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Department of Radiology-Annual Executive Summary Report-July 1, 2011 to June 30, 2012

Vijay M. Rao, MD

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Department of Radiology

Annual Executive Summary Report

July 1, 2011 to June 30, 2012

Vijay M. Rao, MD
The David C. Levin Professor and Chair

DEPARTMENT OF RADIOLOGY

Jefferson Medical College
Thomas Jefferson University
Jefferson University Hospitals

The Mission of the Department of Radiology
is to provide quality diagnostic and
therapeutic imaging services and to
continually improve our services.

Our goals are to:

- Provide quality service to patients and referring physicians
 - Continue to grow successfully in an increasingly competitive market and be the leader
 - Operate in an efficient, productive, and cost effective manner
 - Maintain excellence of our educational programs
 - Continue to advance the science of translational and clinical imaging research
-

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DEPARTMENT OF RADIOLOGY

Vijay M. Rao, M.D.

Professor and Chairman

Geoffrey A. Gardiner, Jr., M.D.	Vice Chair for Clinical Practice
Barry B. Goldberg, M.D.	Vice Chair for Strategic Planning
Ethan J. Halpern, M.D.	Vice Chair for Research
Christopher R.B. Merritt, M.D.	Vice Chair for QA & Performance Improvement
Levon N. Nazarian, M.D.	Vice Chair for Education
Christopher Roth, M.D.	Vice Chair for Methodist Radiology

2011-2012

DEPARTMENT CLINICAL DIVISIONS AND DIRECTORS

BODY COMPUTED TOMOGRAPHY/ABDOMINAL IMAGING	Laurence Needleman, M.D.
BREAST IMAGING	Barbara C. Cavanaugh, M.D.
CARDIOTHORACIC RADIOLOGY	Achala Donuru, M.D. (<i>Acting</i>)
INTERVENTIONAL RADIOLOGY	Daniel B. Brown, M.D.
MAGNETIC RESONANCE IMAGING	Donald G. Mitchell, M.D.
METHODIST RADIOLOGY	Christopher G. Roth, M.D.
MUSCULOSKELETAL AND GENERAL DIAGNOSTIC RADIOLOGY	William B. Morrison, M.D.
NEURORADIOLOGY/ENT RADIOLOGY	Adam E. Flanders, M.D. David P. Friedman, M.D.
NUCLEAR MEDICINE	Charles M. Intenzo, M.D.
ULTRASOUND	Barry B. Goldberg, M.D.

DEPARTMENTAL COMMITTEES AND CHAIRMEN

ADVISORY COMMITTEE	Patrick O’Kane, M.D.
CONTRAST COMMITTEE	Laurence Needleman, M.D.
DIVISION DIRECTORS COMMITTEE	Vijay M. Rao, M.D.
EDUCATION COMMITTEE	Levon N. Nazarian, M.D.
INFORMATICS STEERING COMMITTEE	Victor Sarro
PERFORMANCE IMPROVEMENT COMMITTEE	Christopher R.B. Merritt, M.D.
RESEARCH COMMITTEE	Barry B. Goldberg, M.D. Ethan J. Halpern, M.D.
RESIDENCY SELECTION COMMITTEE	Sandeep P. Deshmukh, M.D.

**RADIOLOGY DEPARTMENT FACULTY RANK
2011-2012**

PROFESSORS

Oksana H. Baltarowich, M.D.
Daniel B. Brown, M.D.
Rick I. Feld, M.D.
Adam E. Flanders, M.D.
Flemming Forsberg, Ph.D.
Geoffrey A. Gardiner, Jr., M.D.
Barry B. Goldberg, M.D.
Ethan J. Halpern, M.D., M.S.C.E.
Charles M. Intenzo, M.D.
David Karasick, M.D.
Stephen Karasick, M.D.
Alfred B. Kurtz, M.D.
Christopher R.B. Merritt, M.D.
Donald G. Mitchell, M.D.
William B. Morrison, M.D.
Levon N. Nazarian, M.D.
Vijay M. Rao, M.D.
Mathew L. Thakur, Ph.D.

RESEARCH PROFESSOR

Ji-Bin Liu, M.D.

EMERITUS PROFESSOR

David C. Levin, M.D.

ASSOCIATE PROFESSORS

David J. Eschelman, M.D.
David P. Friedman, M.D.
Carin F. Gonsalves, M.D.
Sung M. Kim, M.D.
Song Lai, Ph.D.
Laurence Needleman, M.D.
Patrick O’Kane, M.D.
Lisa M. Tartaglino, M.D.
Adam C. Zoga, M.D.

**CLINICAL ASSOCIATE
PROFESSOR**

Barbara C. Cavanuagh, M.D.

ASSISTANT PROFESSORS

Diane M. Deely, M.D.
Steven G. Finden, D.D.S., M.D.
Angela G. Gopez, M.D.
Richard J. Gorniak, M.D.
Paras Lakhani, M.D.
Christopher G. Roth, M.D.
Sharon R. Segal, D.O.
Alexander Sevrukov, M.D.
Dinesh K. Sharma, M.D.
Colette Shaw, M.D.
Annina N. Wilkes, M.D.

**CLINICAL ASSISTANT
PROFESSORS**

Mark W. Cooper, M.D.
Sandeep Deshmukh, M.D.
Flavius Guglielmo, M.D.
George Paul Hobbs, M.D.
Elizabeth H. Hsu, M.D.
Cindy Isaacson-Finden, M.D.
Suzanne S. Long, M.D.
Kristen McClure, M.D.
Cynthia L. Miller, M.D.
Neeta Rao, M.D.
Paul Read, M.D.
Lillian H. Stern, M.D.
Terri Tuckman, M.D.
Nylah Fatima Wasti, M.D.
Michael Wolf, M.D.

**RESEARCH ASSISTANT
PROFESSOR**

Eric Gingold, Ph.D.
Laurence Parker, Ph.D.

INSTRUCTORS

Mark D. Allan, M.D.
Susan DeWyngaert, M.D.
Achala Donuru, M.D.
Tara Eisenberg, M.D.
Manoharan Muthuvelu, M.D.

FACULTY WITH SECONDARY APPOINTMENTS IN RADIOLOGY

Demetrius H. Bagley, M.D., Professor of Urology [primary]
Associate Professor of Radiology [secondary]

Robert L. Brent, M.D., Ph.D., Professor of Pediatrics [primary]
Professor of Radiology [secondary]

Paul J. DiMuzio, M.D., Assistant Professor of Surgery [primary]
Assistant Professor of Radiology [secondary]

Christopher L. Hansen, M.D., Professor of Medicine [primary]
Professor of Radiology [secondary]

Andrew B. Newberg, M.D., Professor of Integrative Medicine [primary]
Professor of Radiology [secondary]

Robert H. Rosenwasser, M.D., Professor of Neurosurgery [primary]
Professor of Radiology [secondary]

Stanton N. Smullens, M.D., Professor of Surgery [primary]
Associate Professor of Radiology [secondary]

Joseph A. Tracy, Ph.D., Professor of Neurology [primary]
Professor of Radiology [secondary]

Paul Walinsky, M.D., Professor of Medicine [primary]
Assistant Professor of Radiology [secondary]

DEPARTMENT OF RADIOLOGY

Vijay M. Rao, M.D., Chairman

CLINICAL DIVISIONS 2011-2012

**Body Computed Tomography/
Abdominal Imaging**

Directed by Laurence Needleman, M.D.
Drs. Oksana Baltarowich, Sandeep Deshmukh,
Tara Eisenberg, Rick Feld, Flavius Guglielmo,
Ethan Halpern, Stephen Karasick, Alfred Kurtz,
Donald Mitchell, Levon Nazarian, Patrick O'Kane

Breast Imaging

Directed by Barbara C. Cavanuagh, M.D.
Drs. Susan DeWyngaert, Tara Eisenberg, Cindy Finden,
Elizabeth Hsu, Alexander Sevruckov, Nylah Wasti,
Annina Wilkes

Cardiothoracic Radiology

Directed by Achala Donuru, M.D.
Drs. Cindy Finden, Ethan Halpern, David Karasick,
Stephen Karasick, Paras Lakhani, Manoharan
Muthuvelu, Dinesh Sharma, Nylah Wasti

Interventional Radiology

Directed by Daniel B. Brown, M.D.
Drs. David Eschelman, Geoffrey Gardiner, Jr.,
Carin Gonsalves, Colette Shaw

Magnetic Resonance Imaging

Directed by Donald G. Mitchell, M.D.
Drs. Sandeep Deshmukh, Flavius Guglielmo,
Patrick O'Kane

Methodist Radiology

Directed by Christopher Roth, M.D.
Drs. Mark Allan, Mark Cooper, G. Paul Hobbs,
Paras Lakhani, Kristen McClure, Cynthia Miller,
Paul Read, Alex Sevruckov, Lillian Stern

**Musculoskeletal and
General Diagnostic Radiology**

Directed by William B. Morrison, M.D.
Drs. Diane Deely, Achala Donuru, Cindy Finden,
Angela Gopez, David Karasick, Stephen Karasick,
Paras Lakhani, Suzanne Long, Manoharan
Muthuvelu, Paul Read, Dinesh Sharma, Adam Zoga

Neuroradiology/ENT Radiology

**Directed by Adam Flanders, M.D.,
David Friedman, M.D.**
Drs. Steve Finden, Richard Gorniak, Neeta Rao,
Vijay Rao, Dinesh Sharma, Lisa Tartaglino,
Michael Wolf

Nuclear Medicine

Directed by Charles M. Intenzo, M.D.
Drs. Sung Kim, Paras Lakhani

Ultrasound

Directed by Barry B. Goldberg, M.D.
Drs. Oksana Baltarowich, Sandeep Deshmukh,
Rick Feld, Flavius Guglielmo, Ethan Halpern,
Alfred Kurtz, Suzanne Long, Chris Merritt, Levon
Nazarian, Laurence Needleman, Patrick O'Kane,
Sharon Segal, Terri Tuckman, Annina Wilkes

Research

Drs. Flemming Forsberg, Song Lai, Ji-Bin Liu,
Laurence Parker, Mathew Thakur

**DEPARTMENT OF RADIOLOGY
HOUSESTAFF ROSTER
2011-2012**

RESIDENTS

FIRST YEAR RESIDENTS (PGY-2)

Sudheer Balakrishnan, M.D.
Noam Belkind, M.D.
Travis Gehringer, M.D.
Robert Kurtz, M.D.
Praneil Patel, M.D.
Sandra Rutigliano, M.D.
Kathleen Schenker, M.D.
Shrenik Shah, M.D. (pathway PGY-3)
Amelia Wnorowski, M.D.
Zombor Zoltani, M.D.

THIRD YEAR RESIDENTS (PGY-4)

Allison Borowski, M.D.
Laryssa M. Hud, M.D.
Ryan I. Huffman, M.D.
Nicholas Petruzzi, M.D.
Jason J. Redon, M.D.
Scott J. Sequeira, M.D. (pathway PGY-5)
Richard E. Sharpe, M.D.
Bartley G. Thornburg, M.D.
Rebecca C. Winter, M.D.
Vahe M. Zohrabian, M.D.

SECOND YEAR RESIDENTS (PGY-3)

Niraj Bhalakia, M.D.
Andrew Chi, M.D.
Christopher Gutjahr, M.D. (pathway PGY-4)
Hassan Irshad, M.D.
Arvin Kheterpal, M.D.
Matthew Morgan, M.D.
Ilana Neuberger, M.D.
Lodewijk van Holsbeeck, M.D.

FOURTH YEAR RESIDENTS (PGY-5)

Robert D. Adamo, M.D. (pathway PGY-6)
Courtney Hoey, M.D.
Waseem Khalid Khan, M.D.
Jessica H. Kobil, M.D.
Michael Petroziello, M.D.
Ariel D. Prager, M.D.
Michael T. Scanlan, M.D.
James M. Terzian, M.D.
Ronald S. Winokur, M.D.

Nuclear Medicine

Chaitra Channappa, M.D. (PGY-3)
Ameneh Mashayekh, M.D. (PGY-2)
Alexandros Pappas, M.D. (PGY-4)

FELLOWS

ABDOMINAL IMAGING (PGY-6)

Luther Adair, M.D.
Ilene Burach, M.D.
Susan Dulka, M.D.
Naseem Shakir, M.D.
Pranshu Sharma, M.D.
Kiran Talekar, M.D.

BODY MRI (PGY-6)

Shiva Gupta, M.D.

BREAST IMAGING (PGY-6)

Colleen Whitecar, M.D.

MUSCULOSKELETAL IMAGING (PGY-6)

Anton Delpont, M.D.
Gabrielle Konin, M.D.
Juan Narvaez, M.D.

**VASCULAR/INTERVENTIONAL
RADIOLOGY (PGY-6)**

Nathan Ertel, M.D.
Anton Mahne, M.D.

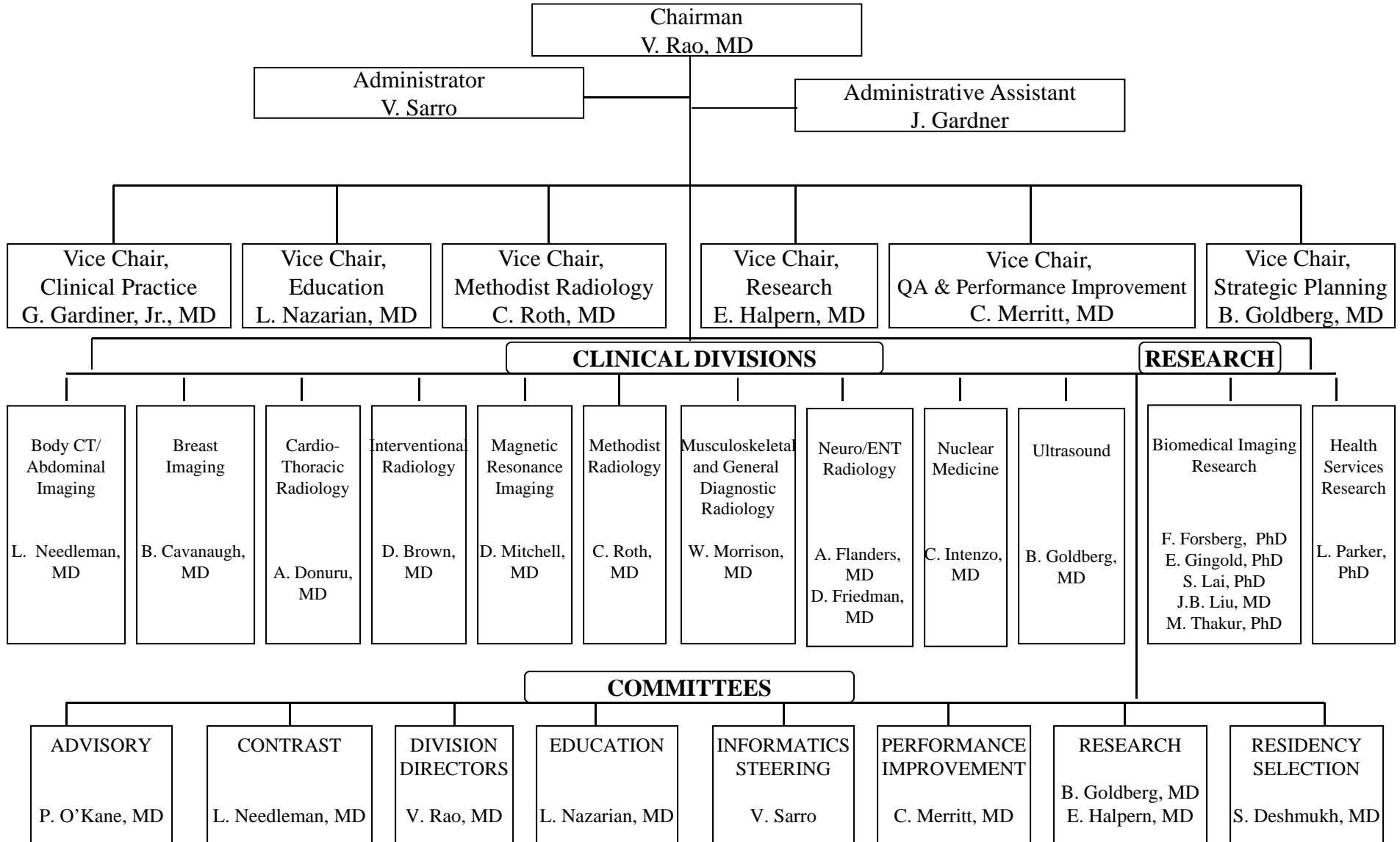
**MUSCULOSKELETAL/NEURO MRI
(PGY-6)**

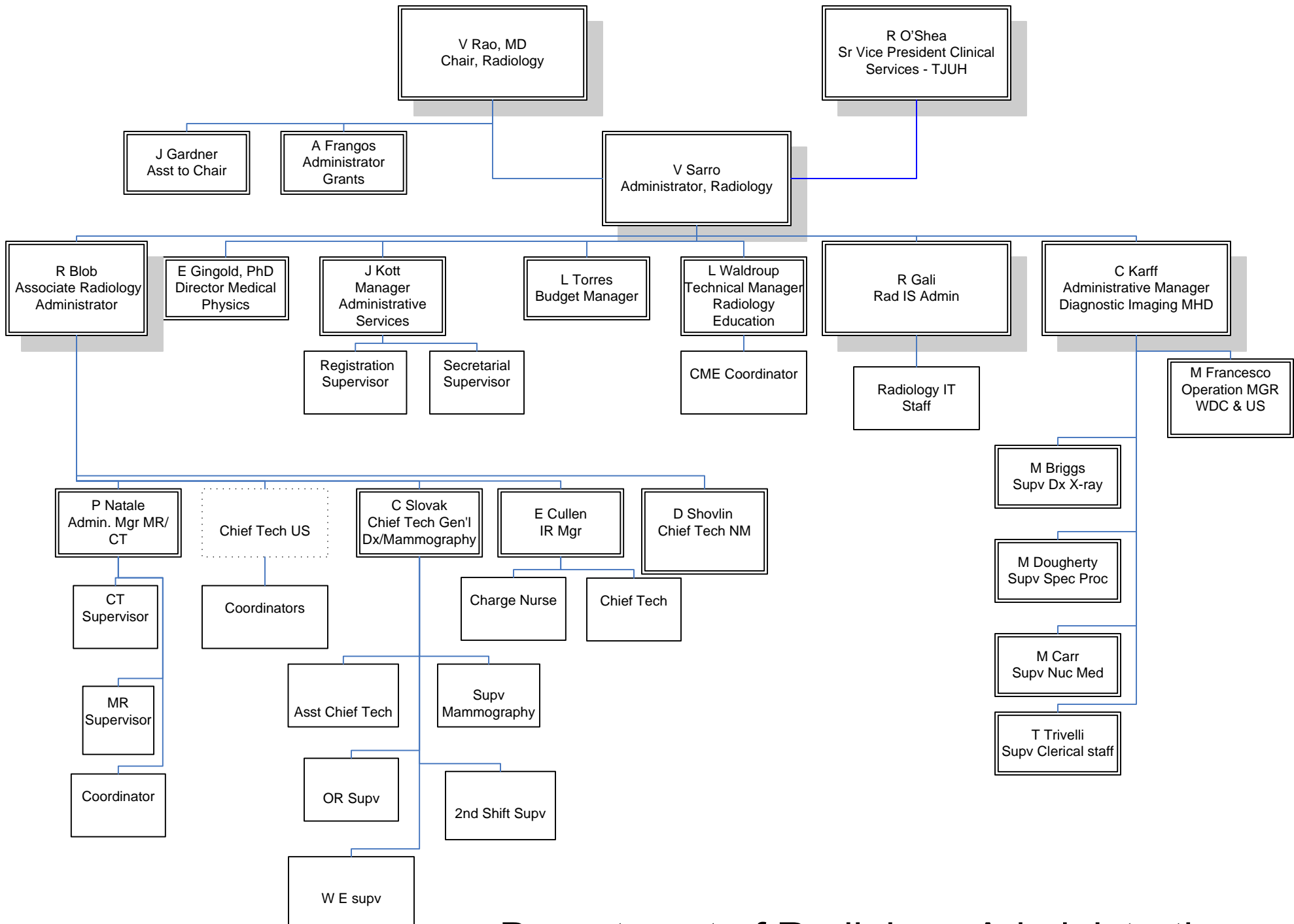
Jeffrey Mathews, M.D.
Niti Tank, M.D.
Hema Thakur, M.D.

NEURO/ENT RADIOLOGY (PGY-6)

Ashish Gandhe, M.D.
Piotr Sadej, M.D.
Michelle Sterling, M.D.
Mahmound Zahra, M.D.

Department of Radiology (2011-2012)





Department of Radiology Administration

STATE OF THE DEPARTMENT
2011-2012
Chairman's Report
Vijay M. Rao, M.D., F.A.C.R.

The past year saw a number of important new developments in our department. The Department has had a successful 3-way joint venture with the hospital and Outpatient Imaging Affiliates, LLC for many years. We celebrated the grand opening of a new joint venture Jefferson outpatient multi-modality imaging center in East Norriton on July 5, 2011. This center houses a state-of-the-art wide bore 1.5T MRI, a 16-slice CT, an ultrasound unit, a plain radiography room, a DEXA scanner, and a digital mammography unit. We also provide mobile PET/CT service one day a week. The facility is staffed daily by a faculty member for patient supervision, but subspecialty interpretations are provided for all modalities from the center city campus. The center is doing well and MRI volumes have far exceeded our expectations.

We standardized policies and procedures across both Methodist hospital and Center City campus for radiology operations. All of our personnel received the AIDET training (Acknowledge, Introduce, Duration, Explanation, and Thank You). In FY'12 we experienced a substantial improvement in patient satisfaction scores on both campuses.

I am pleased to report that our department received a philanthropic gift of \$1M from the Armenian General Benevolent Union to create the Jefferson Center for Diagnostic and Interventional Musculoskeletal Ultrasound. We have a highly successful and reputable program in musculoskeletal diagnostic and interventional ultrasound under the direction of Dr. Levon Nazarian. He is a leading national expert with a very busy practice and attracts patients from across the country. Over the past three years, the musculoskeletal ultrasound volume has grown over four-fold. Demand for these services has continued to grow resulting in an eight week backlog. One of the main limiting factors has been inadequate physician availability with this unique expertise. This gift will allow us to recruit additional trained faculty and expand the program. The Center will also serve as a portal of entry for patients into the Jefferson Hospital System. It is expected that the Center will continue to grow and provide opportunities for additional philanthropy, as many of Dr. Nazarian's patients are affluent and extremely grateful for an alternative, often less invasive, treatment for their musculoskeletal conditions.

Another new development in the Department, with the assistance of our Departmental physicist, Dr. Eric Gingold, has been a major patient safety initiative for radiation dose reduction and monitoring. Low dose software (iDose) has been installed on all three diagnostic Philips Medical CT scanners at TJUH. Additionally key elements of the program include implementation of a comprehensive patient safety educational program on radiation safety and awareness of radiation risks for departmental personnel. Reference doses for CT exams are being reviewed and incorporated into the CT protocols and software is now being used to monitor dose ranges. Radiation dosage or exposure summary report findings are included in patient records in Imagecast. Password protected protocols are now implemented on the department scanners. Policy and procedures on patient and staff shielding and radiation protective training for all technologists have been implemented.

In education, we continued our strong reputation as a top institution for young radiology trainees. We received 694 applications for our eight residency slots. Our fellowship programs continued to be popular. We sponsored a number of CME courses that were well received. Most were in ultrasound but there were others as well. We produce most of these courses right in our department, which helps save costs – an important advantage, since CME in radiology has become highly competitive.

We had a productive year in research as well. Despite an ever-increasing clinical and administrative workload, our faculty was able to produce 292 publications and a large number of presentations at national meetings or at other academic institutions. The details can be seen elsewhere in this report. We also had 32 research grants from various sources, such as the NIH, foundations, and industry. These produced over \$2.6 million in current year funding.

There are many individuals who contribute to our success – far too many to mention here by name, but I'd like to single out a few. JoAnn Gardner has been a loyal and dedicated administrative assistant who has been a great help to me. Victor Sarro has worked very hard and effectively wearing two hats as both the departmental administrator and business manager. Our vice chairs also play vital roles – Geoffrey Gardiner, M.D. in clinical practice; Chris Merritt, M.D. in quality assurance and performance improvement; Ethan Halpern, M.D. in research; Barry Goldberg, M.D. in strategic planning; and Levon Nazarian, M.D. in education. My thanks go to all of them. Chris Roth, M.D., Vice Chair for Methodist, has again provided outstanding leadership of the Methodist radiology team, and I greatly appreciate his dedication. We continue to get great feedback from the Methodist clinicians who are very pleased with the quality of imaging we provide them.

Many thanks go to Adam Zoga, M.D. and Sandeep Deshmukh M.D. for their leadership in helping build business at our satellite centers. I certainly want to thank all of our division directors, who have to assume large administrative responsibilities, in addition to their clinical and teaching workloads. They are all working very hard and they play crucial role in keeping our department running smoothly.

FACULTY RETENTION, RECRUITMENT AND DEVELOPMENT

In FY'11, we recruited four new outstanding faculty members to our department. Alex Sevrakov, M.D. came to us from Washington University, having completed fellowships in breast imaging and abdominal imaging. Colette Shaw, M.D. came from Memorial Sloan Kettering, having completed an interventional fellowship. Paras Lakhani, M.D. came from the University of Pennsylvania, having completed fellowship in oncologic imaging and in informatics. Paul Read, M.D. completed his fellowship in musculoskeletal radiology at Jefferson.

FACULTY DEVELOPMENT, HONORS AND PROMOTIONS

Several faculty members received numerous honors which are listed in the appendix under individual reports. I would like to highlight just a few major accolades: Dr. Oksana Baltarowich became an Honorary Member of Alpha Omega Alpha Honor Medical Society for “unparalleled work as a teacher and mentor to students”. Dr. Eric Gingold served as President of the Delaware Valley Chapter of the American Association of Physicists in

Medicine. Dr. Christopher Merritt received the Lifetime Service Award from the American Board of Radiology. Dr. William Morrison became the President-elect of the Society of Skeletal Radiology and also presented the inaugural Graham Buirski Keynote Lecture of the Australasian Musculoskeletal Imaging Group at the society's annual meeting. Dr. Levon Nazarian continues to serve as editor of the *Journal of Ultrasound in Medicine*. Dr. Vijay Rao served as President of the American Association of Women Radiologists and the Research & Education Foundation of the Radiological Society of North America. Dr. Annina Wilkes was honored with the Tribute Award from the American Cancer Society. Drs. Daniel Brown and Vijay Rao were honored as one of "Top Docs" by the *Philadelphia Magazine*, as well as being named as one of the "America's Best Doctors". Dr. Daniel Brown was also named as one of the Top Vascular and Interventional Radiologists (top 1% designation) in *US News and World Report*. This is quite an honor roll for our department on the national and international scene. At Jefferson, Dr. Sandeep Deshmukh received the Dean's Award for Excellence in Education.

CLINICAL ACTIVITIES

In 2011-2012, our clinical practice remained strong. At the center city locations, we experienced a 4% growth in overall volume. Due to the bundling of CPT codes for abdominal CT examinations, we have begun to track patients instead of CPT codes. There was a 3.1% increase in CT patients during the fiscal year. Of note was 11.3% growth in interventional procedures, 6.9% growth in ultrasound, 3.3% growth in breast imaging, 3.2% in general and 4.0% growth in MRI. Jefferson Outpatient Imaging joint venture centers had a successful year with 51,179 procedures, and 8.9% growth.

In **body MR**, a dynamic secretin-enhanced magnetic resonance cholangiopancreatography protocol was introduced and the MR enterography service has continued to grow. To improve the clinical needs, we have continued to increase the frequency of dictating reports on many of our consultations for cases performed outside Jefferson. Most of these dictated reports are in support of our interventional radiology clinical service, to assist in planning embolization and ablation treatments. Additionally, the standard contrast agent at our outpatient imaging sites has been changed from Magnevist to Gadavist, a more stable agent with no reports of nephrogenic systemic fibrosis and a slightly higher relaxivity.

In **nuclear medicine**, a new program to use I-123 Ioflupane (I-123 DATscan), a dopamine-receptor agent, in patients with movement disorders has been introduced. The purpose of the scan is to distinguish patients with essential tremors from those with Parkinsonian syndrome. Additionally, the use of fluoride-18-PET bone scanning in patients with prostate cancer and the use of FRAX analysis in bone densitometry studies were begun.

In **body CT**, iDose radiation dose reduction has been expanded from the 256-slice scanner and was placed on two 64-slice scanners this year. Virtually 100% of body cases performed on the Philips scanners have dose reduction. The protocol for CT for Methodist Hospital patients has been modified to allow the technologists to select body and chest cases based on the clinical information and the serum creatinine level without requiring a radiologist's protocol. Additionally, point of care creatinine, in which the CT technologists are trained to draw blood for whole blood creatinine tests for patients without recent serum creatinine, has been implemented at TJUH, JHN, and COB.

In **ultrasound**, a new Philips iU22 imaging unit replaced an obsolete clinical system and a Toshiba Nemio XG was replaced with the T-probe system. The services offered through the Musculoskeletal Diagnostic and Therapeutic Ultrasound Center have been expanded with the addition of new staff, allowing increased number of patients to be seen for both musculoskeletal ultrasound and thyroid biopsies. Continued attention to the Technical and Physician staffing model has resulted in continued significant improvements in divisional productivity. Revisions have been made in the divisional protocols and worksheets that have reduced exam time, reduced operating costs (e.g. videotapes), improved uniformity in imaging, and resulted in more standardizing of dictation.

In **interventional radiology**, two new programs have been introduced. The first is injection sclerotherapy of venous incompetence. The other involves the use of the newly acquired Neu-Wave Microwave thermal ablation device which maximizes power delivery to soft tissue while minimizing invasiveness when ablating tumor. The clinical program in the **musculoskeletal division** continues to expand its volume in general imaging (x-ray, MR, and CT), as well as musculoskeletal ultrasound programs, such as platelet rich plasma injections for musculoskeletal injuries.

The division of **chest radiology** continues to utilize gated chest CT to rule out pulmonary embolisms and has increased the utilization of time resolved MR angiography/MR venography imaging (TRICKS), while the **breast imaging** division has acquired two new Phillips ultrasound units for use in the diagnostic imaging area. Additionally, breast imaging services are now offered at Jefferson Outpatient Imaging affiliate centers at East Norriton and include MRI, US, and mammography.

At **Methodist radiology**, a new interventional radiology suite and mobile MRI unit became operational. With the increased MRI capacity and technical improvements the mobile unit delivered, MR enterography services were initiated at Methodist. The state-of-the art interventional radiology equipment offers rotational angiography, previously unavailable on the old system. Methodist also now offer breast imaging services as an ACR-accredited Breast Imaging Center of Excellence. Additionally, with the establishment of the Vascular Center at 1300 Wolf Street, vascular ultrasound services were implemented.

PLANNED NEW CLINICAL FACILITIES AND PROGRAMS

Jefferson Radiology continues to be on leading edge of imaging with improved current clinical programs and exciting new clinical services planned for the upcoming year. In **body CT**, based on success of the emergency department protocol using a lower threshold for full doses of iodinated contrast, a full dose of iodinated contrast will be made available for more patients by changing the eGFR cutoff from 45 (from 60). This should expedite CT exams in the emergency department for some patients.

In **interventional radiology** attempts to expand the sclerotherapy program are planned. In **breast imaging**, the Jefferson Outpatient Imaging East Norriton affiliate center will expand its service to include ultrasound guided breast biopsy. At the Center City Breast Imaging Center, a program for a breast cancer screening program with gray scale and shear wave ultrasound imaging, targeting women with mammographically dense tissue and

women under age 40, will be initiated. The division of **neuroimaging** will expand its capabilities with a new CT scanner in the Jefferson Hospital for Neuroscience and a new MRI scanner at Collegeville.

The **ultrasound division** committee comprised of supervisors, nurses, and faculty members from the ultrasound division, as well as radiology administration and hospital administration will continue to improve and standardize the operation of the interventional service, thereby creating the ability to expand productivity and patient safety. While in **musculoskeletal imaging**, expansion of coverage to affiliate outpatient centers will continue.

The **body MR** division will initiate the use of a new MRI contrast agent for blood pool imaging, Ablavar. A new protocol will be established for the use of Ablavar for MR angiography, mainly for young individuals to avoid radiation.

PHYSICS

During the past year, the Physics section of the Department of Radiology worked closely with the staff at the TJUH Methodist Division to achieve ACR Accreditation in MRI, CT, and to become a Breast Imaging Center of Excellence. The mammography division had long been accredited by the ACR, but for MRI and CT it was a new experience that required rigorous phantom testing, and careful radiation dosimetry in the case of CT

The Joint Commission's (TJC) "Sentinel Event Alert #47" on Radiation Risks of Diagnostic Imaging (published 8/24/11) prompted reexamination of many safety and education procedures. The Physics Division developed a checklist to assist in tracking TJU compliance with TJC recommendations for minimizing radiation risk.

We continue to closely monitor radiation doses from fluoroscopically guided interventional procedures. This process resulted in several instances in which the Physics Division was obligated to alert interventionalists in Interventional Radiology and Vascular Surgery about potential deterministic effects to their patients from high procedure-related radiation exposures. In addition, a new program was initiated this year to monitor patient radiation doses from CT scanning. Software was developed internally that retrieves the Dose Report images from PACS and process those images to extract dose information (CTDIvol and DLP). We have begun weekly audits of CT dose, with reporting of important findings at the Department's monthly CT Working Group meetings.

Imaging equipment in the Department's locations at TJUH, MHD and JHN undergoes annual physics testing to meet regulatory requirements. On Feb 7-8 2012, the Hospital was inspected by representatives of the PA Department of Environmental Protection, Radiation Protection Division. This inspection occurs approximately every 3 years, and focuses on x-ray equipment. There were no items of non-compliance observed. The annual MQSA inspections of the TJUH Breast Center and MHD Breast Center both passed inspection, with all items in compliance.

The Physics section contributed to both the Department's research and education missions. Several clinically research projects involving radiology physics are being conducted in the section. These include a study of radiation doses from fluoroscopically guided

interventional procedures, an examination of the use of a new metric for evaluating radiation dose from CT scanning, the “size-specific dose estimate”, and an analysis of an automated method for evaluating the image quality produced by digital radiographic equipment.

In education, the section continued to provide the Imaging Physics course for residents, resident conferences, medical student teaching, and continuing education seminars for technologists. Changes in the American Board of Radiology’s examination process prompted a restructuring of the resident education program. For the first time, a physics-specific board review for 1st and 2nd year residents took place during June. This program was well-received, and we intend to continue to offer this in future years.

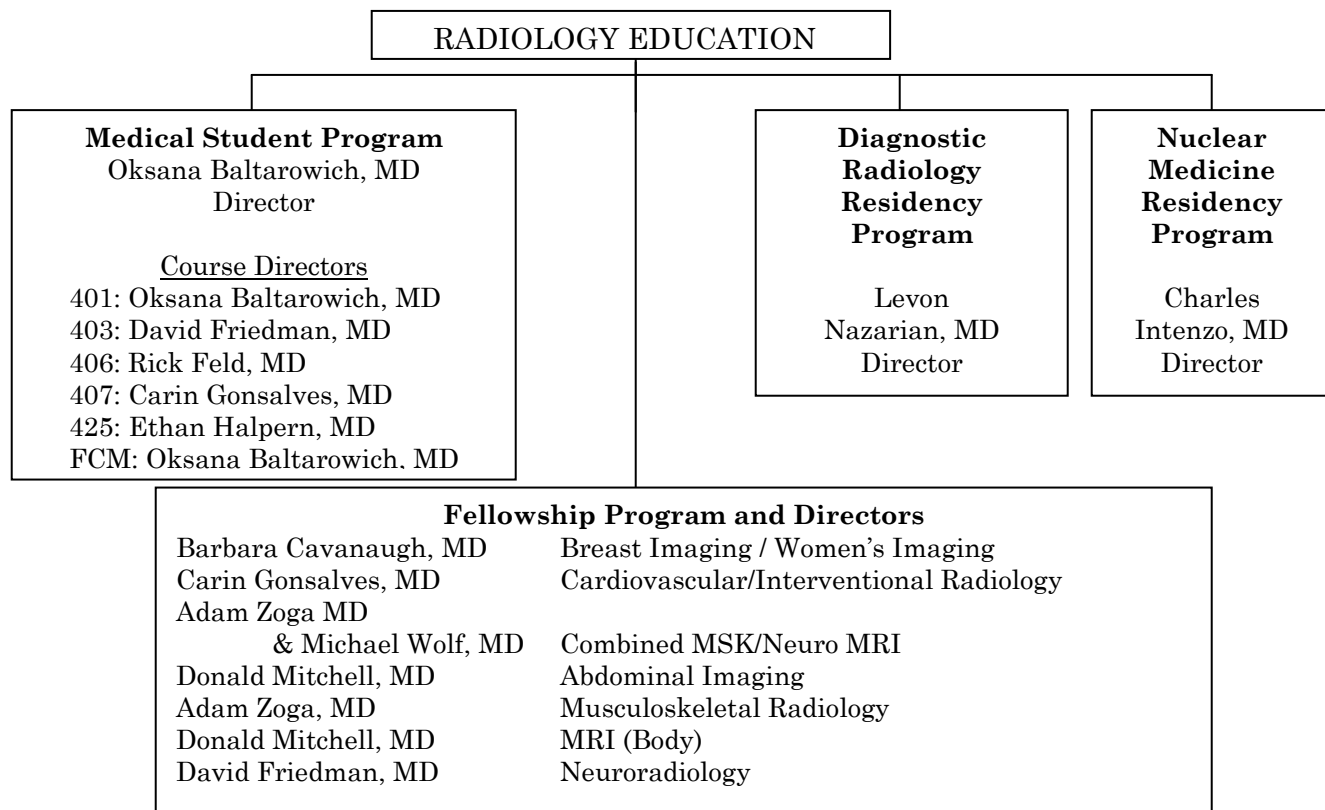
CLINICAL INFORMATICS

The Information Technology section of the Department of Radiology continues to support the clinical needs and mission of the department. All major Radiology applications have been upgraded to versions that are compatible with Windows 7 and browser IE8. Philips iSite has been upgraded to version 3.6 from version 3.5. The voice recognition system, Powerscribe, has been upgraded to version 5.0 from version 4.8. GE Centricity has also been upgraded to 10.6 update 18. All upgrades involved server upgrade and a client pushout.

Other accomplishments involve database upgrade for NMIS, integration of File Room policies at MHD and TJUH, and addition of two new reading stations.

Future planned initiatives include an upgrade of GE Centricity to version 10.7 to be compliant with the ICD10 upgrade. Initiatives also include relocation of application servers from Scott Basement to the new Data Center, virtualizing Centricity environment, implementation of ED Communication module and Primordial RadMetrix.

EDUCATIONAL PROGRAMS



RESIDENCY TRAINING PROGRAM

The educational programs at Thomas Jefferson University Hospital continue to be one of the major strengths of our department. Our residency program is approved for 37 residents and fully accredited by the ACGME.

The Radiology residency program is nationally recognized as one of the top programs in the country. Our faculty are committed to a high caliber of teaching in spite of increased clinical workload. The goal of our residency program is to produce competent radiologists well trained in all aspects of diagnostic radiology.

Upon finishing their training, our residents will be able to pursue a career in either an academic or private practice environment. All nine of our senior residents passed the written boards and seven of the eight passed the oral portions of the American Board of Radiology Examination. We have a reputation for the highest caliber fellowship programs and we are extremely pleased that this year five of the nine residents have chosen to stay on at Jefferson for additional fellowship training. Many thanks to Levon Nazarian, M.D., for his outstanding leadership as the program director. Many thanks to Pamela Coyle, Residency Coordinator, for outstanding assistance throughout the year.

Residency Selection: This year we received 694 applications for eight positions and interviewed 84 candidates. We matched all of our positions from among our top candidates under the leadership of Dr. Sandeep Deshmukh, Chairman of the Residency Selection Committee. We also accepted another candidate outside the match. The teaching and research reputation, as well availability of cutting edge technology such as 256 multidetector CT, PET scanning and 3T MR keeps us competitive with other top institutions in the country.

Resident research is actively encouraged. All residents are required to complete at least one project by the end of their third year, though many do more. Many of our residents presented papers at national meetings. One of our residents, Ronald Winokur, M.D., received the RSNA Research and Education Foundation Roentgen Resident Research Award which was presented to him at the resident's graduation dinner. Dr. Arvin Kheterpal participated in the RSNA/ARRS/AUR Introduction to Research Program, and Dr. Niraj Bhalakia participated in the Siemens-AUR Radiology Resident Academic Development (SARRAD). Dr. Nicholas Petruzzi presented a featured abstract entitled, "Comparison of three chemoembolization regimens for hepatocellular carcinoma: Adriamycin and ethiodol has shorter time to progression than cisplatin/adriamycin/mitomycin-C and ethiodol or adriamycin drug eluting beads" at the Society of Interventional Radiology annual meeting.

In order to facilitate clinical research among radiology residents, each resident attends a monthly seminar series to review the basics of clinical research study design and implementation prior to presenting his/her own research plan. The seminar series includes eight lectures on hypothesis generation and testing, power analysis, study design, measures of association (sensitivity/specificity/likelihood ratios/predictive value/ROC analysis), bias & confounding, IRB/HIPPA issues, research ethics and health services research. These sessions are structured to comply with the core curriculum on research and statistics for radiology residents developed by the Association of University Radiologists. Additional sessions are devoted to allow second year residents to present their proposed projects in a small group session for comments prior to their required presentations to the entire department of Radiology. The series was conducted jointly by Dr. Ethan Halpern and Ms. Andrea Frangos.

Residents receive extensive clinical training in all areas of diagnostic Radiology. Clinical rotations are in compliance with guidelines required by the ACGME and/or recommended by the Association of Program Directors in Radiology (APDR). Almost all training takes place on the Jefferson campus, save pediatric radiology. Residents spend a total of 3 months at A.I. DuPont and get an outstanding education in pediatric radiology.

Residents Robert Adamo, M.D., Lodewijk van Holsbeeck, M.D., Laryssa Hud, M.D., Arvin Kheterpal, M.D., Robert Kurtz, M.D., Michael Petroziello, M.D., Richard Sharpe, M.D., and Zombor Zoltani, M.D. received recognition for excellence in medical student teaching.

TRAINING PROGRAMS FOR FELLOWS

Our fellowship programs had another successful year. There is an increasing number of extremely well qualified applicants in most of the areas offered by our department

including: interventional radiology, body MRI, breast imaging, combined musculoskeletal and neuro MRI, neuroradiology/ENT, US/CT/MRI, and musculoskeletal radiology. All of the above programs received very positive year-end critiques from the graduating fellows.

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The **Abdominal Imaging Fellowship**, under the direction of Dr. Donald Mitchell is an ACGME accredited program. Five fellows graduated: Dr. Luther Adair went on to a private practice group in Honolulu, HI; Dr. Ilene Burach joined a private practice group in Toms River, NJ; Dr. Susan Dulka accepted a position at Geisinger Wyoming Valley Medical Center; Dr. Pranshu Sharma accepted a fellowship position in Musculoskeletal Radiology in our department; and Dr. Kiran Talekar joined our Neuroradiology faculty.

The **Vascular and Interventional (VIR) Fellowship**, under the direction of Carin Gonsalves, M.D., is an ACGME accredited one year program. We currently match two fellows per year in the traditional VIR fellowship. In addition, we offer the DIRECT pathway program, which is a four year combined Radiology Residency and Vascular and Interventional Radiology Fellowship that can be entered after completing two clinical years of training. The program graduated Dr. Nathan Ertel and Dr. Anton Mahne.

The **Body MRI Fellowship**, under the direction of Donald Mitchell, M.D., has remained popular because of the quality of faculty, the large and diverse case volume, and because Body MRI continues to be one of the most rapidly expanding areas of clinical practice. This fellowship includes training in all areas of body MRI, including cardiac, thoracic, vascular, abdominal, pelvic, and breast applications. The graduating fellow, Dr. Shiva Gupta joined the faculty at the University of Texas MD Anderson Cancer Center.

The **Musculoskeletal Fellowship**, under the direction of Adam Zoga, M.D., graduated three outstanding fellows: Drs. Anton Delpont, Gabrielle Konin and Juan Narvaez. This was a very strong clinical team with academic productivity as well. The musculoskeletal fellowship positions remain highly coveted as we received more than 60 applications for the 2011-2012 positions.

The **Neuroradiology/ENT Radiology Fellowship**, under the direction of David Friedman, M.D., graduated one-year fellows, Drs. Piotr Sadej, Michelle Sterling and Mahmoud Zahra. Dr. Ashish Gandhe completed his Neuroradiology fellowship and will continue advanced training in neuroradiology.

The **Breast Imaging Fellowship**, under the direction of Barbara C. Cavanaugh, M.D., offers training in screening and diagnostic mammography, breast ultrasound, breast MRI, image guided percutaneous needle localization and biopsy using mammography, ultrasound and MRI. We also participate in clinical trials for innovative imaging of the breast. Dr. Colleen Whitecar accepted a position with a private practice group in Plymouth, MA.

A combined **Musculoskeletal/ Neuro MRI Fellowship**, under the direction of Michael Wolf, M.D. and Adam Zoga, M.D., is a unique program. Fellows receive training in MRI of musculoskeletal diseases as well as in neuroradiology. This remains a very popular fellowship. Three strong clinical Combined Musculoskeletal/Neuro MRI fellows completed the program: Drs. Jeffrey Mathews, Niti Tank and Hema Thakur.

TEACHING PROGRAMS FOR MEDICAL STUDENTS

I am pleased that radiology continues to be included in the core curriculum for sophomore students in the Foundations of Clinical Medicine Course. I wish to thank Terri Tuckman, M.D. and Oksana Baltarowich, M.D., who willingly contributed their time to this important teaching exercise for Jefferson medical students. The radiology topics presented were Introduction to Diagnostic Imaging, Introduction to Chest Radiology, Women's Imaging, and Abdominal Imaging. I am also pleased that the freshman Neurology Block continues to include radiology and wish to thank Dr. Adam Flanders for continuing to teach Neuroradiological Imaging as part of the curriculum.

I wish to acknowledge contributions of Dr. Oksana Baltarowich who continues in the role of Director of Medical Student Education. She has done a spectacular job of restructuring the course and developing new content material. As a result, the RAD 401 course has received rave reviews and has become one of the most desirable electives for senior medical students. Five additional electives are offered by our department, which include Diagnostic Radiology, IR, Neuroradiology, Cross-Sectional Imaging (Ultrasound/CT/MRI), and the newly established Research in Radiology. The radiology electives remained quite popular and were completed by 208 members of the senior class, either here or at an outside institution. The senior students can choose to attend one or more of the five separate electives

The Neuroradiology elective was completed by 6 senior medical students. Electives in Cross-Sectional Imaging, IR, and Research in Radiology were completed by 6, 9, and 3 students, respectively. All of these courses received outstanding reviews from the students. I wish to thank all the course coordinators for their stellar effort in enhancing medical student education – Oksana Baltarowich, M.D., for General Radiology, David Friedman, M.D., for Neuroradiology, Rick Feld, M.D., for Cross-Sectional Imaging, Carin Gonsalves, M.D., for IR, and Ethan Halpern, M.D., for Research in Radiology.

This past year we have expanded our participation in the education of Jefferson Medical College medical students. Oksana Baltarowich, M.D. accepted an invitation Dr. Gretchen Diemer to teach two radiology sessions in the "Gateway to Internship" fourth year medical student, which is designed to prepare medical students for the transition to internship. We continue to give monthly Chest Radiology lecture to third year medical students rotating through the Internal Medicine Clerkship at Thomas Jefferson University Hospital and radiology residents have been most helpful in teaching these monthly sessions. Similarly, Oksana Baltarowich, M.D. continues to provide an Introduction to Abdominal Imaging lecture as part of the third year Surgery Clerkship curriculum four times per year.

CONTINUING MEDICAL EDUCATION PROGRAMS

Radiology Grand Rounds and Radiology Research Conferences: Twenty-three weekly conferences were held during the 2011-2012 in Radiology, alternating between Grand Rounds, Radiology Research Conferences and Journal Clubs. Grand Round speakers covered a wide range of interesting topics in all areas of radiology. The Radiology Research Conferences allowed faculty, residents, and fellows in the department the opportunity to present the results of their research activities. Additionally, after each presentation, a discussion of the study design and methodology provided a useful learning session for all.

Fourth Annual David C. Levin Lecture: The Department was pleased to present the endowed lecture in honor of Dr. David Levin, Professor Emeritus and former chair of the Department on October 4, 2011. The lecture titled: "Comparative Effectiveness Research in Radiology: The Past and the Future" was given by Dr. Barbara J. O'Neil, Ridley Watts Professor of Health Care Policy, Harvard Medical School.

Jefferson Ultrasound Research and Education Institute (JUREI): The Jefferson Ultrasound Research and Education Institute, under the leadership of Barry B. Goldberg, M.D., continued its educational programs with 30 courses offered in many aspects of ultrasound. The annual Leading Edge meeting, which was held at the Borgata Casino Resort in Atlantic City, was a success with attendance of greater than 1,000 people. The program was supported by a wide variety of exhibitors and lecturers from this country and abroad providing symposia on Ob/Gyn, vascular ultrasound imaging, ultrasound physics, sonomammography, musculoskeletal, pediatric ultrasound, and ultrasound contrast agents. JUREI also offers clinical visiting fellowships and academic fellowships, with visiting fellows from various countries. There is an emphasis on assisting those physicians from less advantaged areas of the world. Through funded education grants, both from government and foundations, our center has established over 70 ultrasound education centers in emerging and underdeveloped countries.

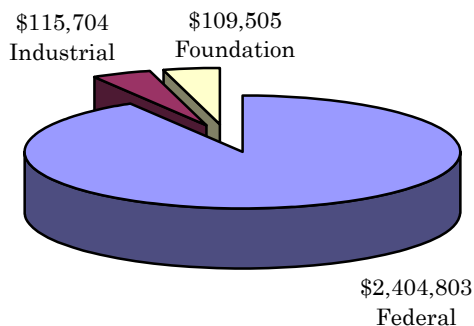
RESEARCH ACTIVITIES

Although the demands of clinical activities continue to increase, as indicated in our clinical productivity, the department's research productivity remained strong. There were 18 NIH or other federal grants active during the year, in addition to 2 foundation or medical society grants, and another 12 industrial grants. As a group, these grants brought in total current year funding of \$2,628,925 including \$1,214,847 in direct support and \$1,414,078 in indirect costs. This is an increase of over 3% from fiscal year '11 (from \$2,545,976). We had 292 publications in the medical literature (including journal articles, books and book chapters, and published abstracts), up from 261 the past fiscal year.

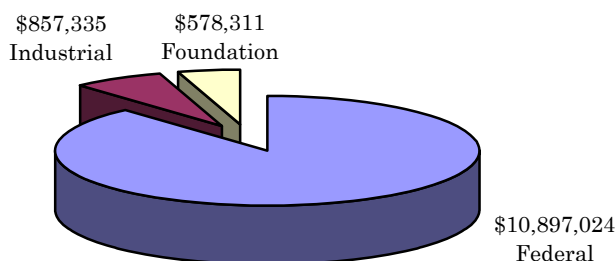
Two Judy Dubbs Memorial Research Awards were presented; one to a junior faculty member within five years of appointment for outstanding scholarly work and one to a post-doctoral fellow who excelled in independent research. The awards were presented to Suzanne Long, M.D., whose expertise and research interests are in musculoskeletal magnetic resonance imaging and ultrasound, and John Eisenbrey, Ph.D., an ultrasound physicist.

Research accomplishments of two faculty members were acknowledged at national meetings. Dr. Adam Flanders received the Magna Cum Laude Award for Excellence in a Scientific Exhibit, “Genomic imaging: Creation of a uniformed terminology to describe the morphologic MR imaging features of gliomas to augment clinical research in the genomics of cancer: A TCGA glioma phenotype research group project,” at the 2012 American Society of Neuroradiology annual meeting. Dr. Ji-Bin Liu was awarded second place for a scientific exhibit, “Parametric imaging of ultrasound contrast shows an improved correlation with immunohistochemical markers in a glioma model compared to nonparametric imaging,” at the American Institute of Ultrasound in Medicine annual meeting.

2011-2012 Fiscal Year Funding



Total Funding (all budget years)



The **Jefferson Molecular and Biomedical Imaging Core Facility**, under the direction of Mathew Thakur, Ph.D., has had another productive year continuing to expand its role in pre-clinical research on campus. The facility remained active and enhanced its services that included optical imaging. In addition to the current grants utilizing the facility, two new grants, one NIH and one industrial, were obtained in which animal imaging shall play a vital role. The work carried out in the imaging facility resulted in three peer-reviewed publications and eleven abstracts at national and international conferences. While the current MicroCAT II CT unit is outdated, Dr. Mathew Thakur has submitted an S10 NIH grant to acquire a new SPECT/CT that will dock into the current Siemens PET Inveon. Addition of a new CT system will greatly enhance the capabilities of the facility, which was listed as an integral part of the Kimmel Cancer Center core grant resubmission.

The **radiopharmaceutical research/molecular imaging program**, under the leadership of Mathew Thakur, Ph.D., continues to be extremely productive. During the past year, Dr. Thakur completed his NIH study evaluating a novel Cu-64 tracer developed

in his laboratory with Positron Emission Mammography (PEM) imaging. PEM imaging is utilized in only a handful of medical centers in the country and is on loan from the sponsor. Dr. Thakur plans to introduce and clinically evaluate a new radionuclide, PEM imaging with Ga-68 which has a shorter half-life (low radiation dose to the patients) and much better image quality than the currently used Cu-64. Investigations were initiated in targeting genomic biomarker imaging of prostate, pancreatic, and breast cancer. Additionally, a project was begun to synthesize and develop nanoparticles with receptor specific biomolecules that will permit them to attach to breast cancer cells and then internalize the nanoparticles. It is hoped that the DOX can be incorporated into the nanoparticles to enhance the therapeutic effectiveness of DOX and minimize the nonspecific normal tissue toxicity. In his laboratory, Dr. Thakur assisted in the training of an JMC M.D./Ph.D. student, two graduate students, a nuclear medicine fellow, and a post-graduate fellow.

The main thrust of the **ultrasound physics research program**, under the direction of Dr. Flemming Forsberg, continues to be in the use of microbubble-based ultrasound contrast agents. Dr. Forsberg continued his study of subharmonic pressure estimation to monitor neoadjuvant therapy of breast cancer (funded by the DoD) and completed using his pressure estimation technique in a human trial on portal hypertension funded by an NIH Challenge Grant. This project will form the basis for a new R01 application. The lab also continued the NCI sponsored multi-center clinical trial of subharmonic breast imaging with associated funding from a Department of Defense post-doctoral grant for Dr. John Eisenbrey to develop post-processing algorithms for subharmonic breast imaging under the guidance of Dr. Forsberg. Dr. Forsberg has received funding from the NIH (an S10 grant) to purchase a small animal, high-frequency ultrasound system which will be delivered in fiscal year '12. In his laboratory, Dr. Forsberg assisted in the training of four masters students, two doctoral students, and two post-doctoral fellows. Amongst these one obtained an MSc from Drexel University in 2011 and will continue in the Lab as a doctoral student.

The **MR physics program**, under the leadership of Song Lai, Ph.D., continued to investigate novel MR imaging techniques that provide a new, non-invasive approach to evaluate normal and diseased brain characteristics and functioning. Working with the Departments of Neurosurgery, Neurology, Pathology, Pediatrics, and the Jefferson Hospital of Neurosciences, the program has been productive in the investigation of lead poisoning, multiple sclerosis, epilepsy, glaucoma, Parkinson's Disease, Klinefelter's Syndrome, and brain tumors.

Our division of **diagnostic ultrasound**, under the leadership of Dr. Barry Goldberg, continued to be highly productive. A variety of basic science, animal, and clinical research studies were underway for the development and evaluation of ultrasound contrast agents and novel imaging techniques to improve the detection of diseases.

Dr. Goldberg completed his research efforts of his NIH-funded R21 grant into secondary lymph node identification with an ultrasound contrast agent. Dr. Liu continued to collaborate with the Department of Anesthesiology in both human and clinical trials investigating the use of a new glucose system. Dr. Nazarian continued his work in musculoskeletal ultrasound diagnosis and therapy. Dr. Goldberg continues to serve as the principal investigator of a Phase III clinical trial of SonoVue (an ultrasound contrast agent)

for liver lesion characterization funded by Bracco. In this study, TJU leads the country in recruitment.

In **breast imaging**, recruitment was initiated for a new study to examine the use of a new ultrasound imaging system that utilized MicroPure imaging to identify breast microcalcifications. Dr. Intenzo continued two PET trials sponsored by the American College of Radiology Imaging Network in **nuclear medicine**. One study is examining the use of 18-Fluorothymidine (FLT) PET for monitoring response of invasive ductal breast carcinoma to neoadjuvant therapy and the second trial is evaluating the use of FDG-PET for staging head and neck cancer. **Nuclear Medicine** also plays a key role in industry-funded clinical trials using combinations of chemotherapy and a radiolabeled therapeutic monoclonal antibody in patients

In **body MRI**, the division continued to evaluate the new internal radiology system for reporting hepatocellular carcinoma on MRI. The division has also been evaluating methods to optimize MR enterography, including antiperistaltic effectiveness and identifying bowel segments identified. Both **musculoskeletal imaging** and **neuroradiology** have been extensively published and presented research projects over the past year. In referenced of recent articles in musculoskeletal radiology and included in a position statement from the ADA task force.

Dr. Flanders, in **neuroradiology**, began enrolling patients into his study funded by the Department of Defense to evaluate the use of novel MR biomarkers to predict outcome in spinal cord injury and primary glial brain tumors. Additionally, Dr. Flanders continued his work on a grant funded by the NIH to create an integrated biomedical informatics infrastructure for cancer research imaging. Dr. Gorniak continued his investigation into a Resident Call Simulator, a teaching system using cases previously missed by residents, to improve the residents for call. He will be submitting a grant to the Radiological Society of North America for funding to expand the project.

In **body CT**, Dr. Halpern continued his evaluation of the cost-effectiveness of coronary CT angiography as a triple-rule-out exam, and expanded his investigation into ventricular outflow. The **interventional radiology division** continue their work with Dr. Sato in immunoembolization for uveal melanoma. Dr. Daniel Brown continues to investigate the efficacy of the various chemo- and radio-embolization techniques.

The **Methodist section** is undergoing a gradual transformation from a community radiology practice to a hybrid community/academic model. Whereas research had been impractical in the past, with recent workflow and workload balancing changes implemented, research has become more highly prioritized. However, maintaining research efforts under the community radiology model has been challenging and accomplishments in this respect have been mostly relegated to scientific abstracts presented at the 2011 Radiological Society of North America annual meeting. Research efforts will be expanded over the next year.

Our **health services research** group (Drs. Vijay Rao, David Levin, Laurence Parker, Richard Sharpe, Jr., and Jessica Kobil and Ms. Andrea Frangos) continued to be highly

productive in studying practice patterns and utilization trends in diagnostic imaging and interventions. We received continued funding from the American College of Radiology.

OPPORTUNITIES FOR EXTRAMURAL FUNDING

Although federal funding continues to be competitive, the department continues to actively seek funding. Overall, the department has 7 pending federal grant proposals, which are listed in Table 2 of the appendix. There are also five pending industry grants and one pending foundation grant. The proposals cover a broad spectrum of radiology research.

The American College of Radiology Imaging Network (ACRIN), an NCI- funded cooperative group, which has always remained a good source of extramural funding for the department, has now been incorporated with Eastern Cooperative Oncology Group (ECOG) to form ECOG-ACRIN. There are projects under development, which we hope to participate in and advance the mission of TJU. While we will continue to pursue grant funds through the NIH and radiology foundations, many of which provide seed grants to gather pilot data for larger grant submissions, we also plan on pursuing funding from industry to sponsor our investigator initiated projects.

Partnerships with industry are also a rich source of funding and research support. Additionally, research partnerships allow us to serve as beta sites for equipment and bring attention to our research endeavors. We have formed a collaborative relationship with Philips Medical Systems North America for evaluation and optimization of imaging equipment and techniques. The partnership has allowed us to optimize many of our imaging techniques with improvements in imaging protocols and analysis, thereby improving patient care. Additionally, many pilot grants have been awarded by Toshiba America Medical Systems, Lantheus Medical and GE Healthcare to study expanded use of modified ultrasound systems and ultrasound contrast agents.

APPENDIX I

PUBLICATIONS

Journal Articles:

1. Aigner F, Schäfer G, Steiner E, Jaschke W, Horninger W, Herrmann TR, Nagele U, Halpern EJ, Frauscher F: Value of enhanced transrectal ultrasound targeted biopsy for prostate cancer diagnosis: A retrospective data analysis. *World J Urol* 2012; 30(3):341-346.
2. Alexandrov AV, Needleman L: Carotid artery stenosis: Making complex assessments of a simple problem or simplifying approach to a complex disease? *Stroke* 2012; 43(3):627-628.
3. Babiarz L, Yousem DM, Parker L, Levin DC, Rao V: Utilization rates of neuroradiology across neuroscience specialties in the private office setting: Who owns or leases the scanners on which studies are performed? *Am J Neuroradiol* 2012; 33(1):43-48.
4. Babiarz L, Yousem DM, Parker L, Rao V: Who collects professional fees for neuroradiology interpretation, radiologists or nonradiologists? *J Am Coll Radiol* 2012; 9(7):498-505.
5. Babiarz L, Yousem DM, Parker L, Rao VM, Levin DC: Volume of neuroradiology studies read by neurologists: Implications for fellowship training. *J Am Coll Radiol* 2011; 8(7):477-482.
6. Baghdanian A, Cohn JR, Mitchell DG, Adamo RD, Brown DB: Cardiac-gated bright blood MR imaging to determine retrieval feasibility of a chronic foreign body. *J Vasc Interv Radiol* 2012; 23(1):151-152.
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8. Berg WA, Cosgrove DO, Dore CJ, Schafer FK, Svensson WE, Hooley RJ, Ohlinger R, Mendelson EB, Balu-Maestro C, Locatelli M, Tourasse C, Cavanaugh BC, Juhan V, Stavros AT, Tardivon A, Gay J, Henry JP, Cohen-Bacrie C, BE1 Investigators: Shearwave elastography improves the specificity of breast ultrasound: The BE1 multinational study of 939 masses. *Radiology* 2012; 262(2):435-449.
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12. Carty FL, Cashman JP, Parvizi J, Zoga AC, Morrison WB: Imaging of the postoperative hip. *Semin Musculoskelet Radiol* 2011; 15(4):357-371.
13. Casagrande BU, Read PJ: Postarthroscopy infection and septic arthritis. *Tech Orthop* 2011; 26(4):253-255.
14. Chan VO, Morrison WB, Kavanagh EC: Postoperative infection in the foot and ankle. *Semin Musculoskelet Radiol* 2012; 16(3):241-253.
15. Chow AH, Morrison WB: Imaging of hip injuries in dancers. *J Dance Med Sci* 2011; 15(4):160-172.
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285. Winokur RS, Sharpe RE, Gorniak RJ, Nazarian LN, Flanders AE, Rao VM: Grid of attending-resident report pairs provides valuable feedback for resident and attending performance in relation to their peers. *Proceedings of the 97th Scientific Assembly and Annual Meeting of the Radiological Society of North America*, Chicago, IL, November-December 2011.
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287. Yorkston J, Gingold E: Digital projection x-ray detectors: A review of current technology and commercial landscape. *Proceedings of the 2011 Joint AAPM/COMP Meeting*, Vancouver, BC, Canada, July 2011.
288. Zinn PO, Mahajan B, Sathyan P, Singh S, Majumder S, Flanders AE, Huang E, Jain R, Gutman D, Hwang S, Kirby J, Freyman J, Jolesz FA, Colen RR, Holder C, Wintermark M, TCGA Glioma Phenotype Research Group: Imaging genomic mapping of edema/cellular invasion MR imaging-phenotypes in glioblastoma multiforme. *Proceedings of the American Society of Neuroradiology 50th Annual Meeting & the Foundation of the ASNR Symposium 2012*, New York, NY, April 2012.
289. Zoga AC, Elias IE, Schweitzer ME, Morrison WB, Abolmaali N: Controlled dynamic movement of joints and spine during ultra-fast MRI using a motor driven device: Feasibility and practical application. *Proceedings of the 97th Scientific Assembly and Annual Meeting of the Radiological Society of North America*, Chicago, IL, November-December 2011.

290. Zoga AC, Girard B, Shortt CP, Kelly BT, Morrison WB: Morphologic patterns of acetabular labrum tear on direct MR arthrography: Classification based on lesion location, extent, and therapeutic implication. *Proceedings of the 2012 Society of Skeletal Radiology Annual Meeting*, Miami, FL, March 2012.
291. Zohrabian V, Zussman B, Frangos A, Mathews J, Lackey J, Lai S, Dresner M, Marino R, Gorniak R, Flanders AE: The “normal appearing” spinal cord in spinal cord injury: Diffusion tensor imaging alterations beyond the visible zone of injury. *Proceedings of the American Society of Spine Radiology 2012 Annual Symposium*, Miami, FL, February 2012.
292. Zohrabian V, Zussman B, Mathews J, Frangos, A, Gorniak R, Lackey J, Dresner MA, Marino R, Lai S, Flanders AE: Can diffusion tensor imaging (DTI) replace the neurologic examination in spinal cord injury (SCI)? *Proceedings of the 97th Scientific Assembly and Annual Meeting of the Radiological Society of North America*, Chicago, IL, November-December 2011.

APPENDIX II

FORMAL SCIENTIFIC PRESENTATIONS

OKSANA BALTAROWICH, M.D.

- October 21-23, 2011 21st Annual Meeting & Postgraduate Course of the Society of Radiologists in Ultrasound, Chicago, IL
- “Non-gynecological findings on pelvic ultrasound scans”
- May 4, 2012 Department of Radiology Grand Rounds, Geisinger Medical Center, Danville, PA
- “Sonography of adnexal masses”
 - “Non-gynecological findings on pelvic ultrasound scans”
 - “Obstetrical ultrasound cases”
 - “General ultrasound cases”
- May 8-11, 2012 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “Ultrasound general imaging – The requisites”
 - “Abdominal ultrasound – Part I (liver, gallbladder, and bile ducts)”
 - “Abdominal ultrasound – Part II (pancreas and spleen)”
 - “Women's imaging symposium – Advances in OB/GYN”
 - “Sonography of the 1st trimester: Another look”
- June 13, 2012 Women’s Imaging Symposium, South Jersey Regional Medical Center, Department of Radiology, Vineland, NJ
- “Sonography of pelvic emergencies”

DANIEL BROWN, M.D.

- September 27, 2011 Visiting Lecturer, Philadelphia Angiographic and Interventional Radiology Society, Philadelphia, PA
- “Management of hepatocellular carcinoma: More options, more questions”
- September 30, 2011 Visiting Lecturer, Mallinckrodt Institute of Radiology, Washington University in St. Louis, St. Louis, MO
- “Management of hepatocellular carcinoma: More options, more questions”
- October 1, 2011 Visiting Lecturer, Midwest Stone Institute, Washington University in St. Louis, St. Louis, MO
- “Cryoablation of extra-renal malignancy”
- October 21, 2011 Department of Radiology Command Grand Rounds, Naval Medical Center, Portsmouth, Portsmouth, VA
- “Cryoablation of extra-renal malignancy”
 - “Interventional oncology: A primer”
 - “IR management of portal hypertension” (radiology residents conference)

- November 10, 2011 An Update in Hepaticopancreatobiliary Malignancies, Jersey Shore University Medical Center, Neptune, NJ
- “Intra-arterial treatment of hepatic malignancy”
- November 12, 2011 Synergy 2011: A Multidisciplinary Approach to Interventional Oncology, University of Miami, Miami, FL
- “Current standards of RF and cryoablation of RCC”
- January 3, 2012 Department of Radiology Grand Rounds, Brigham and Women’s Hospital, Boston, MA
- “Management of hepatocellular carcinoma: More options, more questions”
 - “Lessons learned in interventional oncology” (radiology residents conference)
- January 4, 2012 Department of Radiology Grand Rounds, Massachusetts General Hospital, Boston, MA
- “Management of hepatocellular carcinoma: More options, more questions”
 - “Lessons learned in interventional oncology” (radiology residents conference)
- January 14-15, 2012 International Symposium on Endovascular Therapy, The 4th Annual Symposium on Clinical Interventional Oncology, Miami, FL
- “The role of conventional TACE now and in the future”
 - “Treatment of colorectal liver metastases”
 - “Colorectal tumor board moderator”
 - “Video case discussion of transcatheter techniques”
 - “Metastatic melanoma: TACE, Y90 and percutaneous hepatic perfusion”
 - “Morbidity and mortality”
 - “Setting the TACE table: How three experts do it”
 - “Prescribing narcotics and antiemetics for IO patients: How I do it”
- February 9-12, 2012 Y90: Are YoU Ready? sponsored by the Society of Interventional Radiology, Scottsdale, AZ
- “State of the art: Treatment strategies for liver dominant metastatic disease”
 - “Advanced angio for Y90: Mitigating complications”
 - “Coil/embolization workshop”
 - “Practice models and strategies for success: Unified multidisciplinary practice: Trainees and Y90”
- March 25-28, 2012 37th Annual Scientific Meeting of the Society of Interventional Radiology, San Francisco, CA
- “Spin doctor? Cone-beam CT—more dose, more time, minimal outcome data” (plenary session)
 - “Introduction to Y90” (workshop faculty)
 - “Managing clinical issues with the oncology patient” (workshop faculty/co-director)
 - “Frontiers in interventional oncology” (categorical course organizer/moderator)

- “Tumor board: Hepatobiliary malignancies” (categorical course)
 - “Case based review: Interventional oncology: Vascular, non-vascular and complications” (categorical course)
 - “Local ablation”
- April 4, 2012 Visiting Lecturer, Department of Radiology, Bryn Mawr Hospital, Bryn Mawr, PA
- “Interventional radiology board review”
- May 3-6, 2012 Global Embolization Symposium and Technologies (GEST), New York, NY
- “Splenic embolization for treatment of hypersplenism and portal hypertension”
 - “Radioembolization for HCC: What is the data?”
 - “Radioembolization case-based review” (advanced panel discussion)
 - “GEST consensus forum: Current trends in practice”
- June 14-17, 2012 World Conference on Interventional Oncology (WICO 2012), Chicago, IL
- “Liver metastases (colon) tumor board” (moderator)
 - Introduction to interventional oncology?” (medical student/resident symposium)
 - “Immunoembolization: Better than chemo or radioembolization for melanoma”

BARBARA CAVANAUGH, M.D.

- May 8-11, 2012 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “Ultrasound guided breast biopsy: Imaging/pathology correlation”
 - “Ultrasound guided breast biopsy” (demonstration)

SANDEEP DESHMUKH, M.D.

- November 21, 2011 Visiting Lecturer, Department of Radiology, St. Christopher’s Hospital for Children, Philadelphia, PA
- “MR enterography”
- November 27-
December 2, 2011 97th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “Standardized reporting of likelihood of hepatocellular carcinoma in clinical MRI reports: Initial implementation”
 - “Trends in the utilization of cardiac MRI in the Medicare population” (exhibit)
 - “Mesenteric masses: A case based review” (exhibit)

- May 8-11, 2012 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “Renal artery disease: Interpretation and radiologist’s perspective”
 - “Fistulas, pseudoaneurysms, and other groin problems”

ACHALA DONURU, M.D.

- November 27-
December 2, 2011 97th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “Does a decrease in SUVmax in dual-point FDG-PET/CT imaging reliably exclude malignancy of a solitary pulmonary nodule (SPN)?”
 - “Evaluation for pulmonary embolism using prospective ECG-gating: Impact on image quality and effective radiation dose”

DAVID ESHELMAN, M.D.

- March 2-4, 2012 Ocular Melanoma Foundation 2012 Eye and Not Alone Patient Retreat, Washington, DC
- “A frank chat about ocular melanoma”
- March 25-28, 2012 37th Annual Scientific Meeting of the Society of Interventional Radiology, San Francisco, CA
- “Immunoembolization of uveal melanoma”
- June 16-17, 2012 Melanoma Research Foundation 1st Annual Eyes on a Cure: Patient and Caregiver Symposium, Philadelphia, PA
- “Treatment of uveal melanoma metastatic to the liver”

RICK FELD, M.D.

- May 8-11, 2012 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “Interventional ultrasound including thyroid biopsy: A practical guide”

STEVEN FINDEN, M.D., D.D.S.

- September 7-11, 2011 American Society of Head and Neck Radiology 45th Annual Meeting, San Diego, CA
- “The radiologic appearance of common dental procedures and prosthetics”

CINDY FINDEN, M.D.

- November 27-
December 2, 2011
- 97th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “Chest case of the day”

ADAM FLANDERS, M.D.

- November 27-
December 2, 2011
- 97th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “A coordinated method for clinical trials research: Multireader assessment of MR imaging features of human gliomas”
 - “So many images, so little time. Advanced imaging techniques. Practical informatics for the practicing radiologist: Part two” (in conjunction with the Society for Imaging Informatics in Medicine)
 - “Electronic teaching files (Informatics: Advances) – General concepts & basic MIRC”
 - “Decoding the alphabet soup (IHE®, MIRC®, RadLex®, Reporting): Whirlwind tour of RSNA informatics projects”
 - “Neuroradiology series: Spine. Controversies in cervical spine trauma”
- February 16-19, 2012
- American Society of Spine Radiology 2012 Annual Symposium, Miami, FL
- “Concepts and controversies in MRI of spinal trauma and spinal cord injury”
- March 15-16, 2012
- 11th Annual Cerebrovascular Update Conference, sponsored by Thomas Jefferson University Hospital, Philadelphia, PA
- “Modern imaging approaches in stroke management”
- March 19-22, 2012
- Association of University Radiologists 60th Annual Meeting, San Antonio, TX
- “Enhancing trainee education with a departmental digital lecture library”
- March 25-30, 2012
- 44th IDKD International Diagnostic Course, Davos, Switzerland
- “Spinal trauma and spinal cord injury”
- April 21-26, 2012
- American Society of Neuroradiology 50th Annual Meeting & the Foundation of the ASNR Symposium 2012, New York, NY
- “Genomic imaging: Creation of a uniformed terminology to describe the morphologic MR imaging features of gliomas to augment clinical research in the genomics of cancer: A TCGA glioma phenotype research group project”
- May 4, 2012
- 3rd Annual Navigating Spinal Care Symposium: Geriatric Spinal Disorders, sponsored by Thomas Jefferson University Hospital, Philadelphia, PA
- “Controversies in spinal imaging of the elderly”

- June 7-10, 2012 The Society for Imaging Informatics in Medicine 2012 Annual Meeting, Orlando, FL
- “Quantitative imaging: A revolution in evolution” (co-chair/moderator)
 - “Quantitative imaging: An interactive discussion with the experts” (co-chair/moderator)
 - “Feasibility of multicenter research clinical image evaluation using open source tools and the annotation and imaging markup (AIM) data service”

FLEMMING FORSBERG, PH.D.

- August 2-5, 2011 6th Era of Hope Conference, Department of Defense Breast Cancer Research Program, Orlando, FL
- “Subharmonic aided pressure estimation for monitoring neoadjuvant chemotherapy of locally advanced breast cancer” (poster)
 - “Advanced processing of subharmonic ultrasound contrast images for improved breast cancer diagnosis” (poster)
- September 22-23, 2011 26th Annual Advances in Contrast Ultrasound: ICUS Bubble Conference, Chicago, IL
- “Noninvasive estimation of portal hypertension in humans”
- October 18-21, 2011 IEEE International Ultrasonics Symposium 2011, Orlando, FL
- “Dual grayscale and subharmonic ultrasound imaging on modified ultrasound scanner in 2 and 3D” (poster)
 - “Subharmonic aided pressure estimation in patients with suspected portal hypertension” (poster)
- November 27-
December 2, 2011 97th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “Subharmonic aided pressure estimation for monitoring interstitial fluid pressure in swine melanomas: Initial *in vitro* and *in vivo* results”
 - “Dual grayscale and subharmonic US imaging on a modified commercial scanner” (eposter)
 - “Processing acoustic data from US contrast agents for ambient pressure estimation” (eposter)
 - “Noninvasive subharmonic aided pressure estimation in patients with suspected portal hypertension-preliminary results” (eposter)
 - “Noninvasive cardiac pressure estimation using subharmonic microbubble signals” (eposter)
- November 29, 2011 Ultrasound Quantitative Imaging Biomarker Alliance Exploratory Meeting, Chicago, IL
- “Pressure measurements with contrast agents”

- February 3, 2012 Reunion Internacional Sobre Avances en Hepatologia IV, Valladolid, Spain
- “Subharmonic aided pressure estimation (SHAPE): A noninvasive technique for the measurement of fluid pressures using ultrasound contrast agents”
- March 29-
April 1, 2012 2012 American Institute of Ultrasound in Medicine Annual Convention, Phoenix, AZ
- “The anti-angiogenic effects of a VEGF decoy receptor can be monitored *in vivo* using contrast-enhanced ultrasound imaging”
 - “Acceptance testing of ultrasound imaging systems: Methodology & recent experience”
- May 8-11, 2012 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “3D subharmonic breast imaging: Preliminary results”
 - “Estimating portal hypertension with subharmonic bubble signals: A first-in-humans experience”

ERIC GINGOLD, PH.D.

- July 31-
August 1, 2011 2011 Joint AAPM/COMP Meeting, Vancouver, BC, Canada
- “Digital projection x-ray detectors: A review of current technology”

CARIN GONSALVES, M.D.

- June 16-17, 2012 Melanoma Research Foundation 1st Annual Eyes on a Cure: Patient and Caregiver Symposium, Philadelphia, PA
- “Radioembolization and chemoembolization for treatment of uveal melanoma hepatic metastases”

RICHARD GORNIK, M.D.

- April 29-
May 1, 2012 2012 Annual Meeting of the American Roentgen Ray Society, Vancouver, BC, Canada
- “Technique logger: A PACS based system for imaging quality control”

ETHAN HALPERN, M.D.

- September 21, 2011 Department of Medicine Grand Rounds, Methodist Hospital, Philadelphia, PA
- “ECG-gated CT angiography for chest pain evaluation in the emergency department”

- November 27-
December 2, 2011
- 97th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “Left atrial volume: Comparison of 2D and 3D transthoracic echocardiography with ECG-gated CT angiography”
 - “Evaluation of fully automated computer detection software for interpretation of coronary CT angiography”
 - “Dedicated cardiac CT and triple rule-out studies: Risks and benefits” (refresher course)
 - “Evaluation for pulmonary embolism using prospective ECG-gating: Impact on image quality and effective radiation dose”
 - “Contrast-enhanced sonography of the prostate: Utility of targeted biopsy with flash replenishment MIP imaging”
 - “Evaluation of acute chest pain in the emergency department: Effectiveness of triple rule-out CT angiography for triage of patients”
 - “Impact of coding and reimbursement changes in the 2009-2011 Medicare fee schedules on cost-effectiveness of stress testing and CT angiography for evaluation of coronary artery disease”
 - “Normal measurements of the left ventricular outflow tract by ECG-gated cardiac CT”
 - “Estimation of left ventricular mass during coronary CTA as a predictor of clinical outcome: Comparison with conventional echocardiography”
- February 29, 2012
- Department of Radiology Grand Rounds, Hahnemann University Hospital, Philadelphia, PA
- “Coronary anatomy and variations”
- March 22, 2012
- 8th Annual CVI Update in Nuclear Cardiology, Philadelphia, PA
- “Assessment of patients with LV dysfunction: By CTA”
 - “Assessment of coronary anatomy versus myocardial perfusion: Synergistic application of CTA and nuclear scintigraphy”
- May 8-11, 2012
- The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “GU sonography of the urinary bladder, scrotum and prostate”
 - “Kidneys, adrenal glands and retroperitoneum”
 - “Ultrasound evaluation for fecal incontinence”

CHARLES INTENZO, M.D.

- November 27-
December 2, 2011
- 97th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “Is FDG-PET/CT useful in the staging and restaging of cholangiocarcinoma?”
 - “Does a decrease in SUV max in dual-point FDG-PET/CT imaging reliably exclude malignancy of a solitary pulmonary nodule (SPN)?”
 - “Is FDG-PET/CT sensitive in detecting metastases from hepatocellular carcinoma?”

- January 26-29, 2012 American College of Nuclear Medicine 2012 Mid-Winter Meeting, Orlando, FL
- “Utilization of VQ scans for evaluation of chest pain syndrome in sickle anemia patients presenting to the emergency room”
 - “Atypical appearance of parathyroid gland adenomas on Tc-99m Sestamibi scintigraphy”
 - “The use of FDG-PET/Ct imaging in follow-up of pancreatic cancer”
 - “Tc-99m sestamibi SPECT-MPI vs CTCA to rule-out hemodynamically significant coronary stenosis”

ALFRED KURTZ, M.D.

- January 10, 2012 Visiting Professor, Department of Radiology, Bryn Mawr Hospital, Bryn Mawr, PA
- “CT and Ultrasound of Pelvic Abnormalities”
- May 8-11, 2012 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “Ultrasound general imaging: The requisites” (co-director and moderator)
 - “Obstetrics part I (1st trimester, ectopic pregnancy)”
 - “Obstetrics part II (2nd and 3rd trimester)”
 - “Gynecologic ultrasound”

DAVID LEVIN, M.D.

- September 23, 2011 Visiting Lecturer, Society of Chairs of Academic Radiology Departments, Colorado Springs, CO
- “Cardiac imaging in academic radiology: The past 50 years – Reflections on radiology’s ever-changing role”
- October 27-29, 2011 26th Annual Economics of Diagnostic Imaging 2011: National Symposium, Arlington, VA
- “Major threats facing radiology: What to do about them”
 - “How radiologists should prepare for an era of ACOs”
 - “What’s new with turf battles and self-referral”
- November 9, 2011 Visiting Lecturer, Radiological Society of Puerto Rico, San Juan, PR
- “Self-referral and its relationship to overutilization of imaging”
 - “How states and payers can curb self-referral in noninvasive diagnostic imaging”
 - “The commoditization of radiology and how to undo it”
 - “How radiologists should prepare for an era of ACOs”
- November 16, 2011 Visiting Lecturer, Department of Radiology, New York University Langone Medical Center, New York, NY
- “The major threats facing radiology and what to do about them”

- November 27-
December 2, 2011
- 97th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “Emergency department CT utilization is the primary reason why CT remains the most rapidly growing of the major advanced imaging modalities”
 - “Outsourcing emergency radiology to teleradiology companies – The debate goes on”
 - “Trends in payments to radiologists and cardiologists for noninvasive cardiovascular imaging: Nationwide Medicare data”
 - “Percutaneous needle versus surgical breast biopsy: Previously-stated allegations of overuse of surgery are in error”
 - “Addressing newer threats to radiology: Commoditization, fear of radiation, utilization control, and proposed new payment systems”
- June 7-8, 2012
- Visiting Lecturer, Department of Radiology, University of Ottawa/The Ottawa Hospital, Ottawa, ON, Canada
- “The appropriateness (or lack thereof) of today’s imaging”
 - “Innovative ways to get yourself hired as a radiologist”
 - “How to assure the future of radiology”
 - “The commoditization of radiology and how to undo it”

JI-BIN LIU, M.D.

- March 6, 2012
- The Drexel-Jefferson Academic Alliance Course for Biomedical Engineering, Philadelphia, PA
- “Interventional and intraoperative ultrasound: A review”
 - “Laparoscopic ultrasound”
- June 2, 2012
- The 6th Chinese Academic Ultrasound Congress, Beijing, China
- “Present and prospect of ultrasound technology”
- June 3, 2012
- Ultrasound Training Course, Peking Union Medical College Hospital, Beijing, China
- “Intraoperative ultrasound: Present and future”

SUZANNE LONG, M.D.

- March 3, 2012
- Philadelphia Hand Conference, Philadelphia, PA
- “Ultrasound guided intervention in the hand”
- March 7-11, 2012
- Fundamentals of Musculoskeletal Ultrasound, sponsored by University of Michigan Health System, San Diego, CA
- “Elbow ligaments”
 - “Ankle and foot tendon pathology”
 - “Interventions in the elbow, wrist and hand”

- May 8-11, 2012 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “Musculoskeletal ultrasound: Foot and ankle”
 - “Musculoskeletal ultrasound: Elbow”

CHRISTOPHER MERRITT, M.D.

- April 19-21, 2012 American College of Physicians Internal Medicine 2012, New Orleans, LA
- “Interpretation of common radiologic tests in internal medicine”

- May 8-11, 2012 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “Physics”
 - “BIRADS lexicon – Diagnostic criteria”
 - “Understanding imaging”
 - “Understanding Doppler”

DONALD MITCHELL, M.D.

- October 22-26, 2011 Society of Computed Body Tomography & Magnetic Resonance 34th Annual Course, Challenges and Opportunities in Body CT & MR in 2011, Washington, DC
- “Indications and impact of eoivist – When to use it”
 - “Endometriosis-spectrum of MRI appearances”
 - “Detecting and reporting hepatocellular carcinoma: Implementing LIRADS”
 - “Measurement of hepatic fat and iron by MRI”

WILLIAM MORRISON, M.D.

- August 1-4, 2011 Practical Applications in MSK Radiology: MRI, US and Interventional Techniques, Hilton Head, SC
- “Foot / ankle ligaments and tendons”
 - “Foot / ankle marrow”
 - “Cases”
 - “MRI of MSK infection”
 - “Shoulder rotator cuff”
 - “MRI of the wrist”
 - “Hip FAI”
 - “Hip non-FAI”

- August 29-31, 2011 20th Annual Current Issues of Magnetic Resonance Imaging in Orthopaedics and Sports Medicine, San Francisco, CA
- “How I approach the upper extremity”
 - “Lower extremity osteomyelitis”
 - “Ankle and foot” (panel discussion)
 - “How I approach the lower extremity”

- September 21-24, 2011 2011 International Skeletal Society Annual Meeting, San Diego, CA
- “Posterolateral corner injuries of the knee...Made simple”
 - “Injuries of the hand – Marrow”
- October 6, 2011 American Institute for Radiologic Pathology, Silver Spring, MD
- “MRI imaging of the elbow”
- November 3-4, 2011 6th Annual Musculoskeletal MRI in Clinical Practice 2011, Las Vegas, NV
- “MR arthrography”
 - “Ulnar-sided wrist pain – Radiologist perspective”
 - “Wrist instability – Radiologist perspective”
 - “Osteonecrosis and marrow diseases – Radiologist perspective”
 - “Introduction to MRI of the hips: Protocols, bone trauma, AVN, labral tears, FAI”
 - “Athletic injuries of the foot and ankle”
- November 8, 2011 Visiting Lecturer, American College of Rheumatology, Chicago, IL
- “Imaging of arthritis”
- November 27-
December 2, 2011 97th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “Sports-related musculoskeletal injuries: “Foot and ankle”
- February 9, 2012 Department of Radiology Grand Rounds, Yale-New Haven Hospital, New Haven, CT
- “Unified body theory”
 - Boards review
- February 22-24, 2012 Musculoskeletal MR, American College of Radiology, Reston, VA
- “Cruciate and collateral ligaments”
 - “Ankle: Tendons and ligaments”
 - “Ankle: Bones and joints”
- February 27, 2012 Department of Radiology Grand Rounds, Baylor University Medical Center, Houston, TX
- “Unified body theory”
 - Boards review
- March 3-5, 2012 7th Annual Snowmass 2012, Educational Symposia, Breckenridge, CO
- “MRI of the post-op shoulder”
 - “Imaging of arthritis”
 - “MRI of the ankle”
 - “MRI of muscle”
- March 13-16, 2012 British Society of Skeletal Radiology / Royal College of Radiologists Combined Annual Meeting Leeds, UK
- “Unified principles in MSK radiology”
 - “Common misses on MRI and how to avoid them”
 - “Post-operative knee imaging”
 - “Optimization MRI techniques: MRA vs MRI”

- March 17-21, 2012 2012 Society of Skeletal Radiology Annual Meeting, Miami, FL
- “SAM: Bone marrow imaging”
 - “Opposed phase imaging”
- May 5-11, 2012 ISMRM 2012: International Society for Magnetic Resonance in
Medicine 20th Scientific Meeting & Exhibition, Melbourne,
Australia
- “MRI of the hip: Osseous lesions”
 - “Dedicated extremity units”
- May 5, 2012 Inaugural Graham Buirski Lecture, Australasian Musculoskeletal
Imaging Group (AMSIG) Annual Meeting, Melbourne, Australia
- “Unifying concepts in musculoskeletal radiology”
- May 6, 2012 21st Annual Section for Magnetic Resonance Technologists Meeting,
Melbourne, Australia
- “MRI of the hand and thumb”
- May 20-25, 2012 29th Annual Magnetic Resonance imaging 2012: National
Symposium, Las Vegas, NV
- “Optimization of musculoskeletal MRI”
 - “Osteochondritis dissecans – What is it really?”
 - “MRI of degenerative disc disease and nomenclature”

LEVON N. NAZARIAN, M.D.

- July 7-9, 2011 Hands-on Diagnostic and Interventional Musculoskeletal
Ultrasound in the Upper Limb: State of the Art, American
Institute of Ultrasound in Medicine, Rochester, MN
- “Introduction to MSK US: Normal, abnormal and common
artifacts”
 - “Clinical problem solving: Sonographic approach to the
thrower’s elbow”
 - “Percutaneous tenotomy in the treatment of tennis elbow”
- July 22, 2011 Department of Radiology Grand Rounds, Vanderbilt University,
Nashville, TN
- “Sonography of soft tissue masses” (grand rounds)
 - “Resident case conference”
- July 23-24, 2011 The 35th Annual Vanderbilt Diagnostic Sonography Symposium,
sponsored by Vanderbilt University School of Medicine, Franklin,
TN
- “Overview of musculoskeletal sonography”
 - “Sonography of soft tissue masses”
 - “US of renal & liver transplants”
- August 26-28, 2011 13th World Congress of Ultrasound in Medicine & Biology, World
Federation of Ultrasound in Medicine and Biology, Vienna, Austria
- “Shoulder anatomy”
 - “Ultrasound of shoulder pathology”
 - “Ultrasound-guided treatment of sports overuse syndromes”
 - “Ultrasound of nerve entrapment syndromes” (moderator)

- September 21, 2011 Department of Radiology Grand Rounds, Pennsylvania Hospital, Philadelphia, PA
- “Ultrasound-guided musculoskeletal interventions” (grand rounds)
 - “Introduction to musculoskeletal ultrasound”
 - “Resident case conference”
- October 13, 2011 Visiting Lecturer, Philadelphia Roentgen Ray Society, Philadelphia, PA
- “Ultrasound evaluation of the shoulder”
- October 21-23, 2011 21st Annual Meeting & Postgraduate Course of the Society of Radiologists in Ultrasound, Chicago, IL
- “Live scanning demonstration: Sonography of the adult hip and knee”
- March 1, 2012 39th Annual Course in Electrodiagnostic Medicine, sponsored by Thomas Jefferson University Hospital, Philadelphia, PA
- “US in neuropathies”
- March 29-
April 1, 2012 2012 American Institute of Ultrasound in Medicine Annual Convention, Phoenix, AZ
- “Cutting-edge musculoskeletal ultrasound” (moderator)
 - “Elastography: Applications in musculoskeletal ultrasound”
 - “Ultrasound-guided treatment of trigger finger and carpal tunnel syndrome”
 - “Point-counterpoint: What is the role of ultrasound in the diagnosis of acute appendicitis?” (moderator)
 - “Cost and radiation savings of partial substitution of ultrasound for computed tomography in appendicitis evaluation: A national projection”
- May 8-11, 2012 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “Musculoskeletal Ultrasound Course” (director)
 - “Overview of musculoskeletal ultrasound”
 - “Ultrasound of the shoulder: Pathology”
 - “Ultrasound of the hand and wrist”
 - “Ultrasound of soft tissue masses”
 - “Interventional MSK ultrasound”

LAURENCE NEEDLEMAN, M.D.

- September 22-25, 2011 2011 Society of Diagnostic Medical Sonography Annual Conference, Atlanta, GA
- “Carotid diagnostic criteria: Beyond PSV, logic versus illogic”
 - “Waveform analysis: The hemodynamics behind the shapes”
- October 18, 2011 Cardiology Grand Rounds, Main Line Health Heart Center, Wynnewood, PA
- “Venous Ultrasound”

- October 21-23, 2011 21st Annual Meeting & Postgraduate Course of the Society of Radiologists in Ultrasound, Chicago, IL
- “Hemodynamics and Doppler sonography”
- November 18-19, 2011 Advances in Vascular Imaging and Diagnosis 22nd Annual Symposium and Workshop on Management and Clinical Issues, sponsored by Cleveland Clinic, New York, NY
- “Carotid stenosis beyond the peak systolic velocity”
 - “Logic, illogic, and evidence in carotid diagnostic criteria”
 - “More on the management of quality assurance: Some common sense approaches”
 - “Carotid, venous and arterial complications and interesting cases”
- January 15-19, 2012 2012 International Symposium on Endovascular Therapy, Miami, FL
- “Carotid duplex waveform analysis: Normal and abnormal”
 - “Controversies in carotid screening exams” (panel)
 - “AAA screening: Who should be screened and how to do it”
- February 23, 2012 Washington DC Metropolitan Radiological Society CME Meeting, Washington, DC
- “Arterial stenosis”
 - “DC residents interesting ultrasound case quiz”
- February 24-25, 2012 Registered Physician in Vascular Interpretation Exam Review Course, sponsored by the Society of Vascular Ultrasound and the University of Cincinnati, Tampa, FL
- “Interpretation guidelines: Arterial duplex ultrasound”
 - “Case interpretation: Arterial duplex ultrasound”
 - “Interpretation guidelines: Arterial physiologic testing”
 - “Case interpretation: Arterial physiologic testing”
 - “Interpretation guidelines: Extracranial cerebrovascular”
 - “Case interpretation: cerebrovascular”
- March 17-18, 2012 21st Annual State of the Art Vascular Ultrasound, Medical Technology Management Institute, Chicago, IL
- “Doppler waveforms and artifacts”
 - “Carotid arteries: Stenoses and stents”
 - “Doppler of the lower extremity veins”
 - “Doppler jeopardy”
 - “Doppler of the lower extremity arteries”
- March 29-
April 1, 2012 2012 American Institute of Ultrasound in Medicine Annual Convention, Phoenix, AZ
- “Diagnosing and treating venous disease: Controversies in diagnosis”
- April 12-14, 2012 Ultrasound 2012, sponsored by Harvard Medical School, Boston, MA
- “Doppler waveforms and artifacts”
 - “Carotid ultrasound”
 - “Upper and lower extremity venous ultrasound”

- May 8-11, 2012 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “Venous thrombosis: acute, chronic, recurrent”
 - “Venous cases”
 - “A mock QA conference”
 - “Carotid cases from simple to hard”
 - “Vascular criteria and quality: a panel discussion”
 - “Vascular requisites”

PATRICK O’KANE, M.D.

- March 29-
April 1, 2012 2012 American Institute of Ultrasound in Medicine Annual Convention, Phoenix, AZ
- “Point-counterpoint: What is the role of ultrasound in the diagnosis of acute appendicitis”

VIJAY RAO, M.D.

- November 27-
December 2, 2011 97th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “Facing the challenges of health care reform: Teaching leadership strategies to residents” (refresher course)
 - “Value-added services of hospital-based radiology groups” (refresher course)
 - “Addressing newer threats to radiology: Commoditization, fear of radiation, utilization control, and proposed new payment systems” (refresher course)

DINESH SHARMA, M.D.

- September 20, 2011 Department of Radiology Visiting Lecturer, Bryn Mawr Hospital, Bryn Mawr, PA
- Resident lecture
- January 28-31, 2012 65th Annual Conference of Indian Radiological & Imaging Association, Hyderabad, India
- “Imaging usual and unusual cerebral aneurysms”

COLETTE SHAW, M.D.

- June 28-30, 2012 MASCC/ISOO International Symposium on Supportive Care in Cancer, New York, NY
- “Palliative venting gastrostomy in patients with malignant bowel obstruction and ascites”

MATHEW THAKUR, PH.D

- September 2-12, 2011 3rd International Symposium on Radionuclide Production and Applications, Moscow, Russia
- “Development of radiopharmaceuticals in diagnosis and therapy”
- September 29-30, 2011 Visiting Lecturer, Positron Corporation, Indianapolis, IN
- “Preparation and application of In-111 oxine”
- October 4-7, 2011 Nuclear Medicine Conference, Womack Army Medical Center, Fort Bragg, NC
- “Exploiting biomarkers for oncologic imaging”
- December 5-6, 2011 Visiting Lecturer, Molecular Imaging, Carestream Health Care, Philadelphia, PA
- “Molecular imaging: From bench to bedside”
- March 20-
April 1, 2012 Nuclear Medicine Regional Symposium, Vellore Medical Center, Tamilnadu, India
- “Genomic and molecular approach to PET and PEM imaging of breast cancer in humans”
- May 31, 2012 Visiting Lecturer, Molecular Imaging, Carestream Health Care, Philadelphia, PA
- “Role of molecular imaging in translational research”
- June 9-13, 2012 Society of Nuclear Medicine 2012 Annual Meeting, Miami, FL
- “Positron emission mammography (PEM): Beyond F-18-FDG”
 - “Optical imaging of breast cancer using a peptide – NIR-Fluorophore TP4303”

ADAM ZOGA, M.D.

- August 29-31, 2011 20th Annual Current Issues of Magnetic Resonance Imaging in Orthopaedics and Sports Medicine, San Francisco, CA
- “Imaging of athletic pubalgia and sports hernias”
 - “MR of the hip: AVN, muscle, tendon and labrum”
 - “How I take a hip MRI”
 - “Hip” (panel discussion)
- November 10, 2011 Visiting Lecturer, Colorado Radiologic Society, Denver, CO
- “MRI of athletic pubalgia and the ‘sports hernia’” (keynote lecturer)
- November 10, 2011 Department of Radiology Grand Rounds, University of Colorado Medical Center, Denver, CO
- “Imaging hip and groin pain in the young adult”

- November 18-20, 2011 Musculoskeletal MR, American College of Radiology, Reston, VA
- “MRI knee ligaments”
 - “MRI ankle ligaments”
 - “MRI ankle bones and cartilage”
- February 23, 2012 Department of Radiology Visiting Lecturer, Hahnemann University Hospital, Philadelphia, PA
- “Imaging arthritis: Why MRI?”
- March 17-21, 2012 2012 Society of Skeletal Radiology Annual Meeting, Miami, FL
- “Morphologic patterns of acetabular labrum tear on direct MR Arthrography: Classification based on lesion location, extent, and therapeutic implication”
- April 29-
May 1, 2012 2012 Annual Meeting of the American Roentgen Ray Society, Vancouver, BC, Canada
- “Sports imaging: Sports specific imaging considerations” (instructional course)

APPENDIX III

HONORS, EDITORIAL ACTIVITIES, SERVICE TO REGIONAL OR NATIONAL ORGANIZATIONS

OKSANA BALTAROWICH, M.D.

- Vice President, Ukrainian Medical Association of North America, Pennsylvania Chapter
- Examiner, American Board of Radiology
- Member-at-Large, Board of Directors, Alliance of Medical Student Educators in Radiology
- Member, Education Committee, Society of Radiologists in Ultrasound
- Member, Human Resources Committee, American College of Radiology
- Member, Publications Committee, Society of Radiologists in Ultrasound
- Honorary Member, Alpha Omega Alpha Honor Medical Society, 2012 (for “unparalleled work as a teacher and mentor to students”)

DANIEL BROWN, M.D.

- Chair, Workshop Program, Annual Meeting Committee, Society of Interventional Radiology
- Chair, Endorsement/Joint-Sponsorship Subcommittee, Society of Interventional Radiology
- Chair, web site: www.io-central.org, World Congress on Interventional Oncology
- Member, Annual Scientific Meeting Committee, Society of Interventional Radiology
- Member, Vascular and Interventional Subcommittee, Radiologic Society of North America
- Member, Scientific Meeting Committee, Radiologic Society of North America
- Member, Editorial Board, *Seminars in Interventional Radiology*
- Member, Editorial Board, *Updates in IR: An Evidence Based Approach*
- Reviewer, Abstracts/Posters, The 4th Annual Symposium on Clinical Interventional Oncology
- Named as one of the Top Vascular and Interventional Radiologists (Top 1% designation), *US News and World Report*
- Named as one of the “America’s Best Doctors”
- Named as one of the “Philadelphia Top Docs”, *Philadelphia Magazine*
- Featured Abstract, “Comparison of Three Chemoembolization Regimens for Hepatocellular Carcinoma: Adriamycin and Ethiodol has Shorter Time to Progression than Cisplatin/Adriamycin/Mitocin-C and Ethiodol or Adriamycin Drug Eluting Beads”, Society of Interventional Radiology Annual Meeting, 2012 (mentored abstract)
- A. Edward O’Hara M.D. Award for Excellence in Teaching, Department of Radiology, Thomas Jefferson University Hospital, 2012

BARBARA CAVANAUGH, M.D.

- Reviewer, *Journal of Ultrasound in Medicine*

SANDEEP DESHMUKH, M.D.

- Member, Board of Directors, Pennsylvania Radiological Society
- Reviewer, *Journal of Magnetic Resonance Imaging*
- Reviewer, *Academic Radiology*
- Editor's Certificate of Recognition, Distinguished Reviewer, *Journal of Magnetic Resonance Imaging*
- Dean's Award for Excellence in Education, Jefferson Medical College, 2012

DAVID ESCHELMAN, M.D.

- Member, Clinical Scientific Working Group, Ocular Melanoma Foundation
- Examiner, Certificate of Added Qualifications in Vascular and Interventional Radiology Oral Examination, American Board of Radiology

RICK FELD, M.D.

- Examiner, Ultrasound Oral Examination, American Board of Radiology
- Member, Board of Governors, American Institute of Ultrasound in Medicine
- Member, Ultrasound Committee, American Board of Radiology, Oral Examination
- Member, Education Program Committee, Philadelphia Roentgen Ray Society
- Member, Budget Committee, Philadelphia Roentgen Ray Society
- Subspecialty Editor, *Journal of Ultrasound in Medicine*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Clinical Imaging*
- Reviewer, *International Journal of Clinical Practice*
- Reviewer, *Journal of American Medical Association*
- Reviewer, *Journal of Ultrasound in Medicine*
- Reviewer, *Journal of Ultrasound in Medicine and Biology*

ADAM FLANDERS, M.D.

- Vice-President Elect, American Society of Spine Radiology
- Chair, Subcommittee for Digital Outreach, Informatics Committee, American College of Radiology
- Chair, Neuroradiology Subcommittee, Reporting Committee, Radiological Society of North America
- Chair, Rules Committee, American Society of Neuroradiology
- Chair, Radiology Informatics Committee, Radiological Society of North America
- Chair, Neuroradiology/ENT Subcommittee, RadLex, Radiological Society of North America
- Chair, Ad Hoc Informatics Committee, American Society of Spine Radiology\
- Treasurer, American Society of Spine Radiology
- Member, Informatics Committee, American College of Radiology
- Member, Educational Council, Radiological Society of North America
- Member, Publications Council, Radiological Society of North America
- Member, Radiology Informatics Subcommittee for Educational Exhibits, Radiological Society of North America
- Member, Program Committee, Society for Imaging Informatics in Medicine

- Member, Nominating Committee, American Society of Spine Radiology
- Member, Electronic Learning Center, American Society of Neuroradiology
- Member, Education Committee, American Society of Neuroradiology
- Member, Synaptic Junction Education Subcommittee, American Society of Neuroradiology
- Member, Evidence Based Medicine Committee, American Society of Neuroradiology
- Member, Executive Committee, American Society of Neuroradiology
- Associate Editor, *Neurographics*
- Reviewer, Grants, Society Imaging Informatics in Medicine
- Reviewer, Grants, Craig H. Nielsen Foundation for Spinal Cord Injury
- Imaging Co-Editor, *Yearbook in Ophthalmology*
- Reviewer, Abstracts, Annual Meeting, Radiological Society of North America
- Reviewer, Abstracts, Informatics, Annual Meeting, Radiological Society of North America
- Reviewer, Abstracts, Annual Meeting, American Society of Neuroradiology
- Reviewer, Abstracts, Annual Symposium, American Society of Spine Radiology
- Reviewer, *American Journal of Neuroradiology*
- Reviewer, *Journal of Digital Imaging*
- Reviewer, *The New England Journal of Medicine*
- Reviewer, *Radiographics*
- Reviewer, *Radiology*
- Magna Cum Laude Award for Excellence in a Scientific Exhibit, “Genomic imaging: Creation of a uniformed terminology to describe the morphologic MR imaging features of gliomas to augment clinical research in the genomics of cancer: A TCGA glioma phenotype research group project, American Society of Neuroradiology Annual Meeting, 2012

FLEMMING FORSBERG, PH.D.

- Deputy Editor, Basic Science, *Journal of Ultrasound in Medicine*
- Member, Advisory Editorial Board, *Ultrasound in Medicine and Biology*
- Member, Advisory Editorial Board, *Journal of Ultrasound in Medicine*
- Member, Editorial Board, *Ultrasound Imaging*
- Reviewer, Grants, National Institutes of Health
- Reviewer, Grants, Research & Education Foundation, Radiological Society of North America
- Reviewer, *Acoustic Research Letters Online*
- Reviewer, *Circulation*
- Reviewer, *IEEE Transactions on Ultrasonics, Ferroelectrics & Frequency Control*
- Reviewer, *IEEE Transactions on Medical Imaging*
- Reviewer, *International Journal of Cancer*
- Reviewer, *Journal of Ultrasound in Medicine*
- Reviewer, *Medical Engineering & Physics*
- Reviewer, *Medical Physics*
- Reviewer, *Radiology*
- Reviewer, *Ultrasonics*
- Reviewer, *Ultrasonic Imaging*
- Reviewer, *Ultrasound in Medicine and Biology*
- Reviewer, *Veterinary Radiology & Ultrasound*

DAVID FRIEDMAN, M.D.

- Reviewer, *American Journal of Neuroradiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Journal of the American College of Radiology*

ERIC GINGOLD, PH.D.

- President, Delaware Valley Chapter, American Association of Physicists in Medicine
- Chair, Radiography/Fluoroscopy Subcommittee, American Association of Physicists in Medicine
- Co-chair, Physics Education Task Force, Radiological Society of North America/ American Association of Physicists in Medicine
- Director, Imaging Education Program, 2012 Annual Meeting, American Association of Physicists in Medicine
- Member, Education Program Subcommittee, American Association of Physicists in Medicine
- Member, Imaging Physics Committee, American Association of Physicists in Medicine
- Leader, Task Group 150, Imaging Receptor Subgroup, Acceptance Testing and Quality Control of Digital Radiograph Systems, American Association of Physicists in Medicine
- Member, Task Group 150, Acceptance Testing and Quality Control of Digital Radiograph Systems, American Association of Physicists in Medicine
- Member, Medical Physics Education of Physicians Committee, American Association of Physicists in Medicine
- Member, Meeting Coordination Committee, American Association of Physicists in Medicine
- Member, Committee on Government Relations – Medical Physics, American College of Radiology
- Member, Certifying Exam Committee, American Board of Radiology
- Liaison, American Association of Physicists in Medicine to American Registry of Radiologic Technologists Exam Committee
- Ad hoc Associate Editor, *Medical Physics*
- Reviewer, *Medical Physics*
- Reviewer, *Radiology*

BARRY GOLDBERG, M.D.

- Co-President, International Contrast Ultrasound Society
- Chairman, Archives Committee, American Institute of Ultrasound in Medicine
- Chairman, Archives Committee, World Federation for Ultrasound in Medicine and Biology
- Chairman, Committee on Ultrasound, American College of Radiology Imaging Network
- Chair, Education Committee, World Federation for Ultrasound in Medicine and Biology
- Chair, Ultrasound Working Group, American College of Radiology Imaging Network
- Councilor, World Federation for Ultrasound in Medicine and Biology
- Medical Advisor, Ultrasonic Procedures, Blue Shield of Pennsylvania
- Consultant, United States – Israel Binational Science Foundation
- Consultant, Ultrasound, Philadelphia Zoo, Philadelphia, Pennsylvania
- Professional Consultant, Medicare, Pennsylvania Blue Shield
- Medical Advisor, Ultrasound, World Health Organization

- Member, Administrative Council, World Federation for Ultrasound in Medicine and Biology
- Member, Awards Committee, American Institute of Ultrasound in Medicine
- Member, Public Information Advisory Board, Radiological Society of North America
- Member, Global Steering Group for Education and Training in Diagnostic Imaging, World Health Organization
- Member, Outstanding Researcher Award Review Panel, Research and Education Foundation, Radiological Society of North America
- Member, Past Presidents Committee, American Institute of Ultrasound in Medicine
- Member, Outstanding Researcher Award Review Panel, Research and Education Foundation, Radiological Society of North America
- Member, Public Information Advisors Network, Radiological Society of North America
- Member, Corporate Advisory Council, Radiological Society of North America
- Member, Presidential Advisory Council, American Institute of Ultrasound in Medicine
- Member, Education Council, Radiological Society of North America
- Member, Research and Education Foundation Grant Program Committee, Radiological Society of North America
- Member, Endowment for Education and Research Committee, American Institute of Ultrasound in Medicine
- Member, Committee on International Service, American College of Radiology
- Member, Contrast Agents Panel, American Institute of Ultrasound in Medicine
- Member, Advisory Committee on Ultrasound in Developing Countries, Society of Radiologists in Ultrasound
- Member, Foundation International Outreach Committee, American College of Radiology
- Member, Ultrasound Shear Wave Speed Technical Committee, Quantitative Imaging Biomarker Alliance, Radiological Society of North America
- Member, Ultrasound Shear Wave Speed Clinical Application Subcommittee, Quantitative Imaging Biomarker Alliance, Radiological Society of North America
- Founding Member, International Contrast Ultrasound Society
- Honorary Member, Mexican Association of Ultrasound in Medicine
- Honorary Member, Australasian Society for Ultrasound in Medicine ASUM
- Honorary Member, America Nepal Medical Foundation
- Coordinator, Ultrasonography, Topics in Radiology, *Journal of American Medical Association*
- Associate Editor, *Journal of Ultrasound in Medicine*
- Associate Editor, *Surgical Endoscopy, Ultrasound, and Interventional Techniques*
- Editorial Advisor, *Journal d'Echographie et de Medecine par Ultrasons*
- Overseas Editorial Adviser, *Borno Medical Journal*
- Editorial Consultant, *Applied Radiology*
- Editorial Consultant, *Chest*
- Editorial Consultant, *Medcom Faculty of Medicine*
- Editorial Consultant, *Pediatrics*
- Member, Advisory Committee, *Ultrasonidos en Medicina*
- Member, Editorial Advisory Board, *West African Journal of Ultrasound*
- Member, Advisory Editorial Board, *Ultrasound in Medicine and Biology*
- Member, Editorial Committee, *Journal Ultrasonido*
- Member, Editorial Board, *Advances in Echo Enhancement*
- Member, Editorial Board, *Archives of Clinical Imaging*
- Member, Editorial Board, *Clinics in Diagnostic Ultrasound*
- Member, Editorial Board, *Journal d'Echographie et de Medecine Ultrasonore*
- Member, Editorial Board, *Journal of Clinical Ultrasound in Medicine*
- Member, Editorial Board, *Journal of Surgical Ultrasonology*
- Member, Editorial Board, *Journal of Ultrasound in Medicine*

- Member, Editorial Board, *Journal of Ultrasound in Medicine and Biology*
- Member, Editorial Board, *Radiologia*
- Member, Editorial Board, *Ultrasound International*
- Member, Editorial Board, *Ultrasound International Journal*
- Member, Editorial Board Committee, *Acta Clinica Croatica*
- Member, International Advisory Editorial Board, *Hungarian Radiology*
- Member, International Editorial Board, *Giornale Italiano di Ecografia Journal*
- Member, International Editorial Board, *Brazilian Radiology Journal*
- Member, International Consultant Committee, *Revista Argentina de Radiologia*
- Member, International Advisory Board, *Indian Journal of Medical Ultrasound*
- Member, International Advisory Board, *Turkish Journal of Diagnostic and Interventional Radiology*
- Member, International Liaison Committee, *Ultrasound in Medicine and Biology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Cancer*
- Reviewer, *Gastroenterology*
- Reviewer, *Gastrointestinal Endoscopy*
- Reviewer, *Health Devices*
- Reviewer, *Journal of the National Cancer Institute*
- Reviewer, *Radiology*
- Reviewer, *The New England Journal of Medicine*
- Expert Panelist, AuntMinnie.com

CARIN GONSALVES, M.D.

- Reviewer, *Journal of Vascular and Interventional Radiology*

RICHARD GORNIK, M.D.

- Reviewer, *Radiographics*

ETHAN HALPERN, M.D.

- Member, Task Force to Update Guidelines for Prostate Sonography, American College of Radiology
- Member, Public Information Advisors Network, Radiological Society of North America
- Associate Editor, *Academic Radiology*
- Associate Editor, *Radiology*
- Reviewer, *Academic Radiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Annals of Internal Medicine*
- Reviewer, *Radiology*

CHARLES INTENZO, M.D.

- Member, Academic Council, Society of Nuclear Medicine
- Member, Nuclear Medicine Program Directors, Society of Nuclear Medicine
- Member, Oncology Council, Society of Nuclear Medicine

- Member, Therapy Council, Society of Nuclear Medicine
- Reviewer, *International Journal of Molecular Imaging*
- Reviewer, *Journal of the American Roentgen Ray Society*
- Reviewer, *Journal of Gastrointestinal Cancer*
- Reviewer, *Radiographics*
- Reviewer, *Radiology*

DAVID KARASICK, M.D.

- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Radiographics*
- Reviewer, *Radiology*

STEPHEN KARASICK, M.D.

- Reviewer, *American Journal of Roentgenology*

SUNG KIM, M.D.

- Member, Executive Council, Program Development Education Funding, Society of Nuclear Medicine
- Member, Computer and Instrument Council, Society of Nuclear Medicine
- Member, Brain Imaging Council, Society of Nuclear Medicine
- Member, Correlative Imaging Council, Society Nuclear Medicine
- Member, Membership Committee, Society of Nuclear Medicine
- Reviewer, Nuclear Medicine Subcommittee, Education Exhibit Committee, Radiological Society of North America
- Reviewer, *Journal of Nuclear Medicine*

ALFRED KURTZ, M.D.

- Distinguished Service Award, Society of Radiologists in Ultrasound, 2011
- Member, Editorial Advisory Board, *Diagnostico Journal*
- Reviewer, *Radiographics*

PARAS LAKHANI, M.D.

- Member, Structured Reporting Subcommittee, Radiology Society of North America
- Reviewer, *Journal of Digital Imaging*
- Reviewer, *Radiographics*
- Who's Who in Medicine and Healthcare

DAVID LEVIN, M.D.

- Campaign Chair, Research and Education Foundation Centennial Campaign, Radiological Society of North America

- Co-Chair, Future Trends Committee, American College of Radiology
- Member, Commission on Economics, American College of Radiology
- Member, Committee on Radiologist Resources, American College of Radiology
- Member, Media Spokesperson Group, American College of Radiology
- Member, Committee on Evidence-Based Benefits Design, National Business Group on Health
- Member, Public Information Advisory Network, Radiological Society of North America
- Editorial Board, *Journal of the American College of Radiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Radiology*

JI-BIN LIU, M.D.

- Member, Medical Advisory Board, International Certification and Education Accreditation Foundation
- Member, Editorial Board, *Chinese Journal of Medical Imaging Technology*
- Member, Editorial Board, *Journal of Ultrasound in Clinical Medicine*
- Reviewer, Grants, National Natural Science Foundation of China
- Reviewer, *Academic Radiology*
- Reviewer, *CardioVascular and Interventional Radiology*
- Reviewer, *Chinese Journal of Ultrasonography*
- Reviewer, *Journal of Clinical Ultrasound*
- Reviewer, *Journal of Ultrasound in Medicine*
- Reviewer, *Ultrasonics*
- Reviewer, *Ultrasound in Medicine and Biology*
- Distinguished Reviewer Award, *Journal of Ultrasound in Medicine*
- Contribution Award, Chinese Ultrasound Doctor Association, 2011
- Second Place Scientific Exhibit Award, “Parametric imaging of ultrasound contrast shows an improved correlation with immunohistochemical markers in a glioma model compared to nonparametric imaging”, American Institute of Ultrasound in Medicine, 2012

SUZANNE LONG, M.D.

- Reviewer, *Clinical Radiology*
- Reviewer, *Journal of Ultrasound in Medicine*
- Distinguished Reviewer Award, *Journal of Ultrasound in Medicine*, 2012

CHRISTOPHER MERRITT, M.D.

- Lifetime Service Award, American Board of Radiology
- Member, Strategic Planning Committee, College of Physicians
- Member, Committee on Administration, College of Physicians
- Member, Ultrasound Curriculum Committee, Society of Radiologists in Ultrasound
- Contributing Editor, *Breast Diseases Quarterly*
- Member, International Advisory Board, *Turkish Journal of Diagnostic and Interventional Radiology*
- Reviewer, *American Journal of Roentgenology*

DONALD MITCHELL, M.D.

- Chair, Abdominal Structured Reporting Subcommittee, Radiological Society of North America
- Chair, MRI Committee, RadLex, Radiological Society of North America
- Member, Liver Imaging Reporting and Data System (LIRADS) Steering Committee, American College of Radiology
- Member, Committee on Clinical Growth, International Society for Magnetic Resonance in Medicine
- Member, Governance Committee, International Society for Magnetic Resonance in Medicine
- Member, Expert Panel on Women's Imaging, American College of Radiology Appropriateness Criteria, American College of Radiology
- Member, Childhood Liver Disease Research and Education Network Data and Safety Monitoring Board, National Institute of Diabetes and Digestive and Kidney Diseases
- Director, MR Refresher Course Track, Annual Meeting, Radiological Society of North America
- Managing Editor, MRI Teaching File Resident and Fellow Section, American College of Radiology
- Associate Editor, *Journal of Magnetic Resonance Imaging*
- Member, Editorial Board, *Abdominal Imaging*
- Member, Editorial Board, *Radiology*
- Reviewer, *Academic Radiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Brachytherapy*
- Reviewer, *Investigational Radiology*
- Reviewer, *Radiographics*

WILLIAM MORRISON, M.D.

- President-elect, Society of Skeletal Radiology
- Inaugural Graham Buirski Keynote Lecture, Australasian Musculoskeletal Imaging Group Annual Meeting, 2012
- Chairman, Program Committee, Society of Skeletal Radiology
- Chairman, Corporate Liaison ad hoc Committee, Society of Skeletal Radiology
- Chairman, Sponsorship Committee, International Skeletal Society
- Chairman, Musculoskeletal Section Program Committee, International Society of Magnetic Resonance in Medicine
- Member, Expert Panel on Musculoskeletal Radiology, Bone Tumors, American College of Radiology Appropriateness Criteria, American College of Radiology
- Member, Arthritis Advisory Committee, Food and Drug Administration
- Member, Expert Panel on Musculoskeletal Radiology, Continuous Professional Improvement Series, American College of Radiology
- Member, Board of Directors, BalletX
- Member, Program Committee, International Skeletal Society
- Member, Musculoskeletal Maintenance of Certificate Cognitive Exam Committee, American Board of Radiology
- Program Director, Sports Course, Annual Meeting, International Skeletal Society
- Associate Editor, Musculoskeletal Section, *Radiology*
- Member, Consulting Editorial Board, *Skeletal Radiology*
- Guest Editor, *Seminars in Musculoskeletal Radiology: Imaging the Post-operative Patient*

- Reviewer, Abstracts, Annual Meeting, Society of Skeletal Radiology
- Reviewer, Abstracts, Annual Meeting, International Society of Magnetic Resonance in Medicine
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Journal of Magnetic Resonance Imaging*
- Reviewer, *Osteoarthritis and Cartilage*
- Reviewer, *Radiology*
- Reviewer, *Skeletal Radiology*

LEVON NAZARIAN, M.D.

- Chair, Corporate Affairs Committee, Society of Radiologists in Ultrasound
- Member, Constitution Committee, American Institute of Ultrasound in Medicine
- Member, Public Information Advisory Network, Radiological Society of North America
- Member, Program Committee, Society of Radiologists in Ultrasound
- Co-Moderator, Consensus Conference on Imaging Workup of Shoulder Pain, Society of Radiologists in Ultrasound
- Editor-in-Chief, *Journal Ultrasound in Medicine*
- Member, Advisory Editorial Board, *Ultrasound in Medicine and Biology*
- Member, Editorial Advisory Council, *The New American Medical Journal*
- Consultant to the Editor, *Radiology*
- Reviewer, *Academic Radiology*
- Reviewer, *International Journal of Shoulder Surgery*
- Reviewer, *Journal of Orthopedic Research*
- Reviewer, *Clinical Orthopaedics and Related Research*
- Reviewer, *Ultrasound Quarterly*
- Distinguished Reviewer Award, *American Journal of Roentgenology*

LAURENCE NEEDLEMAN, M.D.

- President Elect, Board of Directors, Intersocietal Commission on Accreditation of Vascular Laboratories
- Member, Guidelines and Standards Committee on Drug and Contrast, American College of Radiology
- Member, Collaborative Committee, Practice Guideline for the Performance of Renal Artery Duplex Sonography, American College of Radiology/American Institute of Ultrasound in Medicine/Society of Pediatric Radiology/Society of Radiologists in Ultrasound
- Chair, Collaborative Committee, Practice Guideline For The Use of Intravascular Contrast Media, American College of Radiology and Society for Pediatric Radiology
- Member, Endowment for Education and Research Committee, American Institute of Ultrasound in Medicine
- Member, Continuous Professional Improvement Panel, Ultrasound, American College of Radiology
- Member, Public Information Advisors Network, Radiological Society of North America
- External Reviewer, Appropriate Use Criteria for Peripheral Vascular Ultrasound and Physiological Testing, American College of Cardiology
- Reviewer, Grants, Medicine Endowment for Education and Research, American Institute of Ultrasound
- Member, Editorial Board, *Journal of Ultrasound in Medicine*

- Subspecialty Editor, Vascular Ultrasound, *Journal of Ultrasound in Medicine*
- Reviewer, *Journal of Ultrasound in Medicine*
- Reviewer, *Radiology*

PATRICK O’KANE, M.D.

- Reviewer, *Radiographics*

LAURENCE PARKER, PH.D.

- Reviewer, *Journal of the American College of Radiology*

VIJAY RAO, M.D.

- President, American Association for Women Radiologists
- President, Research & Education Foundation, Radiological Society of North America
- Member, Board of Trustees, Research and Education Foundation, Radiological Society of North America
- Member, Board of Directors, Pennsylvania Radiological Society
- Member, Board of Directors, American Board of Radiology Foundation
- Member, Executive Board, The Philadelphia Roentgen Ray Society
- Member, Finance Committee, American Association for Women Radiologists
- Member, Bylaws Committee, American Association for Women Radiologists
- Member, Individual Giving Subcommittee, Research and Education Foundation, Radiological Society of North America
- Member, Future Trends Committee, American College of Radiology
- Member, Practice and Leadership Development Committee, American College of Radiology
- Member, Government and Regulatory Issues in Academic Radiology, American College of Radiology
- Member, Utilization Management Committee, American College of Radiology
- Member, Clinical Practice Committee, American Society of Neuroradiology
- Member, Appropriateness Criteria, Utilization and Quality Subcommittee, American Society of Neuroradiology
- Member, Economic Committee and Hospital Advisory Committee, Philadelphia Roentgen Ray Society
- Member, Committee on Radiological Practice and Management, Pennsylvania Radiological Society
- Member, Committee on Diagnostic Radiology, Pennsylvania Radiological Society
- Alternate Councilor to the American College of Radiology, Pennsylvania Radiological Society
- Liaison, Association of Program Directors in Radiology to Society of Chairmen of Academic Radiology Departments
- Member, Editorial Board, *American Journal of Radiology*
- Member, Editorial Board, *Journal of the American College of Radiology*
- Reviewer, Abstracts, Annual Meeting, Radiological Society of North America
- Reviewer, Abstracts, Annual Meeting, Association of University Radiologists
- Reviewer, Abstracts, Annual Meeting, American Society of Head and Neck Radiology
- Reviewer, Scientific Exhibits, Annual Meeting, Radiological Society of North America
- Reviewer, *Academic Radiology*

- Reviewer, *American Journal of Neuroradiology*
- Reviewer, *Health Affairs*
- Reviewer, *Radiographics*
- Reviewer, *Radiology*
- Named as one of the “America’s Top Doctors for Cancer”, Castle Connolly Medical Ltd.
- Named as one of the “America’s Best Doctors”
- Named as one of the “Top Docs”, *Philadelphia Magazine*

CHRISTOPHER ROTH, M.D.

- Reviewer, *Journal of Magnetic Resonance Imaging*
- Reviewer, *Radiographics*

ALEXANDER SEVRUKOV, M.D.

- Reviewer, *American Journal of Roentgenology*

COLETTE SHAW, M.D.

- Member, Appropriateness Criteria Expert Panel, American College of Radiology
- Peer Reviewer, National Peer Review Council
- Reviewer, *Journal of Vascular and Interventional Radiology*

LISA TARTAGLINO, M.D.

- Reviewer, *Radiographics*
- Reviewer, *Radiology*

MATHEW THAKUR, PH.D.

- Member, Past-Presidents Committee Society of Nuclear Medicine
- Member, Board of Governors, Greater New York Chapter, Society of Nuclear Medicine
- Co-chair, 2020 Task Force, Society of Nuclear Medicine,
- Member, Advisory Committee, US Pharmacopeia
- Member, Advisory Committee, Kuwait Medical Research Council
- Member, Advisory Committee, International Atomic Energy Agency
- Chair, Young Investigators Award Committee, International Society of Radiolabeled Blood Elements
- Member, Publication Committee, Society of Nuclear Medicine
- Member, Public Relations Committee, Society of Nuclear Medicine
- Member, Grant Review Service, Foundation for Medical Research, Vienna, Austria
- Member, Wagner-Terruzuka Fellowship Committee, Society of Nuclear Medicine
- Reviewer, Grants, NExT Study Section, National Institutes of Health
- Ad hoc member, Grant Review Service, National Institutes of Health
- Member, Advisory Committee, Annual Meeting, Society of Nuclear Medicine India
- Member, Advisory Committee, Annual Meeting, International Society of Radiolabeled Blood Elements

- Member, Editorial Board, *Current Molecular Imaging*
- Member, Editorial Board, *European Journal of Nuclear Medicine and Molecular Imaging*
- Member, Editorial Board, *Journal of the Association of Latin American Societies of Nuclear Medicine and Biology*
- Member, Editorial Board, *Journal of the Indian Association of Clinical Medicine*
- Member, Editorial Board, *Journal of Labeled Compounds and Radiopharmaceuticals*
- Member, Editorial Board, *Journal of Nuclear Medicine*
- Member, Editorial Board, *Journal of Nuclear Medicine and Biology*
- Member, Editorial Board, *Nuclear Medicine Communications*
- Member, Editorial Board, *Turkish Journal of Molecular Imaging and Radionuclide Therapy*
- Reviewer, *Applied Organometallic Chemistry*
- Reviewer, *Bioconjugate Chemistry*
- Reviewer, *Bioorganic and Medicinal Chemistry*
- Reviewer, *Bioorganic and Medicinal Chemistry Letters*
- Reviewer, *Breast Cancer Research*
- Reviewer, *Cancer Biotherapy & Radiopharmaceuticals*
- Reviewer, Cardiovascular Imaging, *Journal of the American College of Cardiology*
- Reviewer, *Circulation*
- Reviewer, *Current Molecular Imaging*
- Reviewer, *European Journal of Nuclear Medicine*
- Reviewer, *Journal of Labeled Compounds and Radiopharmaceuticals*
- Reviewer, *Journal of Nuclear Medicine*
- Reviewer, *Journal of Nuclear Medicine and Biology*
- Reviewer, *Molecular Imaging & Biology*
- Reviewer, *Molecular Pharmaceutics*
- Reviewer, *Netherland Government Grant*
- Reviewer, *Nuclear Medicine and Biology*
- Reviewer, *Nuclear Medicine Communications*
- Reviewer, *Oncology*
- Reviewer, *Radiology*
- Reviewer, *Separation Science*
- Reviewer, *The Open Medical Imaging Journal*
- Reviewer, *Veterinarian Journal of Pharmaceuticals and Therapy*

TERRI TUCKMAN, M.D.

- Member, Professional Development Committee, American Medical Women's Association
- Member, Committee on Gender Equity, American Medical Women's Association

ANNINA WILKES, M.D.

- Tribute Award, American Cancer Society, 2012
- Member, Medical Advisory Board, Susan A. Komen Foundation
- Member, Speakers Bureau, Susan A. Komen Foundation
- Member, The Breast Health Global Initiative
- Member, Reach to Recovery Program Committee, American Cancer Society

MICHAEL WOLF, M.D.

- Reviewer, *Journal of Neurographics*

ADAM ZOGA, M.D.

- Member, Expert Panel, Musculoskeletal Radiology Appropriateness Criteria, Soft Tissue Tumors, American College of Radiology
- Member, Scientific Program Committee, Annual Meeting, American Roentgen Ray Society
- Poster Reviewer, Radiographics Annual Meeting, Radiological Society of North America
- Member, Editorial Board, Seminars in Musculoskeletal Radiology
- Guest Editor, *Techniques in Orthopaedics: Imaging Bone Infection*
- Reviewer, *Radiographics*
- Reviewer, *Radiology*
- Reviewer, *American Journal of Radiology*
- Reviewer, *Journal of MRI*
- Reviewer, *Clinical Orthopaedics and Related Research*
- Reviewer, *Radiology Case Reports*

APPENDIX IV - ACTIVE GRANTS

07/01/11 - 06/30/12

(Report reflects entire project period awarded and TJU fiscal year expensed)

NIH/OTHER FEDERAL GRANTS

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Flanders, A. X13001	Value of MRI and DTI as Biomarkers for Classifying Acute Spinal Cord Injury	U.S. Army Medical Research Acq. W81XWH-10-1-0935	09/30/10 - 10/31/13	\$488,255	\$268,175	\$756,430
				----- \$86,552 (current fiscal yr)	----- \$47,503 (current fiscal yr)	----- \$134,055 (current fiscal yr)
Flanders, A. Z55301 (subcontract)	In Silico Research Center for Excellence	NIH (SAIC-Frederick) thru Emory University Contract #29XS193	08/24/09 - 05/09/12	\$55,117	\$30,181	\$85,299
				----- \$24,479 (current fiscal yr)	----- \$13,484 (current fiscal yr)	----- \$37,962 (current fiscal yr)
Flanders, A. Z63101 (subcontract)	Contract HHSN261200800001E	NIH (NCI) thru SAIC-Frederick	02/24/12-02/23/15	\$2,613	\$1,437	\$4,050
				----- \$2,613 (current fiscal yr)	----- \$1,437 (current fiscal yr)	----- \$4,050 (current fiscal yr)
Forsberg, F. R97601	Noninvasive and Accurate Measurement of Portal Hypertension	NIH (NIDDKD) RC1 DK087365	09/30/09 - 12/31/11	\$684,766	\$210,176	\$894,942
				----- \$134,277 (current fiscal yr)	----- \$54,484 (current fiscal yr)	----- \$188,761 (current fiscal yr)
Forsberg, F. R99001	Quantitative Subharmonic Breast Imaging	NIH (NCI) R01 CA140338	05/01/10 - 02/28/14	\$1,651,250	\$419,678	\$2,070,928
				----- \$334,020 (current fiscal yr)	----- \$112,842 (current fiscal yr)	----- \$446,862 (current fiscal yr)
Forsberg, F. S07001	Vevo 2100 Ultrasound Scanner	NIH S10 OD010408	06/01/12 - 05/31/13	\$524,615	\$0	\$524,615
				----- \$0 (current fiscal yr)	----- \$0 (current fiscal yr)	----- \$0 (current fiscal yr)
Forsberg, F. X12301	Noninvasive Subharmonic Pressure Estimation for Monitoring Breast cancer	U.S. Army Medical Research Acq. W81XWH-08-1-0503	09/01/08 - 08/31/12	\$297,357	\$162,060	\$459,417
				----- \$69,879 (current fiscal yr)	----- \$39,102 (current fiscal yr)	----- \$108,981 (current fiscal yr)

Forsberg, F. X13601 (Post-Doc Award) (Eisenbrey, J.)	Analysis of 3D subharmonic Ultrasound Signals from Patients with Known Breast Masses for Lesion Differentiation	U.S. Army Medical Research Acq. W81XWH-11-1-0630	09/30/11 - 09/29/14	\$183,793 ----- \$37,087 (current fiscal yr)	\$14,704 ----- \$2,956 (current fiscal yr)	\$198,497 ----- \$40,043 (current fiscal yr)
Goldberg, B. R93801	Contrast-Enhanced Ultrasound Detection of Secondary Lymph Nodes	NIH (NCI) R21 CA137733	12/01/08 - 11/30/11	\$220,000 ----- \$33,784 (current fiscal yr)	\$119,900 ----- \$1,101,709 (current fiscal yr)	\$339,900 ----- \$1,135,492 (current fiscal yr)
Intenzo, C. Z56501	ACRIN 6685: FDG-PET of Head and Neck Cancer	NIH thru ACRIN (cooperative group)	01/01/10 - 12/31/12	\$21,667 ----- \$2,205 (current fiscal yr)	\$4,333 ----- \$0 (current fiscal yr)	\$26,000 ----- \$2,205 (current fiscal yr)
Intenzo, C. Z56701	ACRIN 6688: Phase II Study of 3'-deoxy-3'18F Fluorothymidine (FLT) in Invasive Breast Cancer	NIH thru ACRIN (cooperative group)	04/01/10 - 03/31/13	\$98,967 ----- \$4,493 (current fiscal yr)	\$19,793 ----- \$899 (current fiscal yr)	\$118,760 ----- \$5,391 (current fiscal yr)
Sarro, V. M06701	Health Care Facilities and Other Construction	Health Resources and Services Administration C76 HF19914-01-00	09/01/10 - 12/31/11	\$792,000 ----- \$0 (current fiscal yr)	\$0 ----- \$0 (current fiscal yr)	\$792,000 ----- \$0 (current fiscal yr)
Thakur, M. AG0205	Health Research Formula Fund	PA Department of Health	01/01/10 - 12/31/13	\$83,000 ----- \$24,573 (current fiscal yr)	\$0 ----- \$0 (current fiscal yr)	\$83,000 ----- \$24,573 (current fiscal yr)
Thakur, M. AH0203	Health Research Formula Fund	PA Department of Health	01/01/11 - 12/31/14	\$83,000 ----- \$38,453 (current fiscal yr)	\$0 ----- \$0 (current fiscal yr)	\$83,000 ----- \$38,453 (current fiscal yr)
Thakur, M. R76901	PET Imaging of Breast Cancer Using Oncogene Expression	NIH (NCI) R01 CA109231	04/01/05 - 02/28/12	\$1,019,422 ----- \$30,793 (current fiscal yr)	\$550,604 ----- \$5,357 (current fiscal yr)	\$1,570,026 ----- \$36,150 (current fiscal yr)
Thakur, M. R98401	Optical Imaging for Translational Cancer Research	NIH S10 RR026678	03/04/10 - 03/03/11	\$174,955 ----- \$174,955 (current fiscal yr)	\$0 ----- \$0 (current fiscal yr)	\$174,955 ----- \$174,955 (current fiscal yr)

Thakur, M. S06401	VPAC1 Receptor-Targeted PET Imaging of Prostate Cancer	NIH S10 RR023709	04/19/12 - 03/31/17	\$1,916,916 ----- \$16,721 (current fiscal yr)	\$736,189 ----- \$9,061 (current fiscal yr)	\$2,653,105 ----- \$25,782 (current fiscal yr)
Wolf, M. Z56901	ACRIN 6686/RTOG 0825 Trial: Advanced Imaging	NIH thru ACRIN (cooperative group)	06/29/10 - 12/31/11	\$51,750 ----- \$0 (current fiscal yr)	\$10,350 ----- \$0 (current fiscal yr)	\$62,100 ----- \$1,115 (current fiscal yr)
TOTAL NIH/FEDERAL FUNDING				\$8,349,443 -----	\$2,547,580 -----	\$10,897,024 -----
CURRENT TJU FY NIH/ FEDERAL FUNDING				\$1,014,882 (current fiscal yr)	\$1,388,833 (current fiscal yr)	\$2,404,830 (current fiscal yr)

Active Grants

07/01/11 - 06/30/12

(Report reflects entire project period awarded and TJU fiscal year expensed)

FOUNDATION/NON-PROFIT ORGANIZATION GRANTS

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Lai, S. J63201	Neuroimaging Brain Changes in Glaucoma	Wills Eye Institute	10/21/10 - 09/30/11	\$43,971 ----- \$24,505 (current fiscal yr)	\$0 ----- \$0 (current fiscal yr)	\$43,971 ----- \$24,505 (current fiscal yr)
Rao, V. F65401	Center for Research on Utilization of Imaging Services	American College of Radiology	01/01/04 - 5/16/13	\$534,340 ----- \$85,000 (current fiscal yr)	\$0 ----- \$0 (current fiscal yr)	\$534,340 ----- \$85,000 (current fiscal yr)
TOTAL NON-PROFIT FUNDING				\$578,311 -----	\$0 -----	\$578,311 -----
CURRENT TJU FY NON-PROFIT FUNDING				\$109,505 (current fiscal yr)	\$0 (current fiscal yr)	\$109,505 (current fiscal yr)

Active Grants**07/01/11 - 06/30/12****(Report reflects entire project period awarded and TJU fiscal year expensed)****INDUSTRIAL GRANTS**

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Cavanaugh, B. J43001	Assessment of the Clinical Value of SuperSonic Shear Wave Elastography	SuperSonic Imagine	10/16/08 - 10/16/11	\$86,945	\$20,986	\$107,931
				----- \$11,535 (current fiscal yr)	----- \$2,534 (current fiscal yr)	----- \$14,068 (current fiscal yr)
Flanders, A. A53601	ADCON-L MRI Research Project	GliaTech	09/01/01 - 12/31/50	\$25,000	\$6,250	\$31,250
				----- \$0 (current fiscal yr)	----- \$0 (current fiscal yr)	----- \$0 (current fiscal yr)
Forsberg, F. J75701	Improved Visualization and Identification of Breast Microcalcifications Identified with MicroPure Compared to Grayscale Ultrasound Using Mammography as the Reference Standard	Toshiba Medical Systems, Inc.	04/18/12-04/30/13	\$35,540	\$8,000	\$43,540
				----- \$9,908 (current fiscal yr)	----- \$2,000 (current fiscal yr)	----- \$11,908 (current fiscal yr)
Goldberg, B. J56701	Characterization of Focal Liver Lesions with Sonovue-Enhanced Ultrasound Imaging: A Phase III, Inpatient Comparative Study versus Unenhanced Ultrasound Imaging Using Histology or Combined Imaging/Clinical Data as Truth Standard	Bracco Diagnostics	12/17/09 - 09/30/12	\$182,500	\$44,250	\$226,750
				----- \$31,240 (current fiscal yr)	----- \$17,420 (current fiscal yr)	----- \$48,660 (current fiscal yr)
Goldberg, B. J66701	Evaluation of the Aixplorer Ultrasound System for Abdominal, Gynecological, and Vascular Applications	SuperSonic Imagine, Inc.	04/14/11 - 10/13/12	\$4,000	\$1,000	\$5,000
				----- \$0 (current fiscal yr)	----- \$0 (current fiscal yr)	----- \$0 (current fiscal yr)
Halpern, E. J56801	Cost-Benefit Analysis of Triple Rule-Out Studies Using iCT for ER Chest Pain Patients	Philips Healthcare	08/01/09 - 07/31/10	\$10,000	\$0	\$10,000
				----- \$2,946 (current fiscal yr)	----- \$0 (current fiscal yr)	----- \$2,946 (current fiscal yr)

Halpern, E. J69801	Evaluation of the Aixplorer Ultrasound System for Evaluation of the Prostate	SuperSonic Imagine, Inc.	09/15/11 - 09/14/12	\$10,500 ----- \$7,641 (current fiscal yr)	\$2,000 ----- \$0 (current fiscal yr)	\$12,500 ----- \$7,641 (current fiscal yr)	
McCann, J. J63601	Clinical Registry of St. Jude Medical Angio-Seal™ Vascular Closure Devices following Interventional Radiology Procedures	St. Jude Medical, Inc.	10/22/10 - 10/21/13	\$34,100 ----- \$13,164 (current fiscal yr)	\$7,900 ----- \$3,291 (current fiscal yr)	\$42,000 ----- \$16,455 (current fiscal yr)	
Mitchell, D. J47001	Fatty Liver and Metabolic Syndrome	Philips Medical Systems North America	09/01/08 - 11/30/11	\$20,500 ----- \$12,457 (current fiscal yr)	\$4,500 ----- \$0 (current fiscal yr)	\$25,000 ----- \$12,457 (current fiscal yr)	
Mitchell, D. J47101	Evaluation of Hepatocellular Carcinoma Response	Philips Medical Systems North America	01/08/09 - 01/31/12	\$10,000 ----- \$1,143 (current fiscal yr)	\$2,500 ----- \$0 (current fiscal yr)	\$12,500 ----- \$1,143 (current fiscal yr)	
Thakur, M. J43901	Supplement to NIH Grant	NuView Radio- Pharmaceuticals	07/24/08 - 02/28/12	\$49,700 ----- \$427 (current fiscal yr)	\$12,425 ----- \$0 (current fiscal yr)	\$62,125 ----- \$427 (current fiscal yr)	
Thakur, M. N14501	VPAC-1 Breast Biomarkers	NuView Radio- Pharmaceuticals	04/06/12 - 02/14/14	\$187,703 ----- \$0 (current fiscal yr)	\$91,036 ----- \$0 (current fiscal yr)	\$278,739 ----- \$0 (current fiscal yr)	
				TOTAL INDUSTRIAL FUNDING	\$656,488 -----	\$200,847 -----	\$857,335 -----
				CURRENT YEAR INDUSTRIAL FUNDING	\$90,460 (current fiscal yr)	\$25,245 (current fiscal yr)	\$115,704 (current fiscal yr)
				TOTAL FUNDING	\$9,584,242	\$2,748,427	\$12,332,670
				TOTAL CURRENT YEAR FUNDING	\$1,214,847 (current fiscal yr)	\$1,414,078 (current fiscal yr)	\$2,628,925 (current fiscal yr)

APPENDIX V - PENDING GRANTS

07/01/11 - 06/30/12

(Report reflects entire award period and first year of award)

NIH/OTHER FEDERAL GRANTS

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Forsberg, F.	Subharmonic Imaging and Pressure Estimation for Monitoring Neoadjuvant Chemotherapy	USAMRAA W81XWH-12-1-0066	09/30/12 - 09/29/14	\$374,581	\$186,770	\$561,351
FUNDED				----- \$217,020 (-01 year)	----- \$100,111 (-01 year)	----- \$317,131 (-01 year)
Forsberg, F.	Ninivasive Subharmonic Aided Pressure Estimation of Portal Hypertension	NIH	04/01/13 - 03/31/17	\$1,937,945	\$508,160	\$2,446,105
				----- \$417,553 (-01 year)	----- \$96,120 (-01 year)	----- \$513,673 (-01 year)
Goldberg, B.	Contrast Ultrasound Detection of Sentinel Lymph Nodes in Breast Cancer Patients	NIH	12/01/12 - 11/30/15	\$750,000	\$412,500	\$1,162,500
				----- \$250,000 (-01 year)	----- \$137,500 (-01 year)	----- \$387,500 (-01 year)
Goldberg, B. (subaward)	Histotripsy Guided by CEUS for Treatment of Metastatic Lymph Nodes	NIH	04/01/13 - 03/31/16	\$622,105	\$289,578	\$911,683
				----- \$226,389 (-01 year)	----- \$71,934 (-01 year)	----- \$298,323 (-01 year)
Halpern, E.	Promoting Active Surveillance for Favorable Risk Prostate Cancer with Contrast-Enhanced Ultrasound	USAMRAA	09/30/12 - 09/29/15	\$311,463	\$171,305	\$482,768
				----- \$101,794 (-01 year)	----- \$55,987 (-01 year)	----- \$157,781 (-01 year)
Thakur, M.	PET Imaging of Breast Cancer Using Oncogene Expression	NIH	12/01/12 - 11/30/17	\$1,722,299	\$947,267	\$2,669,566
				----- \$306,325 (-01 year)	----- \$168,479 (-01 year)	----- \$474,804 (-01 year)
Thakur, M.	SPECT/CT for Small Animal Imaging Facility at TJU	NIH	04/01/13 - 03/31/14	\$599,569	\$0	\$599,569
				----- \$599,569 (-01 year)	----- \$0 (-01 year)	----- \$599,569 (-01 year)
TOTAL NIH GRANT FUNDING				\$6,317,962	\$2,515,580	\$8,833,542
TOTAL FIRST YEAR NIH FUNDING				----- \$2,118,650 (-01 year)	----- \$630,131 (-01 year)	----- \$2,748,781 (-01 year)

APPENDIX V - PENDING GRANTS

07/01/11 - 06/30/12

(Report reflects entire award period and first year of award)

FOUNDATION/NON-PROFIT ORGANIZATION GRANTS

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Halpern, E.	Promoting Active Surveillance for Favorable Risk Prostate Cancer with CE-TRUS and Decision Counseling	Prostate Cancer Foundation	06/01/13 - 05/31/15	\$982,410	\$0	\$982,410
				----- \$493,107 (-01 year)	----- \$0 (-01 year)	----- \$493,107 (-01 year)
TOTAL NON-PROFIT FUNDING				\$982,410	\$0	\$982,410
TOTAL FIRST YEAR NNO-PROFIT FUNDING				----- \$493,107 (-01 year)	----- \$0 (-01 year)	----- \$493,107 (-01 year)

APPENDIX V - PENDING GRANTS

07/01/11 - 06/30/12

(Report reflects entire award period and first year of award)

INDUSTRIAL GRANTS

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED	
Brown, D.	A Phase III Clinical Trial of Intra-Arterial TheraSphere® in the Treatment of Patients with Unresectable Hepatocellular Carcinoma (HCC)	Nordion, Inc	01/01/12 - 12/31/16	\$21,360	\$5,340	\$26,700	
				----- \$7,120 (-01 year)	----- \$1,780 (-01 year)	----- \$8,900 (-01 year)	
Cavanaugh, B.	A Pivotal Study of Imaging with Opto-acoustics to Diagnose Breast Masses Detected by Mammography and/or Diagnostic Gray-Scale Ultrasound: A New Evaluation Tool for Radiologists	Seno Medical Instrument	01/01/13 - 12/31/13	\$60,000	\$15,000	\$75,000	
				----- \$60,000 (-01 year)	----- \$15,000 (-01 year)	----- \$75,000 (-01 year)	
Forsberg, F.	Contrast-Enhanced Ultrasound for the Evaluation of Renal Cell Carcinoma Cryoablation	GE Healthcare	01/01/13 - 12/31/13	\$10,000	\$2,500	\$12,500	
				----- \$10,000 (-01 year)	----- \$2,500 (-01 year)	----- \$12,500 (-01 year)	
Liu, J.	Feasibility Study of Definity Enhanced Ultrasound Imaging for Detection of Sentinel Lymph Nodes	Lantheus Medical Imaging	09/01/11 - 06/30/12	\$22,600	\$8,113	\$30,713	
				----- \$22,600 (-01 year)	----- \$8,113 (-01 year)	----- \$30,713 (-01 year)	
Sharma, D.	Digital Imaging Research	AGFA Corporation	08/01/12 - 12/31/13	\$33,700	\$0	\$33,700	
				----- \$3,370 (-01 year)	----- \$0 (-01 year)	----- \$3,370 (-01 year)	
				TOTAL INDUSTRIAL FUNDING	\$147,660	\$30,953	\$178,613
				TOTAL FIRST YEAR INDUSTRIAL FUNDING	----- \$103,090 (-01 year)	----- \$27,393 (-01 year)	----- \$130,483 (-01 year)
				TOTAL PENDING FUNDING	\$7,448,032	\$2,546,533	\$9,994,565
				TOTAL FIRST YEAR PENDING FUNDING	----- \$2,714,847 (-01 year)	----- \$657,524 (-01 year)	----- \$3,372,371 (-01 year)