both Dr. Thomas and Dr. Ferris have made an impact on the lives of every R&E donor and grant recipient in some way.*

*"The RSNA Research & Education Foundation serves as a powerful contributor to research and education in the fields of Diagnostic Radiology as well as Radiologic Oncology. I see no better investment in our future than to support this wonderful Foundation. It will help secure our future and most importantly lead to improved patient care. After all, that is what it is all about."*

**Ernest J. Ferris, M.D.**



# Canon U.S.A. Showcases the RSNA R&E Foundation at New Corporate Headquarters

The Foundation extends special thanks to Canon U.S.A. for highlighting the RSNA R&E Foundation at its new corporate headquarters in Melville, New York. The Foundation is featured on an interactive display wall in the company's showroom that highlights Canon's key corporate social responsibility initiatives.

*"We are very proud of the support we have given to help the Foundation fulfill its mission to improve patient care by funding research and education in radiology," said Tsuneo Imai, Senior Director and General Manager, Healthcare Solutions Division, Business Imaging Systems Group, Canon U.S.A. "Through this relationship we have awarded grants to 17 medical students to support their radiology, radiation oncology, or nuclear medicine research."*



## Grant Season Is Open

The online grant application system is now open.

Whether as a scientific advisor, mentor, or applicant, the R&E Foundation offers a number of opportunities to support our specialty. Grant awards are available to medical students, trainees, junior faculty and even seasoned investigators: Apply today!

### Education Grants – Deadline: January 10

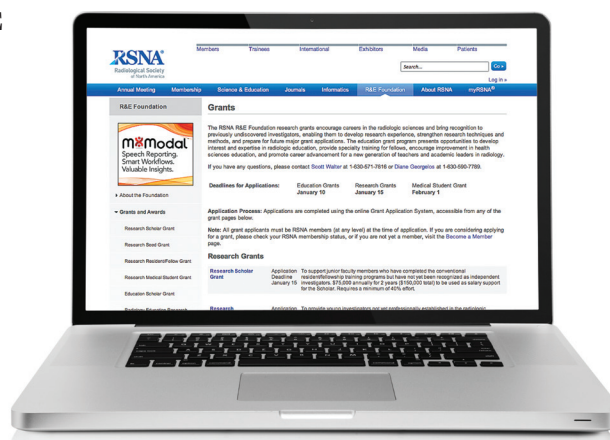
- Education Scholar Grant
- RSNA/AUR/APDR/SCARD Radiology Education Research Development Grant

### Research Grants – Deadline: January 15

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

### Research Medical Student Grant – Deadline: February 1

Questions about RSNA R&E Foundation grants can be directed to Scott Walter, [swalter@rsna.org](mailto:swalter@rsna.org) or (630) 571-7816.



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## Don't Miss This Opportunity! Help Others With a Tax-Free Gift From Your IRA Today

Are you 70½ or older? Congress reinstated a law that allows you to transfer up to \$100,000 from your IRA directly to a qualified charity such as the R&E Foundation without having to pay income taxes on the money.

Known as the IRA charitable rollover, this law has been extended to the end of 2013. Your gift will qualify under this law if:

- You are age 70½ or older at the time of your gift.
- You transfer up to \$100,000 directly from your IRA. This opportunity applies only to IRAs and not other types of retirement plans.
- You transfer funds outright to one or more qualified charities. The legislation does not permit direct transfers to charitable trusts, donor advised funds, charitable gift annuities or supporting organizations.
- You make your gift by Dec. 31, 2013.

### Why Consider This Donation Option?

- The transfer generates neither taxable income nor a tax deduction, so you benefit even if you do not itemize your tax deductions.
- If you have not yet taken your required minimum distribution for the year, your IRA charitable rollover gift can satisfy all or part of that requirement.
- Your gift will be put to use today, allowing you to see the difference your donation is making.

It is wise to consult with your tax professionals if you are contemplating a charitable gift under the IRA charitable rollover law.

### An Alternative if You Are Under Age 70½

If you don't meet the age requirement for the IRA charitable rollover, you have another tax-wise option to consider: Name the R&E Foundation as a beneficiary of your IRA.

Retirement plan assets are subject to substantial income and possible estate taxes when given to any individual other than your spouse after your lifetime. Charitable organizations such as ours, however, pay no taxes. Therefore, it can prove beneficial to leave these highly taxed assets to us and leave other assets that are not as heavily taxed, such as real estate and life insurance, to loved ones.

If you have any questions about using your IRA to make a tax-wise gift to the R&E Foundation, please contact Liten DeNaut, [ldenaut@rsna.org](mailto:ldenaut@rsna.org) or (630)368-3744 or visit [RSNA.org/LegacyGiving](http://RSNA.org/LegacyGiving).

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## Three Easy Ways to Give:



**ONLINE**  
[RSNA.org/donate](http://RSNA.org/donate)



**PHONE**  
(800) 381-6660



**MAIL**  
RSNA R&E Foundation  
820 Jorie Blvd.  
Oak Brook, IL 60523