

2007

## Department of Radiology-Annual Executive Summary Report-July 1, 2006 to June 30, 2007

Vijay M. Rao M.D.

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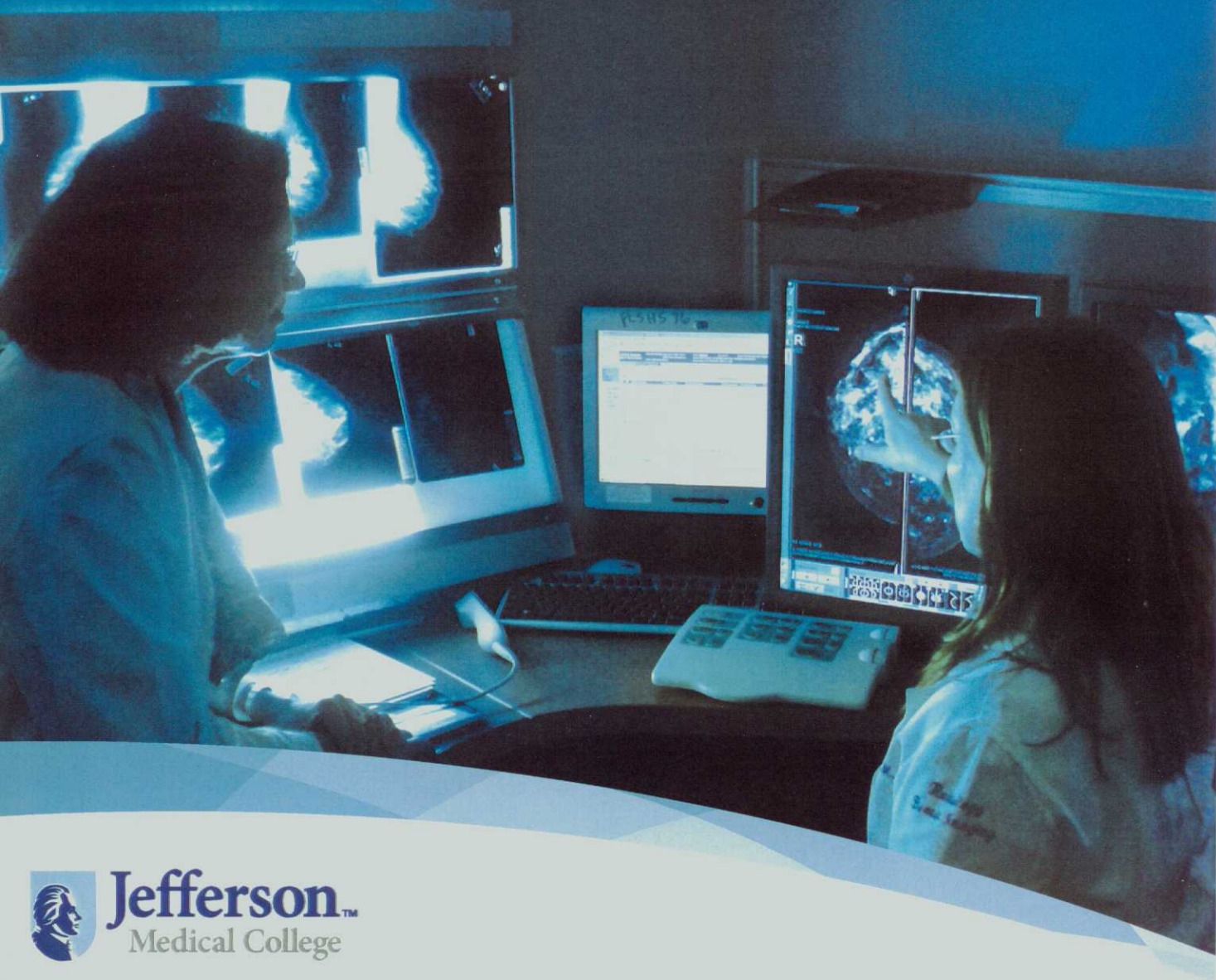
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06/07

## Department of Radiology Annual Report

Vijay M. Rao, M.D.  
*Professor and Chair*

# Reshaping the Future of Imaging



**Jefferson™**  
Medical College



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## DEPARTMENT OF RADIOLOGY

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 Information Technology
Levon N. Nazarian, M.D.	Vice Chair for Education

**2006-2007**

### **DEPARTMENT CLINICAL DIVISIONS AND DIRECTORS**

BODY COMPUTED TOMOGRAPHY/ABDOMINAL IMAGING	Laurence Needleman, M.D.
BREAST IMAGING/AMBULATORY RADIOLOGY	Annina N. Wilkes, M.D.
CARDIOVASCULAR/INTERVENTIONAL RADIOLOGY	Kevin L. Sullivan, M.D.
MAGNETIC RESONANCE IMAGING	Donald G. Mitchell, M.D.
MUSCULOSKELETAL AND GENERAL DIAGNOSTIC RADIOLOGY	William B. Morrison, M.D.
NEURORADIOLOGY/HEAD AND NECK RADIOLOGY	Adam E. Flanders, M.D. David P. Friedman, M.D.
NUCLEAR MEDICINE	Charles M. Intenzo, M.D.
THORACIC RADIOLOGY	Narainder Gupta, M.D.
ULTRASOUND	Barry B. Goldberg, M.D.
METHODIST HOSPITAL DIVISION	Larry A. Caputo, M.D.

### **DEPARTMENTAL COMMITTEES AND CHAIRMEN**

ADVISORY COMMITTEE	Alfred B. Kurtz, M.D.
CONTRAST COMMITTEE	Laurence Needleman, M.D.
EDUCATION COMMITTEE	Levon N. Nazarian, M.D.
INFORMATICS COMMITTEE	Adam E. Flanders, M.D.
PERFORMANCE IMPROVEMENT COMMITTEE	Christopher R.B. Merritt, M.D.
SCIENTIFIC ADVISORY FOR IMAGING RESEARCH	Barry B. Goldberg, M.D. Ethan J. Halpern, M.D.
RESIDENCY SELECTION COMMITTEE	Levon N. Nazarian, M.D.

**RADIOLOGY DEPARTMENT FACULTY RANK  
2006-2007**

**PROFESSORS**

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.  
Anna S. Lev-Toaff, M.D.  
Christopher R.B. Merritt, M.D.  
Donald G. Mitchell, M.D.  
Levon N. Nazarian, M.D.  
Vijay M. Rao, M.D.  
Kevin L. Sullivan, M.D.  
Mathew L. Thakur, Ph.D.

**RESEARCH PROFESSOR**

Ji-Bin Liu, M.D.

**EMERITUS PROFESSOR**

David C. Levin, M.D.

**ASSOCIATE PROFESSORS**

Paul Acton, Ph.D.  
Oksana H. Baltarowich, M.D.  
David J. Eschelman, M.D.  
David P. Friedman, M.D.  
Song Lai, Ph.D.  
William B. Morrison, M.D.  
Laurence Needleman, M.D.  
Lisa M. Tartaglino, M.D.  
Pamela Van Tassel, M.D.

**ASSISTANT PROFESSORS**

Diane Bergin, M.D.  
Diane Deely, M.D.  
Haroon H. Durrani, M.D.  
Steven G. Finden, D.D.S., M.D.  
Carin F. Gonsalves, M.D.  
Angela G. Gopez, M.D.  
Richard J. Gorniak, M.D.  
Narainder K. Gupta, M.D.  
Sung M. Kim, M.D.  
Patrick L. O'Kane, M.D.  
Sharon R. Segal, D.O.  
Dinesh K. Sharma, M.D.  
Zsuzsanna P. Therien, M.D.  
Annina N. Wilkes, M.D.  
Adam C. Zoga, M.D.

**CLINICAL ASSISTANT  
PROFESSORS**

Patti J. Herling, M.D.  
Bentley Hollander, M.D.  
Cindy Isaacson Finden, M.D.  
Lynn Lucas-Fehm, M.D.  
Terri Tuckman, M.D.

**RESEARCH ASSISTANT  
PROFESSOR**

Eric Gingold, Ph.D.  
Laurence Parker, Ph.D.  
Shaoyong Zhang, M.D., Ph.D.

**INSTRUCTORS**

Susan DeWyngaert, M.D.  
Jamie Lee Thomas, D.O.  
Michael J. Wolf, 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]

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]

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

## **DEPARTMENT OF RADIOLOGY**

Vijay M. Rao, M.D., Chairman

### **CLINICAL DIVISIONS 2006-2007**

#### **Body Computed Tomography/ Abdominal Imaging**

**Directed by Laurence Needleman, M.D.**  
Drs. Oksana Baltarowich, Haroon Durrani, Rick Feld, Ethan Halpern, Patti Herling, Stephen Karasick, Alfred Kurtz, Anna Lev-Toaff, Levon Nazarian, Patrick O'Kane

#### **Breast Imaging/ Ambulatory Radiology**

**Directed by Annina N. Wilkes, M.D. (acting director)**  
Drs. Susan DeWyngaert, Cindy Finden, Valerie Gilliam, Bentley Hollander, Lynn Lucas-Fehm, Zsuzsanna Therien

#### **Cardiothoracic Radiology**

**Directed by Narainder Gupta, M.D.**  
Drs. Cindy Finden, Ethan Halpern, Patti Herling, David Karasick, Stephen Karasick, David Levin, Dinesh Sharma

#### **Cardiovascular/ Interventional Radiology**

**Directed by Kevin L. Sullivan, M.D.**  
Drs. David Eschelmann, Geoffrey Gardiner, Jr., Carin Gonsalves, Jamie Lee Thomas

#### **Magnetic Resonance Imaging**

**Directed by Donald G. Mitchell, M.D.**  
Drs. Diane Bergin, Diane Deely, Angela Gopez, William Morrison, Patrick O'Kane, Adam Zoga

#### **Musculoskeletal and General Diagnostic Radiology**

**Directed by William B. Morrison, M.D.**  
Drs. Diane Bergin, Diane Deely, Cindy Finden, Angela Gopez, Narainder Gupta, Patti Herling, David Karasick, Stephen Karasick, Dinesh Sharma, Adam Zoga

#### **Neuroradiology/ENT Radiology**

**Directed by Adam Flanders, M.D.,  
David Friedman, M.D.**  
Drs. Steven Finden, Richard Gorniak, Vijay Rao, Dinesh Sharma, Lisa Tartaglino, Pamela Van Tassel, Michael Wolf

#### **Nuclear Medicine**

**Directed by Charles M. Intenzo, M.D.**  
Drs. Narainder Gupta, Sung Kim

#### **Ultrasound**

**Directed by Barry B. Goldberg, M.D.**  
Drs. Oksana Baltarowich, Diane Bergin, Haroon Durrani, Rick Feld, Ethan Halpern, Patti Herling, Alfred Kurtz, Anna Lev-Toaff, Christopher Merritt, Donald Mitchell, Levon Nazarian, Laurence Needleman, Patrick O'Kane, Sharon Segal, Terri Tuckman, Annina Wilkes

#### **Research**

Drs. Paul Acton, Flemming Forsberg, Eric Gingold, Song Lai, Ji-Bin Liu, Laurence Parker, Mathew Thakur, Shaoxiong Zhang



**DEPARTMENT OF RADIOLOGY  
HOUSESTAFF ROSTER  
2006-2007**

**RESIDENTS**

**FIRST YEAR RESIDENTS**

Adeel Hasan Azam, M.D.  
Susan Cha, M.D.  
Michael J. Gould, M.D.  
Elizabeth P. Ives, M.D.  
Njogu J. Njuguna, M.D.  
Marzban Rad, M.D.  
Paul J. Read, M.D.  
Sara E. Brooks-Sienkiewicz, M.D.

**THIRD YEAR RESIDENTS**

Nitesh Bhagat, M.D.  
Garen Boghosian, M.D.  
Rashi I. Mehta, M.D.  
Ketan Naran, M.D.  
Neeta Rao, M.D.  
Sudhir Vora, M.D.  
Peter Wahba, M.D.

**SECOND YEAR RESIDENTS**

Amy Austin, M.D.  
Luis Beltran, M.D.  
Suzanne S. Long, M.D.  
Kristen E. McClure, M.D.  
Ami Modi, M.D.  
Jason H. Neustadter, M.D.  
Nirav Patel, M.D.  
Tamara Ann Trella, M.D.  
Chun Wang, M.D.

**FOURTH YEAR RESIDENTS**

Joseph O. DeJesus, M.D.  
Michael V. Dutka, M.D.  
Alan R. Hammond, M.D.  
Hilary M. Hochberg, M.D.  
Bradley G. Leybold, M.D.  
Susan Sung, M.D.  
John D. York, M.D.

**Nuclear Medicine**

Mona Preeti Natwa, M.D.  
Ronald B. Goodwich, M.D.

**FELLOWS**

**ABDOMINAL IMAGING**

Pauline Germaine, D.O.  
Jeffrey Gramp, M.D.  
Joseph D. Marko, M.D.  
Anant Chimanlal Patel, M.D.  
Mimi Huynh Pinto, D.O.  
Myron Y. Prawak, D.O.  
Tara L. Sagebiel, M.D.  
Joseph C. Schmidt, D.O.

**BODY MRI**

Yuliya Lakhman, M.D.

**BODY/NEURO MRI**

Ronald J. Dolin, M.D.  
Laura B. Klein, M.D. (thru 09/30/06)  
James A. Pellegrini, M.D.  
Krishna D. Thirumala, M.D.  
Anuj J. Tolia, M.D.

**BREAST IMAGING**

Sun Ju Kim, M.D. (thru 09/20/06)  
Dayna Levin, M.D.

**CARDIOTHORACIC IMAGING**

Muthuvelu Manoharan, M.D.

**CARDIOVASCULAR/INTERVENTIONAL**

Suken Shah, M.D. (thru 08/18/06)  
Meguru Watanabe, M.D.

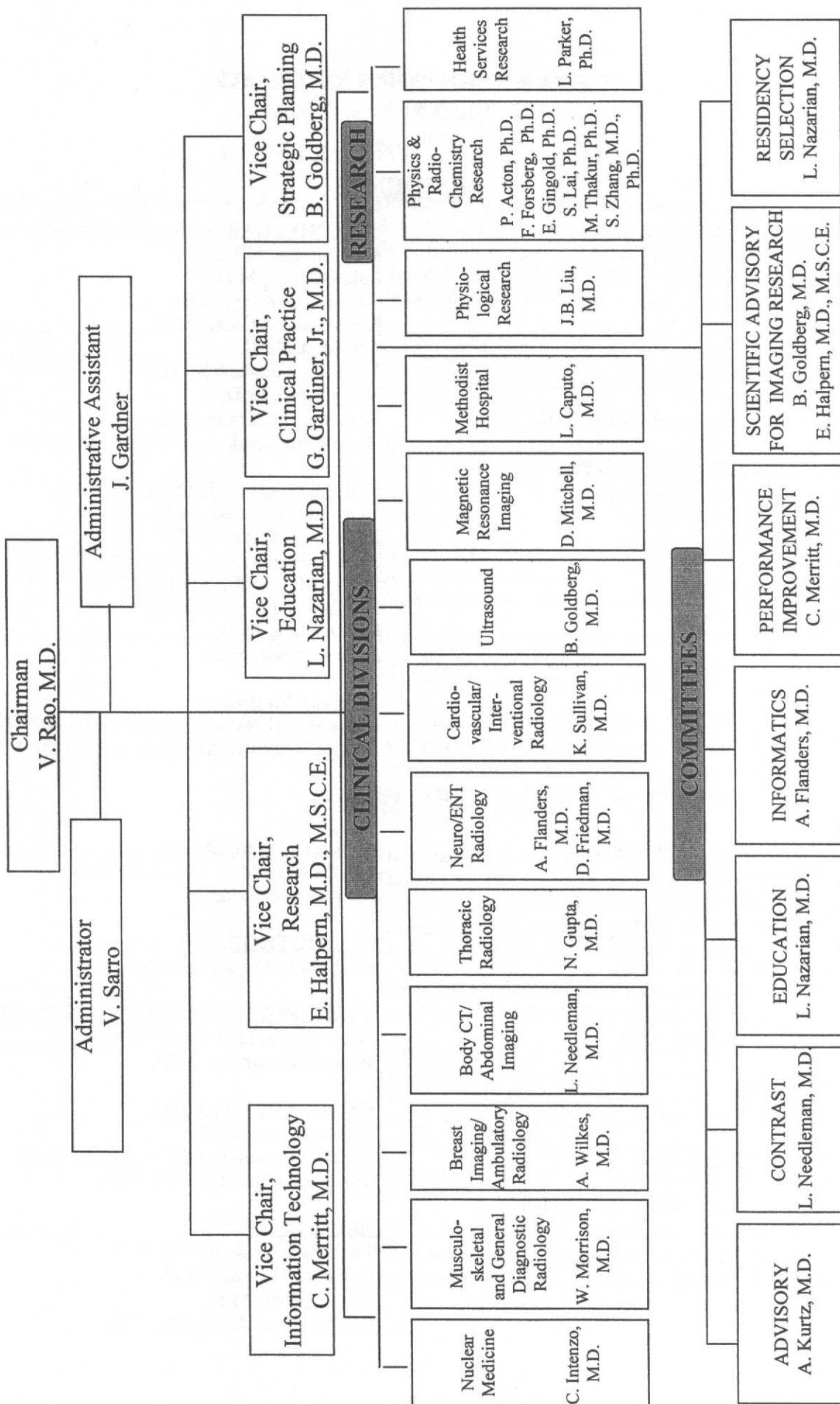
**MUSCULOSKELETAL**

Sachin Dheer, M.D.  
Eoin C. Kavanagh, M.D. (thru 10/13/06)  
Christopher Kirkpatrick, M.D.

**NEURO/ENT**

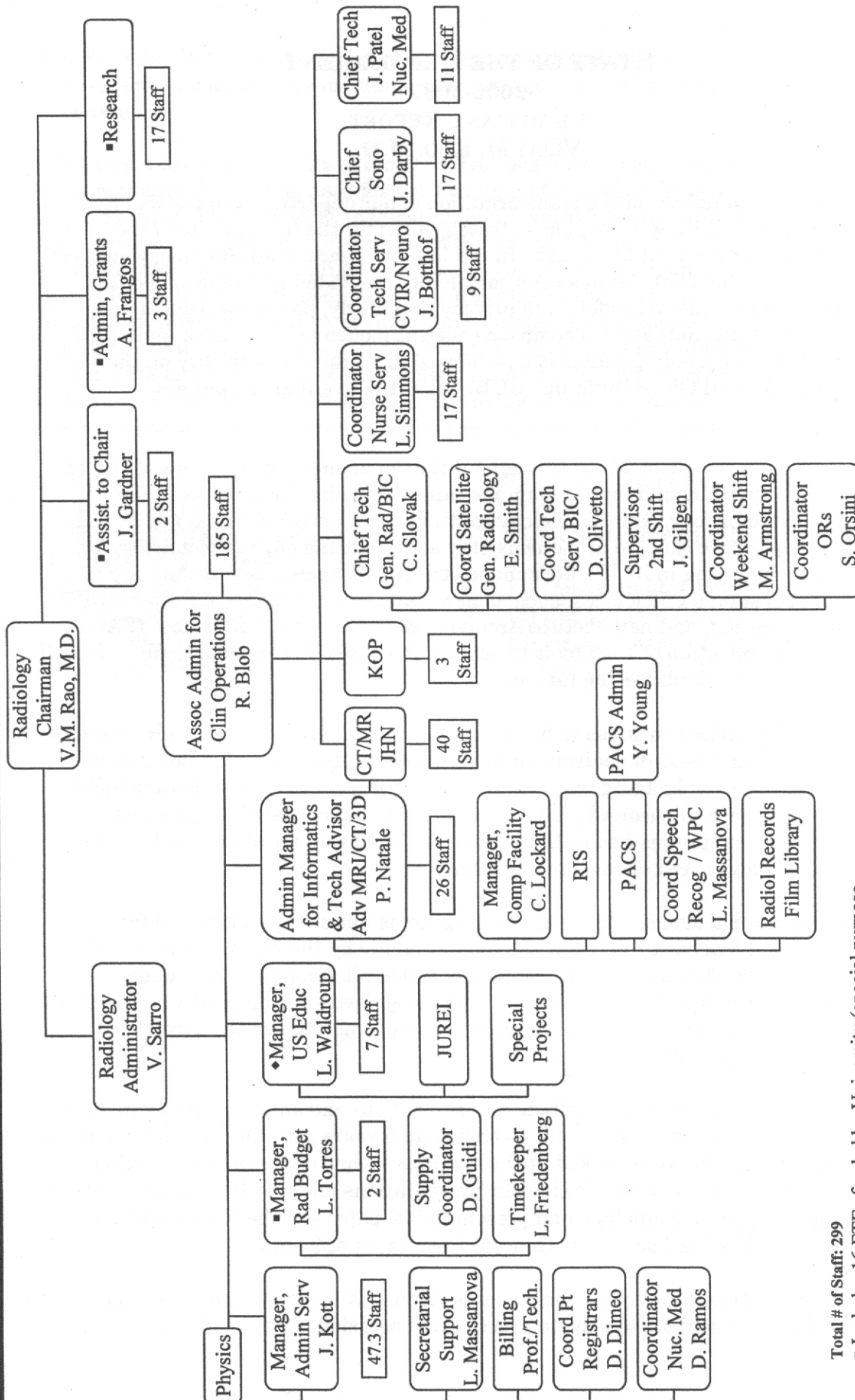
Thomas Y. Chayapruks, M.D.  
Reginald J. Denis, M.D.  
John D. Fiss, M.D.  
Venkatensha J. Kadaba, D.O.

# Department of Radiology (2006-2007)





# Department of Radiology Administration



Total # of Staff: 299

■ Includes 16 FTEs funded by University (special purpose, overage, and college)

◆ Includes 8 FTEs funded by Hospital special purpose account

## STATE OF THE DEPARTMENT

2006-2007

### CHAIRMAN'S REPORT

VIJAY M. RAO, M.D.

It is gratifying to reflect on the transformation of our department in the last five years. It is also exciting to develop a strategic plan for the future state of the department over the next five years. In the last five years, main Radiology space of our department on 3 Gibbon has been completely renovated and redesigned for enhanced patient comfort, safety and privacy. Similarly, patient waiting areas on 7 Thompson (ultrasound) and 8 Thompson (nuclear medicine) have been improved. Diagnostic breast imaging center is now housed in a brand new facility on the 4<sup>th</sup> floor of the Medical Office Building (MOB), resulting in enhanced patient satisfaction.

New technology has been added throughout the department in the areas of CT, MRI, US, SPECT scanning and digital mammography. This has brought us to the forefront of technology. But technology continues to improve by leaps and bounds and it is imperative that we proactively stay at the cutting edge of technology by continually investing in it. We have made strides in bringing new technology to enhance operational efficiencies, such as new Radiology Information System (RIS), speech recognition, and new Picture Archiving & Communication System (PACS). However, optimization of such tools to achieve the desired operational efficiency will continue to be the focus for the future.

Our clinical practice continues to be strong. Our clinical revenues have increased by 24% since my first year of chairmanship. We have unique strengths not only in advanced diagnostic imaging, but also in many therapeutic areas including MSK interventions with ultrasound guidance, interventional cancer therapy using radioactive microspheres and radiofrequency ablations under ultrasound or CT guidance, immuno- and chemo-embolizations.

In the educational arena, our residency program is nationally recognized for excellence and has been ranked at the top nationally by the American Board of Radiology for 2005 and 2006. We get nearly 500 applications for 8 residency positions. Our fellowship programs are well recognized and competitive. Our CME courses continue to be very popular, and new programs such as the cardiac training course have enjoyed great success.

In the research arena, it is gratifying to note that our extramural funding increased by 103%, compared to my first year as chairman 5 years ago. Our publication record remains strong. We were ranked at the top, above some of the most prestigious institutions, for the number of scientific presentations made at RSNA over the past ten years. Jefferson Radiology had presented 503 papers at the RSNA over ten years followed by Massachusetts General Hospital at 429 papers.

Faculty recruitment and retention remains strong. It is not surprising we have lost several faculty members to private practice and occasionally to academic

departments. But we have successfully recruited 18 faculty members (14 MDs and 4 PhDs) over the past 5 years including 4 faculty members who had previously left the department.

I would like to extend thanks to many individuals for our continued success. Thanks to my assistant JoAnn Gardner for her loyalty and outstanding assistance and Victor Sarro for his hard work, dedication and invaluable assistance in management of the business aspects and operations of radiology. Thanks to Andrea Frangos for her dedication and outstanding assistance in compiling this report. I am pleased to acknowledge all of our division heads for their leadership in furthering the department mission. Thanks to the faculty for their commitment, dedication and good citizenship. New technological advances in programs in radiology continue to keep us intellectually stimulated. Reflections of the key events of the past year and upcoming planned initiatives reveal a promising future for the department. This report will address the big events of the past year in the following areas:

- |                                  |   |
|----------------------------------|---|
| 1) Department Organization       | 9) Opportunities for Extramural Funding             |
| 2) Clinical Activities           | 10) Affiliations and Interdepartmental Activities   |
| 3) Planned New Clinical Programs | 11) Department Administration                       |
| 4) Clinical Weaknesses           | 12) Department Goals                                |
| 5) Clinical Informatics          | 13) Issues for the College, University and Hospital |
| 6) Educational Programs          |   |
| 7) Research Accomplishments      |   |
| 8) Research Weaknesses           |   |

## DEPARTMENT ORGANIZATION

The senior leadership team underwent reorganization. Dr. Geoffrey A. Gardiner, Jr. was recruited as Vice Chair for Clinical Practice. Dr. Chris Merritt was appointed as Vice Chair of QA and Performance Improvement. Dr. Adam Flanders was appointed Director of Radiology IT. Dr. Barbara Cavanaugh joined our faculty as Director of Breast Imaging in June 2007.

## CLINICAL ACTIVITIES

The past year was a strong year, with the results of the hard work and dedication of the department continuing to show results. Our clinical practice experienced a 4.8% growth in the total procedure volume in FY'07 compared with FY'06. Total work RVU's were 14.0% higher reflecting the increasing complexity of the caseload. Our outpatient imaging center, a joint venture with TJUH had another successful year with 31,093 procedures being performed, representing a 20.4% growth compared with last year. The center continues to be well-managed by Outpatient Imaging Affiliates, LLC, with their aggressive marketing efforts producing positive results.

In 2006-2007, a new CT scanner was installed in the Emergency Department with coverage 7 days a week, reducing waiting time for emergency room patients. In a limited manner, **body CT** began to offer a chest pain protocol for Emergency Department patients. The exam is a triple rule-out study that evaluates the coronary arteries, pulmonary arteries, and aorta for stenoses, embolism and dissection, while also evaluating the lungs for pulmonary disease. Additionally for cardiovascular disease, the **cardiothoracic division** evaluates anatomical and functional imaging with

cardiac CT angiography. 3-dimensional and multiplanar (sagittal, coronal and curved) reconstructed CT images continue to provide opportunities for non-invasive alternatives, such as virtual bronchoscopy and virtual colonography. Fusion of images with PET/CT has offer another technique to guide thoracic biopsies.

In **CVIR**, we have begun treating patients with hepatic malignancies with drug eluting beads. These embolic spheres release chemotherapeutic agents into the liver over a more extended period of time compared to the currently used material (ethiodol), and lead to lower systemic levels of chemotherapy. This will hopefully lead to lower complication and higher response rates. Additionally, in conjunction with the **nuclear medicine division**, Yttrium-90 radiolabeled microspheres have begun to be used for the treatment of patients with hepatic malignancy. The largest group treated to date is patients with uveal melanoma metastatic to liver. Since primary uveal melanoma sites respond well to high dose brachytherapy when radioactive plaques are placed adjacent to the tumor on the eye, there is reason to believe this method will prove successful in the liver. Selected patients who fail chemoembolization are offered this therapy.

In **nuclear medicine**, the Philips Forte large-field-of-view dual-headed SPECT camera with attenuation correction was acquired. The camera is used primarily for either SPECT or whole body imaging that requires a large-field-of-view and has a state-of-the-art attenuation correction software program, which is useful in stress myocardial perfusion imaging of obese patients. The PET Center is a participant in the National Oncologic Patient Registry (NOPR), a data gathering program sponsored by the American College of Radiology and the

Academy of Molecular Imaging. In this program, the Center for Medicare and Medicaid Services provide reimbursement for PET scans in patients with malignancies that are not currently covered by Medicare. This data collection includes the clinicians input both before and after the PET scan, so that the impact by PET scanning on patient management is evaluated; the ultimate goal would be approval by CMS for Medicare to permit reimbursement for those malignancies evaluated. As a part of the program, we have been collecting data on pancreatic and gynecological malignancies.

Positive impact continues to be seen from the MR scanners installed in 2005-2006, with reduced wait time for inpatient exams, cardiac MR imaging in the **body MRI division** and functional MRI in the **neuroradiology / head and neck radiology division**. The MR systems also serve to enhance our breast MR imaging program in the **breast imaging division** which is now located in newly renovated space designated as the Jefferson-Honickman Breast Imaging on the fourth floor of the Main Office Building.

The **musculoskeletal and general radiology division** continues to be the only musculoskeletal division in the country that serves as consultant for all four major sports teams in the city – Philadelphia Eagles, Phillies, Flyers and Sixers. The clinical programs have been expanded to include comprehensive imaging protocols for athletic pubalgia using sensorcaine-arthrography with a specially designed MR imaging protocol. The program has attracted significant numbers of referrals from Hahnemann University's Dr. William Myers, a national expert on athletic pubalgia.

Six new state-of-the-art scanning systems have been added in the **ultrasound**

**division**. The clinical service added in 2005 to provide one full day of thyroid biopsies per month to reduce waiting time for an appointment has been so successful that one additional day per month is being added to the schedule. The diagnostic and therapeutic musculoskeletal ultrasound imaging program has not yet reached its full potential and we are cross-training radiologists and increasing the appointment times offered to meet community needs in this area. Our musculoskeletal ultrasound service is now one of the largest in the country.

The pediatric radiology practice at **A.I. duPont** remains healthy with over 72,000 procedures performed annually. A.I. duPont is in the process of searching for a new head of Radiology.

### SATELLITE CENTERS

In the mid 90's, imaging centers proliferated resulting in a dramatic shift of outpatient imaging to such centers away from the hospitals. Our department contracted with several outside centers to provide professional services.

Although our satellite center continues to be an important part of our clinical practice, imaging centers are taking major financial hits from reimbursement cuts due to enactment of the Deficit Reduction Act (DRA) 2005. Many imaging centers are closing including two centers that we have provided services for several years. Bala MRI closed doors in May 2006 and Academy Imaging has been scaling back gradually with the intent to close doors in December 2007. Langhorne center, managed by InSight Health, converted to a full modality center as mandated by IBC, and is slowly ramping up but is facing intense competition in the area.



## RAD CONSULT

Imaging utilization nationally is in the crosshairs of the Center for Medicare and Medicaid services and other payors because of skyrocketing costs of imaging. Payors are now contracting with Radiology utilization management firms to develop guidelines for clinical indications and appropriate utilization of high end imaging studies such as CT, MRI and PET. HealthHelp is one such organization. This past year, we as the first academic department in the country, have contracted with HealthHelp to participate in their RadConsult Program. We recruited an outstanding program manager, Nancy Smith, to implement this program. She has done a yeoman's job indeed. We provide peer-to-peer consultation to the referring physicians, review clinical indications for CT, CTA, MRI, MRA and PET using guidelines developed by HealthHelp to determine the appropriateness of the requested study.

## DEPARTMENT DASHBOARD

Performance metrics are monitored and trended in three main areas: faculty performance, clinical operation performance and financial performance. Faculty performance metrics include clinical productivity measured by work RVU's, examination volume, report turnaround time, and academic productivity. Work RVU's for clinical faculty are above the national median for academic radiologists as determined by the MGMA. Academic productivity includes peer-reviewed publications, funded grants, grant applications submitted, books, book chapters, published abstracts, invited lectures, regional and international presentations. Faculty engage in one-on-one teaching activity on a daily basis, which is difficult to quantify. However, residents' evaluations of faculty effort and quality

are given serious consideration. For clinical operations, performance metrics monitored include patient access, time lag between order of study to completion of study, patient satisfaction surveys, and referring physician satisfaction.

## PLANNED NEW CLINICAL FACILITIES AND PROGRAMS

With continued upgrades to state-of-the-art imaging equipment, improved current clinical programs and exciting new clinical services can be offered to the Jefferson community. The new 3.0 Tesla MRI scanner placed at the Jefferson Hospital for Neuroscience will result in increased volume of MR examinations, including advanced MR imaging techniques. In **body MRI**, upgrades of the software on the MR units on 3 Gibbon should improve body MR, cardiac MR and body MRA services.

In the **musculoskeletal and general diagnostic radiology division**, an ONI extremity magnet will be placed in JCCI and will provide a much needed service to the Jefferson community including evaluation of hand disorders. Services at the Langhorne site will continue to be expanded with new programs offered possibly including spine injection procedures and musculoskeletal ultrasound in conjunction with the **ultrasound division**.

The department will continue to expand in therapeutic areas with the **interventional radiology division** planning to expand their successful radioactive microsphere treatment program to more patients with hepatocellular carcinoma. The **cardiothoracic radiology division** will provide radiofrequency ablation of primary lung tumors that are unresectable tumors, as well as in patients with comorbidities for whom

surgical resection is contraindicated. The division will collaborate with the **body CT** and **body MR divisions** to expand the noninvasive cardiac imaging services including CT angiography and MRI for stress and rest perfusion studies, scar imaging, and evaluation of complex cardiac anomalies and phase studies.

At the **breast imaging center**, the breast cancer program expansion will continue with support through fundraising to improve the screening center, improve patient flow and provide a more pleasant environment for patients.

In body CT ablation services will be expanded to include lung masses and bone metastases, and increase the number of liver and kidney ablations performed. We hope to acquire one of the prototype microwave ablation system with Jefferson serving as a beta site. With the addition of this system, the **Department of Radiology** would have all of the major modalities for in situ ablation: cryo-, radiofrequency, and microwave-ablation.

### CLINICAL WEAKNESSES

We faced several challenges in our clinical operation. Our outpatient MR scanners in the Clinical Office Building remain outdated and continue to limit many of our clinical and research capabilities. Related to this issue is that of inadequate technologist training. As advanced technologies are implemented, imaging protocols become more complex and training becomes imperative to maintain high quality imaging. Image processing needs to be improved in order to demonstrate images in an optimal manner. Technologists need to be provided training to become superusers. There are also information technology issues such as difficulty in filtering undictated cases and restoring prior exams, which results in significant delays

in providing timely reports. For CT imaging, the rapid growth in our clinical service has led to less time consulting with referring physicians about imaging results, patient outcomes, and appropriate ordering.

Lack of space remains a limitation for many areas of the department. Nuclear medicine has inadequate space for inpatients with no inpatient waiting area, resulting in inpatients in wheelchairs and stretchers held in the hallways or around the reception desk. This is a particular problem for the cardiac inpatients, whose stretchers span the hallway of 8 Thompson. This area is in dire need of facility expansion to improve the patient's experience, thereby maintaining the strong outpatient practice in this hospital setting. Additionally, interventional radiology services cannot be maximally expanded, as there is lack of adequate outpatient clinic space. Space needs to be made to provide comprehensive divisional services in one area. A lack of an appropriate marketing by TJUH has prevented us from being competitive in promoting and expanding new clinical services.

### CLINICAL INFORMATICS

The IT Division of the Department of Radiology continues to expand its support of the clinical mission of the department. In addition, the Division sees itself as a resource for the entire Jefferson Healthcare system, contributing to the needs of patients and clinicians.

The majority of the academic year focused on one of our most extensive IT projects to date; the staging, installation and deployment of our new Picture Archiving and Communication System (PACS) and Enterprise Imaging Distribution System. This huge endeavor required close coordination and cooperation from multiple stakeholders outside of the Department of Radiology including TJU

Hospital IS, Jefferson IT, the TJUH Clinical Informatics Committee (CIC), the Methodist Hospital Radiology Group, the Methodist Hospital IS Group and Administration.

The new Philips iSite PACS is vastly more complex technologically than our current legacy Canon and AGFA PACS systems. Unlike our current disparate PACS and Enterprise image distribution systems all imaging is consolidated into a single system and imaging is now tightly integrated into our imaging workflow engine provided through our Radiology Information System (RIS). All TJUH and Methodist Hospital imaging studies will be stored and served through this new system. The redundant server architecture is capable of consolidating and storing our over 350,000+ examinations per year with high availability and failover capacity. Imaging data is permanently archived off-site for safety, and all imaging studies that are added to the system are *always available*. Radiologists and clinicians will now access *the same data repository*. Since this new PACS is tightly integrated to our RIS and Speech Recognition System (SR), the new enterprise system will display a comprehensive image history timeline that links to all prior radiology reports and prospective imaging studies.

Since the TJUH Department of Radiology has a decade of previous PACS experience, the process of migrating to an entirely new PACS architecture required a significant amount of additional planning, internal development, training and testing. Moreover, the Radiology IT Group needed to develop a solution that would allow us to continue to work in our existing legacy PACS environment without interruption to Radiology clinical

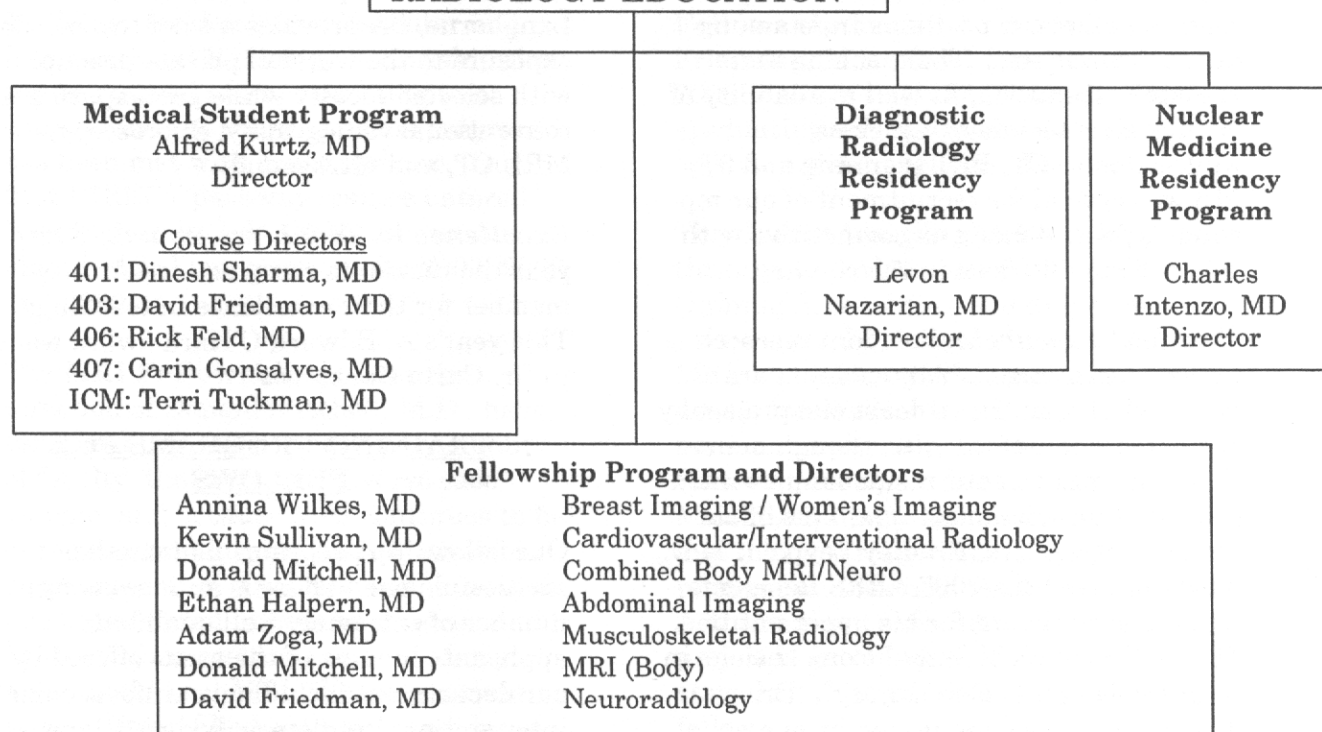
service or clinician access to imaging studies. This required creation of a complex redundant data transfer process that allowed us to replicate images simultaneously on three disparate PACS systems and the existing Stentor iSite Enterprise Image Distribution system. Also, the Radiology IT Development Group had to create a custom engine to migrate required historical imaging studies from the now expansive legacy archive to the new PACS system without creating inordinate delays in delivery of clinical services.

With existing clinical services intact, the IT team turned to the deployment of hundreds of new registrar, technologist and Radiologist workstations. This required establishment of training and testing procedures for an entirely new image workflow process that provides greater quality control of imaging studies from the initiation of an order to completion of a finalized report. Hundreds of individuals within the Department of Radiology were trained to interact with the new system, role-based core competencies were developed and validated, and finally, the internal transition process to the new PACS began in Spring 2007.

Throughout the upcoming summer months in FY'08, the Department of Radiology will quietly transition to the new PACS system while systematically retiring unnecessary legacy components of the old systems. In the fall of FY'08, in cooperation with Hospital IS and Jeff IT, we will transition to the new feature-rich Enterprise Imaging application. Clinicians will experience a richer level of interactivity, a greater level of access and tighter integration to image workflow.

## EDUCATIONAL PROGRAMS

### RADIOLOGY EDUCATION



### RESIDENCY TRAINING PROGRAM

The educational programs at Thomas Jefferson University Hospital continue to be one of the major strengths of our department. In February and March of 2007, the residency and fellowship programs were site visited by the ACGME, and the site visitor was continually impressed by the quality of our programs.

The Radiology residency program is nationally recognized as one of the top programs in the country. In fact, for the third consecutive year the residency program was recently ranked number 1 out of 187 programs in the country by the American Board of Radiology based on 5-year cumulative performance on the oral board examination. This is indeed a major accomplishment and a tribute to our faculty who remain committed to a

high caliber of teaching in spite of faculty shortages and increased clinical workload and to the outstanding leadership provided by our residency program director and Vice Chair for Education, Levon Nazarian, M.D. The goal of our residency program is to produce quality radiologists well trained in all aspects of diagnostic radiology.

Upon finishing their training, our residents will be competent to pursue a career in either an academic or private practice environment. All seven of our senior residents passed both the written and 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 six out of the seven have chosen to stay on at Jefferson for additional fellowship training.



**Residency Selection:** This year we received approximately 650 applications for eight positions and interviewed approximately 75 candidates. We matched all of our positions from among our top candidates. The teaching and research reputation, as well availability of cutting edge technology such as Multidetector CT, PET scanning and 3T MR was crucial for recruitment of our top candidates and made us competitive with other top institutions in the country.

**Resident Research:** 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 graduating seniors, Bradley Leypold, M.D., PhD., received the 2007 ARRS Residents in Radiology Award for his paper entitled, "Early Evolution of Spinal Cord Lesions in Traumatic Spinal Cord Injury". Dr. Leypold was also nominated by our department to receive the RSNA Research and Education Foundation Roentgen Resident Research Award which was presented to him at graduation. Another resident, Dr. Luis Beltran participated in the RSNA/ARRS/AUR Introduction to Research Program.

**Clinical Training:** 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. Residents get an outstanding education spending a total of 3 months at A.I. duPont. This rotation enhances the educational experience in pediatric radiology. The addition of cutting edge multidetector CT scanners, an on campus PET/CT scanner and continued upgrades to existing MRI and

Ultrasound units combined with the subspecialty expertise of our faculty ensure up-to-date experience for our residents and fellows. Our outpatient facility in Langhorne, PA provides a brief two month exposure to the world of private practice with selected faculty while participating in conventional radiography, fluoroscopy, MRI, CT, and ultrasound.

**Excellence in Teaching Award:** Every year the residents recognize one faculty member for their excellence in teaching. This year's A. Edward O'Hara award went to Dr. Carin Gonsalves.

### **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: cardiovascular/interventional radiology, body MRI, breast imaging, combined body 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.

The **Abdominal Imaging Fellowship** is coordinated by Dr. Ethan Halpern with Dr. Anna Lev-Toaff responsible for the fellow selection process. Fellows are trained in advanced, multi-modality imaging of the abdomen and pelvis, including sonohysterography, virtual colonoscopy, and CT/MR urography while continuing to receive training in chest imaging (including cardiac imaging). There is one month of elective time available for additional training in abdominal imaging or training in extra-abdominal cross-sectional work. The program offers seven positions each year.

The **Vascular and Interventional Fellowship**, under the direction of Kevin



Sullivan, M.D., is an ACGME accredited one year program. In addition, we recently started a DIRECT pathway program, which is a 4 year combined Radiology residency and Vascular and Interventional Radiology Fellowship that can be entered after completing two clinical years of training. This program has been met with great interest. Our first DIRECT pathway trainee entered the program in July, 2006, and we have already filled our positions for 2007, 2008, and 2009.

The **MRI Fellowships**, under the direction of Donald Mitchell, M.D., have remained popular because of the quality of faculty, the large and diverse case volume, and because MRI continues to be of the most rapidly expanding areas of clinical practice. One fellowship position has been offered in body/musculoskeletal MRI and four positions in neuro/body/musculoskeletal MRI. These positions have all been filled with top candidates.

The **Musculoskeletal Fellowship program**, under the direction of Adam Zoga, M.D., graduated two strong fellows including Sachin Dheer, a former Jefferson resident who accepted an academic position at Christiana Medical Center in Delaware and Christopher Kirkpatrick who has taken a private practice position in his home town in Bucks County, PA. This was a very strong clinical duo with academic productivity as well. Both fellows presented scientific papers at the American Roentgen Ray Society annual meeting this year, and Sachin has two original papers currently in peer review.

The musculoskeletal fellowship positions remain highly coveted as we received more than 50 applications for the 2008-2009 positions. From that group, we interviewed 12 candidates and received acceptances from our top two choices,

Ketan Naran from Jefferson and George Hobbs from the University of Texas.

The **Neuroradiology/ENT Radiology Fellowship**, under the direction of David Friedman, M.D., filled four positions for 2007-2008 through the NRMP match. The four graduating fellows obtained excellent job opportunities in private practice.

The **Breast Imaging Fellowship**, under the direction of Annina Wilkes, M.D., offers training in screening and diagnostic mammography, breast ultrasound, breast MRI, and image guided percutaneous needle localization and biopsy using mammography, ultrasound and MRI. Fellows participate in twice monthly Multidisciplinary Breast Cancer Conference and they are responsible for several resident and medical student conferences. Additionally, participation in a research project is encouraged. Dayna Levin, M.D. stayed on this year to be the breast imaging fellow.

Our visiting fellowships remain very popular in the various subspecialty areas; these programs allow practicing radiologists to learn new techniques and sharpen their traditional skills. Because of our international reputation, several physicians from overseas have chosen to pursue their research theses in our department in the divisions of MRI, Neuroradiology/ENT, Ultrasound, etc.

### **TEACHING PROGRAMS FOR MEDICAL STUDENTS**

I am pleased that radiology continues to be included in the core curriculum for sophomore students with Dr. Alfred Kurtz acting as the Director of Medical Student Education for the Department of Radiology. 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 Women's Imaging and Abdominal Imaging.

The junior and senior students can choose to attend one or more of the four separate electives offered by our department, which include general Radiology, CVIR, Neuroradiology, and Cross-Sectional Radiology. The radiology electives remain quite popular and were completed by 146 members of the senior class, either here or at an outside institution. Our radiology elective courses are also popular with medical students from other institutions, with 9 students in attendance this year.

The neuroradiology elective was completed by 7 senior medical students. Electives in cross-sectional imaging and CVIR were completed by 10 and 10 students respectively. All of these courses received rave reviews from the students. I wish to thank all the course coordinators for a fine job – Dinesh Sharma, M.D. for general radiology, David Friedman, M.D. for neuroradiology, Rick Feld, M.D. for cross-sectional imaging and Carin Gonsalves, M.D. for CVIR.

#### **CONTINUING MEDICAL EDUCATION PROGRAMS**

In spite of all the added pressures of increasing clinical responsibilities, our faculty devote an enormous amount of energy and time to educational activities.

***Division of Musculoskeletal and General Radiology:*** The Jefferson Lower Extremity Advanced Imaging Symposium, directed by Adam Zoga, M.D., was held in October 2006 with 105 attendees. The Jefferson Musculoskeletal Imaging Symposium held in June 2007 was directed by Dr. Angela Gopez with 134 attendees.

***Radiology Grand Rounds and Radiology Research Conferences:***

Twenty weekly conferences were held during the 2006-2007 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.

***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 more than 40 courses offered in all 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 1,300 people. The program was supported by a wide variety of exhibitors and there were lecturers from this country and abroad providing symposia on Ob/Gyn, vascular ultrasound, ultrasound physics, sonomammography, pediatric ultrasound, musculoskeletal imaging, and a symposium on ultrasound contrast agents.

Educational activities of the division will continue in the coming year to support the training of medical students, residents, and fellows under the leadership of various members of the staff. A series of conferences in all aspects of ultrasound have been arranged for fellows and residents similar to the past year. Our programs for physicians and paramedical personnel, as well as scientists from around the world continue.

The RSNA Research & Education Foundation grant "Teach the Teachers

Initiative for Ultrasound Training in Latin America,” received a one year extension in order to complete the objectives of the grant. During this time period, JUREI faculty and staff will visit the seven newly formed affiliate ultrasound education centers to ensure they meet JUREI standards as teaching facilities. This program will be completed by June 30, 2008. The new centers are located in Tegucigalpa, Honduras; Bridgetown, Barbados; Guatemala City, Guatemala; Managua, Nicaragua; La Paz, Bolivia; San Jose, Costa Rica and Maracaibo, Venezuela.

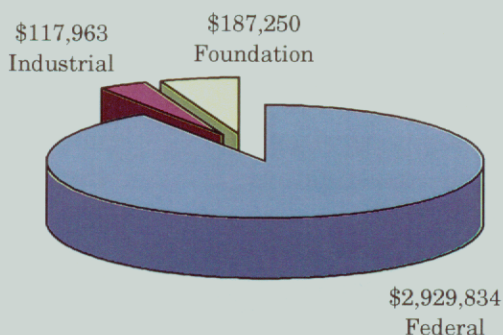
These seven new centers are in addition to the sixty-five previously established centers. In addition, JUREI is in the process of finalizing the acceptance of centers in Mexico City, Mexico and New Delhi, India. These centers further JUREI’s goal of helping developing

and emerging nations provide quality ultrasound education in their countries

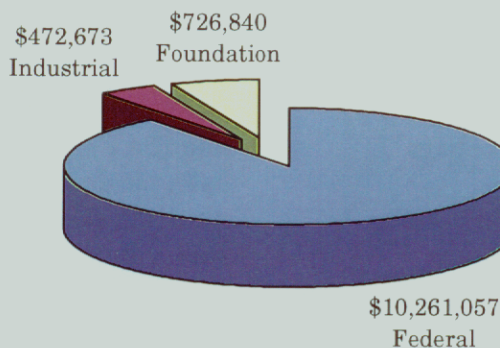
**Cardiac CT Training Program:** Our department continues to offer a training program in cardiac CT directed by Ethan Halpern, M.D., which includes quarterly didactic courses in addition to weekly hands-on training sessions in coronary CT angiography. The quarterly courses are taught by Drs. Ethan Halpern, David Levin and Eric Gingold and provide information needed for coronary CT angiography as well as evaluation of cardiac function and assessment of cardiac valves. The hands-on sessions are held in conjunction with the regular cardiac CT schedule so that participants are able to observe and participate in the performance and interpretation of clinical cases. These courses have been popular with both radiologists and cardiologists.

## **RESEARCH ACCOMPLISHMENTS**

### **2006-2007 Fiscal Year Funding**



### **Total Funding (all budget years)**



Although the demands of clinical activities continue to increase, as indicated in our clinical productivity, the department's research productivity remained strong and actually showed an increase in funding. There were 31 NIH or other federal grants active during the year, in addition to 3 foundation or medical society grants, and another 11 industrial grants. As a group, these grants brought in total current year funding of \$3,235,047, including \$2,555,091 in direct support and \$679,956 in indirect. This represents a 103% increase compared to my first year as chair 5 years ago. We had 220 publications in the medical literature (including journal articles, books and book chapters, and published abstracts) over the past fiscal year. Dr. Adam Zoga was awarded the annual Judy Dubbs Memorial Research Award, in recognition of his efforts in research.

**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. This year, the facility provided imaging services for nine NIH funded campus investigators across five departments. With Neurosciences' Dr. Iacovitti, new PET and SPECT imaging agents have been evaluated to assess severity and regression of Parkinson's disease in a rat model using stem cell therapies. In Biochemistry and Molecular Pharmacology, FDG PET was used to quantify lung tumor burden in a mouse model with Dr. Waldman. FDG PET was used to quantify glucose metabolism differences across various anti-angiogenesis therapies with Dr Iozzo in Pathology. Radiology's Dr. Thakur continues to characterize and validate novel oncogene expression imaging

agents. CT imaging was an integral part of all protocols.

Zixiong Cao PhD, a Biomedical engineer in the Department of Radiology, has been working closely with the small animal imaging group. He is funded through grants to improve pinhole SPECT imaging where he is using complex physics simulation engines to optimize multiple pinhole designs for specific imaging applications. He has also become more involved in helping to define and execute imaging studies.

Imaging data from the lab has been in numerous publications and presentations this year pertaining to both the science and application of molecular imaging. Enhanced funding to promote the molecular imaging facility has been pursued. A revised application was submitted for a NIH shared instrumentation grant to obtain a next generation microPET better suited for neurological imaging mice. The increasing utilization and helpful results obtained have prompted the KCC advisory committee to include this facility as a part of the KCC core grant now under the review by NIH. It is hoped that this will bring further exposure of the facility to KCC members.

**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, and the Farber Institute, the program has been productive in the investigation of multiple sclerosis, epilepsy, and brain tumor imaging.

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 were underway for the development and evaluation of ultrasound contrast agents and novel imaging techniques to improve the detection of diseases. Dr. Ji-Bin Liu completed his work on his NIH grant that assessed the utility of contrast enhanced monitoring of prostate RF ablations. Dr. Goldberg continued his NIH-funded investigation into the use of ultrasound contrast agents for imaging lymphatic channels and sentinel lymph nodes in a swine model. A five-year NCI grant with Dr. Margaret Wheatley at Drexel University was awarded to develop novel ultrasound contrast agents. Dr.

Flemming Forsberg received two grants to study subharmonic pressure estimation in the heart and portal vein with ultrasound imaging from the American Heart Association and NIH, respectively. Drs. Rick Feld and Ethan Halpern continued work on real-time elastography for imaging of thyroid and prostate lesions and Dr. Halpern began work on his NIH-funded clinical trial to evaluate prostate cancer detection with contrast-enhanced ultrasound following pretreatment with Dutasteride.

**In breast imaging**, the faculty continued their efforts on NCI funded cooperative group clinical trials to define the most effective modalities for breast cancer screening. Results from a multi-center study, with Dr. Vijay Rao serving as principal investigator at Jefferson, that examined the efficacy of contralateral breast MRI in women recently diagnosed with breast cancer were published in the *New England Journal of Medicine*. Dr. Merritt continued patient follow-up on a trial of the utilization of screening breast ultrasound in a high risk population.

**In nuclear medicine**, Dr. Thakur continued his study on the development of

probes for imaging oncogene expression, including his NIH-funded work to examine Cu-64 PET imaging of breast cancer and a current investigation of Cu-64 for prostate cancer imaging. Dr. Intenzo participated in two trials sponsored by the American College of Radiology Imaging Network that evaluated PET for assessment of response to therapy in nonsmall cell lung cancer and monitoring the therapeutic response of malignant gastrointestinal stromal tumors to Gleevec, a tyrosine kinase inhibitor. Dr. Intenzo and Kim published an article demonstrating PET findings in pulmonary lymphangitic carcinomas in *Clinical Nuclear Medicine*.

**In body MRI**, Dr. Mitchell began work with Dr. Navarro in Gastroenterology on an NIH grant that includes rapid MRI for noninvasive monitoring of fatty liver and mesenteric fat. Additionally, Dr. Mitchell serves as chair of the Gynecologic Disease Site Committee of the American College of Radiology Imaging Network cooperative group and is a member of the National Cancer Institute Gynecological Scientific Steering Committee.

**In neuroradiology/ head and neck radiology**, Dr. Flanders continued his work on two grants funded by the NIH for cross-institutional access to cancer imaging data and an integrated biomedical informatics infrastructure for cancer research imaging.

**In body CT**, Drs. Halpern, Levin, Gardiner and Zhang continued their investigation into coronary CT angiography to diagnose coronary disease and for surgical planning, with over 20 presentations given on the topic at national meetings. Dr. Lev-Toaff continued to evaluate the benefits of CT colonography.



In cardiovascular interventional radiology division, collaboration with Dr. Sato in medical oncology continued on his NIH funded trial of immunoembolization of uveal melanoma metastatic to liver. The division's accomplishments in this field have been recognized by invitations to present our work at both the Annual meeting of the Society of Interventional Radiology and the World Conference on Interventional Oncology.

Our **musculoskeletal group** continued to be productive in their research publications, describing imaging findings in athletic pubalgia, osteomyelitis, subchondral cysts, and vertebroplasty and musculoskeletal biopsy utilization. Dr. Morrison began a multicenter trial funded by the American College of Radiology Imaging Network to develop a standardized method of imaging osteoarthritis of the knee. Additionally, Dr. Morrison is serving as principal investigator at Jefferson for an NIH grant awarded to Drexel University to study the biomechanics of clubfoot deformity. Dr. Zoga's work in athletic pubalgia has been recognized with awards for best paper at the Society of Skeletal Radiology annual meeting and Cum Laude Award for educational exhibits at the Radiological Society of North America annual meeting.

Our **health services research group** (Dr. Levin, Dr. Parker, Andrea Frangos and I) 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. Over the past year, our Center for Research on Utilization of Imaging Services (CRUISE) has had seven abstract published and 10 papers published. We expanded our work and began to examine patient level data with the hopes of securing additional grant funding. There is no doubt that this work

will further enhance the national reputation of our department.

### **RESEARCH WEAKNESSES**

Although we managed to exceed our previous research success, proper research infrastructure (funds and personnel) is necessary to be successful in research today. Continued governmental budgetary restraints make obtaining federal support increasingly difficult, with the majority of projects requiring two or three resubmissions to be awarded funding, and funds, when awarded, to be cut drastically. There needs to be financial support to allow investigators to collect pilot data to be considered for funding, including support personnel to work on unfunded pilot clinical trials.

The department has been productive in clinical research, but the effort required for the new era of complex clinical trials are limited by the amount of time that can be committed by faculty. The clinical workload has been increasing, eroding the academic time to carry out research. The NIH and FDA are promoting the use of radiological endpoints for a wide range of clinical trials, such as oncology and neurology studies. Often the sponsors require complex image evaluations by radiologists, thereby adding research work on studies being conducted by investigators in other departments to our department's clinical workload. More financial support is required to increase the number of faculty members, thereby restoring time to perform our research and assist with the multitude of other studies being carried out at Jefferson.

Trained clinician-researchers are needed to attract both industrial and federal funding. Translational research is a major part of the new NIH roadmap and requires qualified, capable researchers to carry out this work. With an overall

shortage of radiologists nationwide, trained clinician-researchers are in great demand. In this competitive marketplace, we must be able to compete with other institutions to attract these specially trained clinician-researchers.

### **OPPORTUNITIES FOR EXTRAMURAL FUNDING**

The department has 13 pending grant proposals, which are listed in Table 2 of the appendix. There are nine pending proposals for federal grants and/or subcontracts and four proposals to foundations and industry. The proposals cover a broad spectrum of radiology research. There are also over eight pending projects outside the department in which our faculty are listed as co-investigators. These are not listed in Table 2 as the principal investigators are faculty members from other TJU departments.

The American College of Radiology Imaging Network (ACRIN), an NCI funded cooperative group, remains a good source of extramural funding for the department. The department has been involved in eleven projects since the cooperative group's inception. There are additional projects, which are under development at ACRIN, which we hope to participate in. Additionally, ACRIN has recently been awarded a grant from the Pennsylvania Department of Health. We have already been awarded two of these projects and will be involved with at least one more pending project. 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.

With the NIH and FDA promoting the use of radiological endpoints in clinical trials, and amount spent on imaging increasing drastically over the past decade, evaluation of new imaging technologies with outcome and cost-benefit analyses are areas of radiology research that need to be explored. Breast and prostate cancer detection and treatment remain areas of interest to funding agencies and sources of funding in these areas need be explored. Additionally, with the high costs of cardiovascular disease to insurers, coronary CT and cardiac MR have a lot of potential for research funding. Other avenues of funding and research support are partnerships with industry. Partnership are a rich source of financial support, but more importantly, allow us to serve as beta sites for equipment and bring attention to our research endeavors.

### **AFFILIATIONS AND INTERDEPARTMENTAL ACTIVITIES**

Virtually every clinical department relies heavily on a strong radiology department to provide quality imaging for clinical care of patients as well as research. Joint endeavors between departments build on the strengths of both the departments to produce mutually beneficial programs.

Our physicians continue to work with faculty in other departments across Jefferson campus for both clinical and research endeavors. In body MR, collaborations with the gastroenterology, particularly in the area of hepatology, has led to several manuscripts in *Radiology*. Dr. Lev-Toaff continued her research and clinical endeavors with the Division of Gastroenterology utilizing virtual colonoscopy. Drs. Halpern, Mitchell, Gardiner, and Zhang have been working with cardiology in evaluating cardiac CT angiography and MR angiography. Dr. Halpern has also been collaborating with

the Emergency Department to create a protocol for acute chest pain with patients presenting with chest pain. Drs. Merritt and Needleman have been working with the Emergency Department on ways to improve emergency service using the Failure Mode and Effects Analysis (FMEA) model, for which Jefferson Radiology may be among the first radiology departments to use this model. Neuroradiologists continue to collaborate with researchers in the Departments of Otolaryngology, Neurosurgery, Orthopedic Surgery, Neurology, Rehabilitation Medicine, and the Farber Institute. Our physicians in CVIR continue their weekly multidisciplinary management conference and clinic in conjunction with Medical Oncology for the management of patients with uveal melanoma metastatic to liver, as well as have a monthly multidisciplinary management conference in conjunction with Hepatology, Transplant Surgery, and Medical Oncology for the management of patients with hepatocellular carcinoma. In musculoskeletal radiology, we are working closely with the Department of Orthopedic Surgery, Sports Medicine, Family Medicine, and Rheumatology on clinical and research projects including the shoulder, hip, foot, and spine imaging. Dr. Halpern continues his joint effort with the Department of Urology and the Jefferson Prostate Center. In breast imaging the new Jefferson Breast Care Center will help to develop collaborations with various members of the multidisciplinary team. In nuclear medicine we are currently involved in two ACRIN-RTOG jointly sponsored projects involving the evaluation of FDG-PET for assessment of response to therapy in nonsmall cell lung cancer and the use of FDG-PET in monitoring the therapeutic response of Gleevec for malignant gastrointestinal stromal tumors. Additionally, almost all of our divisions participate in multidisciplinary

conferences in many disciplines including chest, breast, gastroenterology, musculoskeletal, neurosciences and head and neck conferences.

The Department of Radiology's research collaborations also extend beyond Jefferson. Dr. Zoga worked with Dr. Meyers at Drexel to identify imaging findings of sports hernias and he now refers all his patients to TJU for imaging of this condition. Dr. Morrison worked with Dr. Siegler at Drexel University to evaluate clubfoot deformity. The ultrasound group continues to collaborate on several projects with investigators at the Drexel University. Additionally, we continue our close relationships with the engineering departments at both Drexel University and the University of Delaware for undergraduate and graduate training and research.

### **DEPARTMENT ADMINISTRATION**

The administrative team lead by Victor Sarro has done an outstanding job of multitasking and managing a plethora of initiatives in the department this past year and deserves special recognition. However, it has become increasingly apparent how thin the administrative infrastructure is for the size of our operation and department. Implementation of the new Philips Stentor PACS as an enterprise wide initiative will require a lot of resources to ensure optimal training of users including technologists, radiologists, clinicians, house staff and nurses. Additional resources must be made available by TJUH for endeavors of this magnitude which are in progress.

### **DEPARTMENT GOALS**

There are a number of important goals we plan to focus on in the coming year. (1) **Improving our operational efficiency**

– We need to better coordinate the technical and professional aspects of our informatics activities. I am not entirely satisfied with the way things have progressed this past year. We have to optimize and integrate the available tools and resources – such as PACS, RIS, HIS, and (in the near future) EMR. It is important to engage the technical team so as to improve access to and the technical quality of the studies, while at the same time decreasing “open table” time. Faculty must be encouraged to streamline protocols, improve turnaround time, and standardize reports. I want to empower division heads to take ownership of monitoring practice performance metrics, using things like electronic dashboards. We also need to improve our interactions with referring physicians so as to be able to better educate them about which imaging studies are the most appropriate, and to obtain better clinical information when studies are ordered. **(2) Help build our practice through better branding and marketing** – We have an outstanding radiology department that is profitable for the hospital. However, we need to convince them of the importance of marketing our services. We also need to greatly improve our department’s web site. I intend to recruit a professional webmaster to help us redesign our site so we can better communicate with Jefferson and outside physicians, as well as improve its content and timeliness. **(3) Expand our clinical programs on campus** – There are a number of areas of our practice that we plan to grow substantially in the near future. These include ultrasound-guided percutaneous musculoskeletal interventions, coronary CT angiography, cardiac MRI, percutaneous radiofrequency ablation of liver and other tumors, transcatheter selective embolization of tumors with radioactive particles, PET/CT, and breast MRI. Expansion in these areas will come as a result both of the development of new

imaging applications and the expertise and leadership of our faculty. **(4)**

**Explore off-campus expansion opportunities**

– In concert with the outreach strategy being developed by JUP, TJU, and TJUH, there are promising opportunities for us to enlarge our practice. These include Frankford Bucks Hospital, Methodist Hospital, and a possible new imaging center in the old Navy Yard area (probably done in conjunction with Methodist). We also plan to expand our facilities at JCCI. **(5)**

**Enhance our educational programs**

– We need to review and perhaps change our resident/fellow balance. We also need to consider changes in our residency rotations and on-call duties. The American Board of Radiology recently announced major changes that will take place in its certifying examinations starting with the class entering in 2010, and it is quite likely that there will be major changes in the structure of the residency program as well. We will start making plans to get ready for the transition. **(6) Enhance our research efforts**

– We intend to expand our molecular imaging/translational research efforts and collaborate with other investigators in the basic science departments and the Kimmel Cancer Center. **(7) Expand our research collaboration with industry** – We have developed a strong research collaboration with Philips Medical Systems in recent years, and I am hopeful that we can expand this even further. For example, this spring we anticipate becoming a beta site for a new Philips prototype high speed multidetector CT scanner. We also want to expand our molecular imaging program. **(8) Pursue philanthropy** – We have identified a possible donor of a substantial sum to support research in our department. I hope to be able to finalize the arrangements before the end of CY 2007.



## **ISSUES FOR THE COLLEGE, UNIVERSITY AND HOSPITAL**

**Night/Weekend On-Call Coverage by Attending Radiologists.** Suggestions have been made that we should have attending radiologists "in house" 24 hours a day, 7 days a week, so that final reports can be obtained immediately. This suggestion is neither feasible nor necessary. In academic radiology department like ours, every faculty member is highly subspecialized – people do only neuroradiology, or only mammography, or only chest radiology, etc. After practicing like this for a few years, we tend to lose our capabilities in other aspects of imaging outside our own individual areas of subspecialization. If a single faculty member had to be in house reading cases at all times, that would create a very undesirable situation wherein chest radiologists would have to read brain MRI or CT studies, mammographers would have to read CTs of the abdomen, and so on. This would clearly not be in the best interests of good patient care. In fact, a recent study from the University of Pittsburgh (Branstetter et al, *Acad Radiol* 2007; 14:201) looked at this very issue. They determined the error rates in 65,780 Emergency Department CT and plain x-ray studies that were interpreted by radiology residents and junior or senior radiology attending staff who were covering in the ED outside their areas of subspecialty expertise. The "gold standard" was the final interpretation by the appropriate subspecialty radiologist the next morning. The error rates for CT were 2.0% for radiology residents, 2.5% for senior radiology attendings, and 1.8% for junior radiology attendings. In plain x-ray, the error rates were 0.8% for radiology residents, 0.5% for senior radiology attendings, and 0.8% for junior radiology attendings. In essence, the radiology residents did just as well as faculty

attendings who are working outside their areas of subspecialization. This means there is no advantage to be gained from having a radiology attending in house nights and weekends unless that individual is working specifically in his/her area of expertise. But, if our department were forced to have subspecialists in all areas of radiology in house nights and weekends, that would create an intolerable call burden on our faculty, and many of them would simply leave to go elsewhere. As it is, many of our faculty currently spend much of their evening and weekend time doing research or preparing teaching conferences.

We very carefully monitor error rates among our residents on call and in the very rare event of less-than-adequate performance, counseling and tutorials are provided. It is a high priority in our department that if an error is detected at morning readout by a subspecialty attending radiologist, the ED is notified immediately. In addition, if an ED attending is dissatisfied with a reading provided by a radiology resident, attending radiologists are on call from home at all times in neuroradiology, body CT, body MRI, ultrasound, nuclear medicine, general radiology, and interventional radiology. Often they can access cases from home using teleradiology, but if necessary, will come into the hospital. This arrangement has served the institution well for decades, and it would be highly disruptive to our department to change it.

### **Methodist Hospital Radiology.**

Methodist Hospital (MH) is an intrinsic part of TJUH. It is wholly owned by TJUH. We are a single unit in regard to JCAHO requirements. We have worked closely with MH personnel in selection of PACS, and defining steps for implementation. This will provide a high level of functional integration. However,



the Methodist Hospital radiology services are provided by a private group which has chosen to stay at arms length from our own department. The Methodist radiology group has been invited and encouraged to function as a community division of JUP Radiology. This would benefit the hospital and both radiology groups, and would allow economies of scale to be achieved. Our department could benefit by having a community oriented group like the Methodist radiologists. The MH radiologists and their patients would benefit by having our subspecialty expertise available to them, as well as night call coverage which they currently outsource to a night hawk service. JUP would benefit by enlarging its revenue base. Despite all our efforts, there continues to be resistance from Methodist radiologists. It is time for the TJUH and Methodist Hospital administrations to make it happen.

**Ambulatory Care Facility.** A new large ambulatory care facility is planned for the corner of 10th and Sansom Streets, tentatively scheduled for opening in 3 to 5 years. The goal would be to provide comprehensive, coordinated and convenient care to patients. Discussions continue to be held about what ancillary services to provide there. This needs careful business planning to assess consolidation, costs versus benefit of duplicating high-end imaging resources. TJUH and our department are in the final stages of a beautiful and expensive renovation of 10 Main and 3 Gibbon. State-of-the-art CT and MR scanners are now located on 3 Gibbon along with plain radiography and fluoroscopy, as well as a spacious and attractive outpatient waiting

area. Patients will be able to easily access this area via a bridge from the new ambulatory building. Our department is already widely dispersed throughout the campus as well as off campus, and having to cover yet another site would put additional strain on both physician and technologist manpower.

#### **Scope of JUP Radiology Practice.**

Some of the JUP clinical practices may be expanding beyond our campus into new locales as part of regional strategy. For example, discussions have been ongoing about a new outpatient facility for expanding the JUP cardiology practice in Bucks County somewhere near Frankford Hospital. It is imperative that when planning for expanding JUP practices is undertaken, and ancillary services are likely to be included, JUP Radiology be included and promoted as the primary provider of ancillary services. Preference should be given to our department in any venture that expands JUP's scope of practice in this manner

**Expansion of Pre-Clinical Imaging at TJU.** I am very pleased that we have been able to develop an animal imaging facility that includes micro CT and micro PET units. At present our PhD investigators use the animal imaging facilities for their own research; and support investigators from other departments including the Kimmel Cancer Center, Neurosciences and Cardiology for their research. We hope in the future to be able to add a 7T animal MRI as most investigators on campus will benefit from a full modality preclinical/molecular imaging core facility.

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## FORMAL SCIENTIFIC PRESENTATIONS

### OKSANA H. BALTAROWICH, M.D.

- July 15, 2006                      Seminar in Ultrasound Practice, Abbott Northwestern Hospital, Minneapolis, MN
- "Tips for your OB/GYN ultrasound practice"
- August 16, 2006                      Friends of Ukraine Radiology Conference, Live Interaction Collaboration Demonstration, linking Ukraine, Philadelphia, PA, and other US sites
- "Sonographic evaluation of RLQ pain in women"
- August 30, 2006                      1<sup>st</sup> International Web-Conference of the World Federation of Ukrainian Medical Associations, linking Ukraine and Philadelphia, PA
- "Sonographic evaluation of gastrointestinal causes of RLQ pain"
- November 26-  
December 1, 2006                      92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Evaluation of the effectiveness of an ultrasound training program for physicians from the Caribbean, Central and South America"
- March 15-18, 2007                      Annual Convention of the American Institute of Ultrasound in Medicine, New York, NY
- "Assessment of an ultrasound training program for physicians from the Caribbean, Central and South America"
- April 13-15, 2007                      2<sup>nd</sup> Abu Dhabi 2-3-4D Ultrasound Conference: Practical Approach to Diagnostic Ultrasound, Abu Dhabi, UAE
- "Sonography of the diffusely abnormal liver"
  - "Ultrasound evaluation of the biliary system"
  - "Liver Doppler"
  - "Ultrasound evaluation of the RLQ"
  - "How to avoid pitfalls in transvaginal sonography of the pelvis"
  - "Sonography of uterine myometrial disorders"
  - "Diagnostic pitfalls and challenges of ectopic pregnancy"
  - "Differential diagnosis of adnexal masses"
- May 1-4, 2007                      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Advances in OB/GYN" (moderator)
  - "Abdominal ultrasound – Part I (liver, gallbladder, and bile ducts)"
  - "Abdominal ultrasound – Part II (pancreas and spleen)"
  - "Sonohysterography: Getting started"

### **DIANE BERGIN, M.D.**

- November 26-  
December 1, 2006      92<sup>nd</sup> Scientific Assembly and Annual Meeting of the  
Radiological Society of North America, Chicago, IL
- "Mapping marrow edema pattern related to extrinsic ligament attachment on MRI in setting of acute wrist injury"
- May 6-11, 2007      107<sup>th</sup> Annual Meeting of the American Roentgen Ray Society,  
Orlando, FL
- "MRI extrinsic ligaments of the wrist with surgical correlation"
  - "MRI of the coracohumeral ligament on unenhanced MRI"

### **DIANE DEELY, M.D.**

- October 21-22, 2006      Jefferson Musculoskeletal Imaging Symposium: Imaging  
Orthopaedic Dilemmas and Advances, Thomas Jefferson  
University, Philadelphia, PA
- "Percutaneous image guided orthopedic intervention"
- June 23-24, 2007      Jefferson Musculoskeletal Imaging Symposium: Anatomic and  
Imaging Correlation in the Upper and Lower Extremity, Thomas  
Jefferson University, Philadelphia, PA
- "Rapid MR interpretation using pattern recognition"
  - "MDCT imaging of the knee and shoulder"

### **RICK FELD, M.D.**

- May 1-4, 2007      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas  
Jefferson University Hospital, Atlantic City, NJ
- "CT versus ultrasound in the female pelvis"
  - "Scrotal Doppler"
  - "Interventional US including thyroid biopsy: A practical guide"

### **ADAM FLANDERS, M.D.**

- August 24-26, 2006      18<sup>th</sup> Annual Meeting of the Eastern Neuroradiological Society,  
Cambridge, MD
- "MRI biomarkers for spinal cord injury"
- September 26-30, 2006      21<sup>st</sup> Annual Meeting of the North American Spine Society Seattle,  
WA
- "Utility of MRI as a biomarker for spinal cord injury"
- October 12-14, 2006      Neuroradiology: The Essentials, Philadelphia, PA
- "Spine: Anatomy and degenerative disease"
  - "Vascular diseases of the spinal cord"

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| November 26-<br>December 1, 2006 | <p>92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL</p> <ul style="list-style-type: none"> <li>• "Spine: Injury" (co-moderator)</li> <li>• "Image processing, analysis and navigation" (co-moderator)</li> <li>• "Essentials of spine imaging"</li> <li>• "RadLex for radiologists: A clinical introduction to a new lexicon for radiology"</li> <li>• "Using the RSNA teaching file" (hands-on workshop)</li> </ul> |
| February 22-25, 2007             | <p>Annual Symposium of the American Society of Spine Radiology, Marco Island, FL</p> <ul style="list-style-type: none"> <li>• "MR of adult spinal trauma"</li> </ul>   |
| March 22-23, 2007                | <p>6<sup>th</sup> Annual Cerebrovascular Update Conference, sponsored by Thomas Jefferson University Hospital, Philadelphia, PA</p> <ul style="list-style-type: none"> <li>• "Update on imaging of neurovascular disease"</li> </ul>   |
| June 7-10, 2007                  | <p>Annual Meeting of the Society for Imaging Informatics in Medicine, Providence, RI</p> <ul style="list-style-type: none"> <li>• "Regional health information organizations (RHIOs)" (course director)</li> </ul>   |
| June 9-15, 2007                  | <p>45<sup>th</sup> Annual Meeting of the American Society of Neuroradiology, Chicago, IL</p> <ul style="list-style-type: none"> <li>• "Teaching file creation using the MIRC software suite"</li> <li>• "Cervical myelography from degenerative causes" (course director)</li> </ul>   |

### **FLEMMING FORSBERG, PH.D.**

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|----------------------------------|---|
| August 30-<br>September 2, 2006  | <p>6<sup>th</sup> International Symposium on Therapeutic Ultrasound, Oxford, England</p> <ul style="list-style-type: none"> <li>• "Using a commercial ultrasound contrast agent for viral-mediated gene transfer in vitro and in vivo" (poster)</li> </ul>  |
| October 3-6, 2006                | <p>IEEE International Ultrasonics Symposium, Vancouver, Canada</p> <ul style="list-style-type: none"> <li>• "Assessing angiogenesis in murine glioma and breast tumor models with contrast-enhanced ultrasound imaging"</li> <li>• "Quantitative analysis of contrast enhanced subharmonic breast images" (poster)</li> </ul> |
| November 26, 2006                | <p>International Customer Symposium, Toshiba America Medical Systems, Chicago, IL</p> <ul style="list-style-type: none"> <li>• "Comparing fundamental ultrasound imaging to tissue harmonic imaging and differential tissue harmonic imaging in the liver"</li> </ul>   |
| November 26-<br>December 1, 2006 | <p>92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL</p> <ul style="list-style-type: none"> <li>• "Comparing contrast enhanced US and pathology measures of breast lesion vascularity"</li> </ul>  |

- December 9-10, 2006      8<sup>th</sup> International Symposium on Ultrasound Contrast Imaging, Tokyo, Japan
- "Subharmonic breast imaging in vivo: First experiences in women"
  - "Ultrasound contrast imaging of sentinel lymph nodes"
- March 10, 2007      16<sup>th</sup> Annual Diagnostic Ultrasound Symposium, Toledo, OH
- "Advances in ultrasound imaging: Marketing or reality?"
- March 15-18, 2007      Annual Convention of the American Institute of Ultrasound in Medicine, New York, NY
- "Comparing hepatic fundamental, tissue harmonic and differential tissue harmonic imaging"
  - "Ultrasound imaging of angiogenesis"
- May 1-4, 2007      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Contrast agents symposium" (moderator)
  - "Contrast imaging for monitoring the anti-angiogenic compound VEGF trap"
  - "Prostate cancer detection with microflow imaging"
  - "Cumulative maximum intensity subharmonic imaging: A new diagnostic tool"
- May 14-17, 2007      Annual Meeting of the World Conference on Interventional Oncology, Washington DC
- "Ultrasound imaging methods for interventional procedures"
- May 16-18, 2007      32<sup>nd</sup> International Symposium on Ultrasonic Imaging and Tissue Characterization, Arlington, VA
- "Breast lesion characterization using contrast enhanced subharmonic and cumulative maximum intensity breast images"
  - "Excitation enhanced imaging: In vitro and in vivo results"
- June 8, 2007      Visiting Professor, PG Radiology Program, University of Zulia, Servicio Autonomo Hospital Universitario de Maracaibo, Maracibo, Venezuela
- "Advances in ultrasound imaging: Marketing or reality?"

### **DAVID FRIEDMAN, M.D.**

- August 24-26, 2006      18<sup>th</sup> Annual Meeting of the Eastern Neuroradiological Society, Cambridge, MD
- "Imaging of adhesive arachnoiditis"
- February 22-25, 2007      Annual Symposium of the American Society of Spine Radiology, Marco Island, FL
- "Mobile intradural schwannoma of the cauda equina"
  - "Imaging of adhesive arachnoiditis"

- June 9-15, 2007      45<sup>th</sup> Annual Meeting of the American Society of Neuroradiology, Chicago, IL
- "Participation of an academic neuroradiology division in a peer-to-peer ordering support program (HealthHelp RadConsult): Early results"

### **ERIC GINGOLD, PH.D.**

- September 20-21, 2006      Cardiac CT, Thomas Jefferson University, Philadelphia, PA
- "Resolution and dose in cardiac CT"
  - "Choosing a scanner"
- March 21-22, 2007      Cardiac CT, Thomas Jefferson University, Philadelphia, PA
- "Resolution and dose in cardiac CT"
  - "Choosing a scanner"
- May 26-29, 2007      24<sup>th</sup> Annual Meeting of the American College of Medical Physics, Baltimore, MD
- "Managing radiation dose in the transition from screen-film to digital mammography"

### **BARRY B. GOLDBERG, M.D.**

- October 3-6, 2006      18<sup>th</sup> Congress of the European Federation of Societies for Ultrasound in Medicine and Biology, Bologna, Italy
- "Ultrasound: A look into the future"
  - "Evaluation of the effectiveness of an ultrasound physician training program"
  - "Lymphosonography of sentinel lymph nodes in a melanoma tumor model: A comparison to lymphoscintigraphy"
- October 17-18, 2006      Strategic Planning for the Future of Ultrasound in Radiology Seminar, Society of Radiologists in Ultrasound, San Francisco, CA
- "The role of contrast agents in ultrasound: 10 years hence"
- October 24, 2006      NCI Pediatric Oncology Imaging Frontiers Workshop, Washington, DC
- "Ultrasound contrast agents in pediatric imaging"
- November 16, 2006      Visiting Professor Lecture Series, US Food and Drug Administration, Center for Drug Evaluation and Research, Silver Spring, MD
- "American Institute of Ultrasound in Medicine recommendations for contrast-enhanced liver ultrasound imaging clinical trials – Training"
- November 26-  
December 1, 2006      92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Responding to the needs of radiologic education in developing countries" (moderator)



- "Variability in lymphatic drainage from melanoma tumors: The effect of tumor location on the detection of sentinel lymph nodes"
- March 15-18, 2007      Annual Convention of the American Institute of Ultrasound in Medicine, New York, NY
- "Variability in lymphatic drainage from melanoma tumors: The effect of tumor location on the detection of sentinel lymph nodes"
- May 1-4, 2007      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Advances in ultrasound imaging"

### **ANGELA GOPEZ, M.D**

- October 21-22, 2006      Jefferson Musculoskeletal Imaging Symposium: Imaging Orthopaedic Dilemmas and Advances, Thomas Jefferson
- "MR imaging of the rotator cuff"
  - "MRI elbow"
  - "MRI knee I: Cartilage and collateral ligaments"
  - "MRI of post-operative menisci and cartilage"
- February 24-26, 2007      9th Annual Hand Surgery Symposium, Philadelphia, PA
- "Imaging in the evaluation and diagnosis of hand and wrist tumors"
- June 23-24, 2007      Jefferson Musculoskeletal Imaging Symposium: Anatomic and Imaging Correlation in the Upper and Lower Extremity, Thomas Jefferson University, Philadelphia, PA
- "Optimizing shoulder imaging – Protocols, arthrography, and low-field strength magnets"
  - "MR of shoulder instability"
  - "Cartilage confusion: Chondrosis, osteochondral defects, and osteochondral lesions"

### **ETHAN J HALPERN, MD**

- September 25, 2006      Department of Medicine Grand Rounds, Graduate Hospital, Philadelphia, PA
- "Cardiac CT: Assessment of the aortic and mitral valves. Clinical applications of coronary CT angiography"
- September 26, 2006      Visiting Professor, Department of Radiology, Bryn Mawr Hospital, Bryn Mawr, PA
- "Arterial Doppler"
- October 4, 2006      Visiting Professor, Department of Radiology, Mercy Catholic Medical Center, Philadelphia, PA
- "Overview of cardiac CT"

- November 15, 2006 Intercity Grand Rounds, Wayne State University – Detroit Medical Center, Detroit, MI
- “CT evaluation of coronary anatomy and cardiac function”
- November 26-  
December 1, 2006 92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “Assessment of the aortic valve area and morphology during cardiac CT angiography”
  - “Microflow imaging of the prostate during contrast-enhanced ultrasound: Initial experience”
  - “Optimizing coronary CT angiography”
- January 18, 2007 Philips Medical Systems, Haifa, Israel
- “Cardiac CT: State of the art and vision for the future”
- January 21, 2007 Visiting Professor, Hadassah Hospital, Ein Karem, Jerusalem, Israel
- “CT evaluation of cardiac anatomy and function”
- April 18, 2007 Prostate Cancer Imaging Strategy, sponsored by AdMeTech Foundation, Latham Hotel, Washington, DC
- “Ultrasound detection and treatment of prostate cancer – Areas for future research”
- May 10, 2007 Department of Medicine Grand Rounds, Doylestown Hospital, Doylestown, PA
- “Cardiac CT – State of the art”

### **CHARLES M. INTENZO, M.D.**

- November 26-  
December 1, 2006 92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “The role of SPECT in the localization of parathyroid adenomas within the neck: It’s not only for the mediastinum”
  - “Is routine thyroid function testing warranted in diffuse thyroid uptake of 18-FDG?”
  - “Are emergency room physicians justified in ordering lung V/Q scans on asthmatic patients evaluated in the emergency room for an asthmatic attack?”

### **DAVID KARASICK, M.D.**

- April 13, 2007 Department of Radiology Grand Rounds, Georgetown University, Washington, DC
- “Imaging of complications of spinal fusion”

## **SUNG M. KIM, MD**

- November 26-  
December 1, 2006      92<sup>nd</sup> Scientific Assembly and Annual Meeting of the  
Radiological Society of North America, Chicago, IL
- "Detection of recurrent disease in the patient with a negative diagnostic iodine scan and rising thyroglobulin: Combined strategy with US and PET scan"
  - "Limitation of dual-time point PET imaging to assess the likelihood of malignancy in the patients treated with radiation"
  - "Clinical relevance of discordant FDG-PET findings of bone metastases with bone scan or CT" (poster)
- June 2-6, 2007      54<sup>th</sup> Annual Meeting of the Society of Nuclear Medicine,  
Washington, DC
- "PET evaluation of bone metastases: Degree of hypermetabolic activity of FDG-PET depends on the degree of osteolytic or osteoblastic component in the bone metastases" (poster)

## **ALFRED B. KURTZ, M.D.**

- May 1-4, 2007      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas  
Jefferson University Hospital, Atlantic City, NJ
- "Obstetrics part I (1<sup>st</sup> trimester, ectopic pregnancy)"
  - "Obstetrics part II (2<sup>nd</sup> and 3<sup>rd</sup> trimester)"

## **SONG LAI, PH.D.**

- April 14-19, 2007      Annual Meeting of the American Association of Neurological  
Surgeons, Washington DC
- "Anaplastic astrocytoma subtypes with different imaging and prognostic qualities"
- May 19-25, 2007      15<sup>th</sup> Scientific Meeting and Exhibition of the International Society  
for Magnetic Resonance in Medicine, Berlin, Germany
- "A robust approach for correction of susceptibility artifacts in EPI"
  - "Paint and track: Surface-based ROI selection in DTI fiber tracking"

## **DAVID C. LEVIN, M.D.**

- July 21-23, 2006      American College of Radiology Intersociety Summer Conference,  
Banff, Alberta, Canada
- "Pay for performance"
- July 26, 2006      Guthrie Clinic, Sayre, PA
- "Economics and politics of coronary CT angiography"

- October 20-22, 2006      Annual Meeting of the California Radiological Society, Newport Beach, CA
- "3 coronary CTA: Normal anatomy, anatomic variations, and congenital anomalies"
  - "Who should be doing coronary CTA – radiologists or cardiologists?"
- October 26-29, 2006      21<sup>st</sup> Annual Economics of Diagnostic Imaging 2006: National Symposium, Arlington, VA
- "Turf wars in radiology: How to prepare yourself for what's ahead in 2007"
  - "Accreditation programs in diagnostic imaging by health plans and Medicare: What are they? What are the implications?"
  - "Recent trends in utilization of diagnostic imaging"
- November 26-  
December 1, 2006      92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Radiology by nonradiologists: Problems and solutions" (categorical course)
  - "What every radiologist needs to know about the coronary arteries" (categorical course)
  - "Changes in recent years in the utilization patterns of noncardiac thoracic imaging"
  - "Utilization of breast imaging in the U.S. Medicare population: Recent trends"
  - "The effect of the introduction of MR and CT angiography on utilization of catheter angiography for peripheral vascular disease"
  - "Comparison of workload trends in musculoskeletal imaging among radiologists and orthopedic surgeons between 2000 and 2004"
  - "Self-referral in diagnostic imaging: What are the problems associated with it and what can be done about it?"
- March 1, 2007      Michigan Radiological Society, Detroit, MI
- 77<sup>th</sup> Preston Hickey Lecture
- March 1, 2007      Wayne State University School of Medicine/Detroit Medical Center, Detroit, MI
- "What every radiologist needs to know about coronary artery disease"
- March 2, 2007      William Beaumont Hospital, Detroit, MI
- "What every radiologist needs to know about coronary artery disease"
- April 18, 2007      Presentation to State Legislators, Payers, Other Policymakers, and News Media, Arizona Radiological Society, Phoenix, AZ
- "Self-referral in diagnostic imaging – The problems associated with it and what can be done about it"

- May 7-9, 2007      Radiology Business Management Association Radiology Summit, St. Louis, MO
- "What should radiologists' role be in coronary CT angiography and other advanced cardiac imaging?"
  - "Recent trends in utilization of the major imaging modalities"

### ANNA LEV-TOAFF, M.D.

- September 7-8, 2006      Introduction to 3D/4D OB/GYN Ultrasound, Gulfcoast Ultrasound Institute, Tampa, FL
- "Understanding uterine malformations"
  - "GYN overview: 3D ultrasound as a problem solving tool"
  - "Sonohysterography: 2D & 3D applications"
  - "Case studies in gynecologic ultrasound"
- September 15-17, 2006      National Conference on OB/GYN Ultrasound, Chicago, IL
- "Three-dimensional ultrasound in the gynecology patient"
  - "Saline infusion sonohysterography"
- January 9, 2007      Department of Radiology Grand Rounds, Hospital of the University of Pennsylvania, Philadelphia, PA
- "CT colonography"
- February 25-  
March 2, 2007      12<sup>th</sup> Annual Snowmass 2007: Multislice CT in Clinical Practice, Snowmass Village, CO
- "Challenging cases in abdominal and pelvic CT"
  - "CT colonography"
  - "CT of the gastrointestinal tract"
  - "CT in obstetrics and gynecology"
  - "CT colonography: Workstation tutorial – Lessons from practice"
- March 15-18, 2007      Annual Convention of the American Institute of Ultrasound in Medicine, New York, NY
- "Value of 3-dimensional sonography in women with intrauterine devices"
- May 1-4, 2007      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Gynecologic ultrasound"
  - "3D ultrasound in gynecology"
- May 6-11, 2007      107<sup>th</sup> Annual Meeting of the American Roentgen Ray Society, Orlando, FL
- "CT colonography in older patients with incomplete conventional colonoscopy or contraindication to colonoscopy"



### **JI-BIN LIU, M.D.**

- October 14-16, 2006      International Musculoskeletal and Interventional Ultrasound Symposium, Beijing, China
- "Interventional ultrasound: A review"
  - "New developments of US-guided ablation therapy"
  - "Laparoscopic ultrasound: Its role in laparoscopic surgery"
  - "Intraoperative ultrasound: Its role for renal tumor surgery"
  - "Sonohysterography: Technical considerations and clinical applications"
- November 2-5, 2006      11<sup>th</sup> Prouts Neck Prostate Cancer Meeting, Prouts Neck, ME
- "Radiofrequency ablation of prostate monitored by contrast-enhanced US"
- February 27, 2007      Drexel-Jefferson Academic Alliance for Biomedical Engineering, Philadelphia, PA
- "Interventional ultrasound: A review"
  - "Laparoscopic ultrasound"
- March 15-18, 2007      Annual Convention of the American Institute of Ultrasound in Medicine, New York, NY
- "Contrast-enhanced ultrasound for guiding and monitoring ethanol ablation of canine prostates"

### **CHRISTOPHER R. B. MERRITT, M.D.**

- May 1-4, 2007      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Breast ultrasound physics"
  - "BIRADS lexicon – Diagnostic criteria"
  - "Basic imaging"
  - "Understanding Doppler"

### **DONALD G. MITCHELL, M.D.**

- November 26-  
December 1, 2006      92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Case-based review of body MRI"
  - "Optimal techniques for MRI of the liver at 1.5T"
  - "MRI delineation of cervical cancer and guidance for intracavitary brachytherapy"
  - "Early invasive cervical cancer: MRI and CT predictors of occult lymphatic metastases in the ACRIN 6651/GOG 183 Intergroup Study"
  - "Focal liver lesions: ADC measurement of abdominal organs and lesions using parallel imaging technique"

## WILLIAM MORRISON, M.D.

- August 27-30, 2006      15<sup>th</sup> Annual Current Issues of Magnetic Resonance Imaging in Orthopedics and Sports Medicine, San Francisco, CA
- "Lower extremity osteomyelitis"
  - "Ankle and foot" (panel discussion)
- Sept 10-15, 2006      Annual Meeting of the International Skeletal Society Vancouver, British Columbia, Canada
- "Provocative MR imaging of the musculoskeletal system" (refresher course)
- Sept 19, 2006      Long Island Radiological Society, Long Island, NY
- "MR imaging of osteomyelitis"
- October 12-15, 2006      Annual Meeting of the Colombian Association of Radiologists, Cartagena, Colombia
- "MRI of the elbow"
  - "MR of muscle"
  - "MRI of musculoskeletal infection"
  - "MR arthrography"
  - "MRI of the hip: Impingement and dysplasia"
- October 21-22, 2006      Jefferson Musculoskeletal Imaging Symposium: Imaging Orthopaedic Dilemmas and Advances, Thomas Jefferson
- "MRI of the shoulder – Instability"
  - "MRI of the hip"
  - "MRI of the knee: Menisci and cruciate ligaments"
  - "MR imaging of the athlete"
  - Panel discussion
- October 23, 2006      Visiting Professor, Department of Radiology, Johns Hopkins University, Baltimore, MD
- "Hip dysplasia and impingement"
- November 26-  
December 1, 2006      92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "MR imaging of the postoperative knee and shoulder with orthopedic and radiologic correlation" (refresher course)
  - "Musculoskeletal: Practice issues and imaging techniques"
  - "Musculoskeletal biopsy: Utilization and provider distribution in the United States"
- January 10, 2007      Department of Radiology, Albert Einstein Medical Center, Philadelphia, PA
- Boards review
- January 17-25, 2007      9<sup>th</sup> International Magnetic Resonance Imaging Course, Riyadh, Saudi Arabia
- "MRI of the knee menisci"
  - "Direct vs. indirect MR arthrography"
  - "Imaging of arthritis"
  - "MRI of sports injuries"

- "MRI of the diabetic foot"
  - "Imaging of shoulder instability"
- February 14, 2007      Armed Forces Institute of Pathology, Washington, DC
- "MRI of the elbow"
- February 26-28 2007      Clinical Issues for 2007, Radiological Society of North America  
Refresher Course, Phoenix, AZ
- "Imaging of the post operative knee"
- March 4, 2007      Musculoskeletal MRI 2007, Gold Coast, Queensland, Australia
- "MR of shoulder instability: Tips to tell labral variation from tear"
  - "MRI of the elbow"
  - "Musculoskeletal tumors and tumor like conditions"
  - "MR imaging of cartilage"
  - "MRI of the hip: When should I call a labral tear?"
  - "MRI of the spine: Nomenclature of disc disease and injury patterns"
- April 18, 2007      Armed Forces Institute of Pathology, Washington, DC
- "MRI of the elbow"
- April 20-22, 2007      61<sup>st</sup> Annual Meeting of the Pacific Northwest Radiological Society,  
Portland, OR
- "MRI of the ankle"
  - "Adult hip dysplasia"
- April 26-29, 2007      Musculoskeletal and Neuro Imaging 2007, Colorado Springs, CO
- "MR imaging of cartilage"
  - "MR imaging of the glenohumeral joint instability"
  - "Imaging of the wrist and hand"
  - "MR imaging of the elbow"
  - "MR imaging of the hip and pelvis"
  - "MR arthrography"
- May 6-11, 2007      107<sup>th</sup> Annual Meeting of the American Roentgen Ray Society,  
Orlando, FL
- "MRI of the diabetic foot" (categorical course)
  - "Intraosseous ganglia of the knee: MR imaging characteristics"
- May 19-25, 2007      15<sup>th</sup> Scientific Meeting and Exhibition of the International Society  
for Magnetic Resonance in Medicine, Berlin, Germany
- "MRI and CT of the post-operative shoulder" (categorical course)
  - "Use of simulated weight-bearing for MR evaluation of ankle and hindfoot mechanics: A feasibility study"
- June 1, 2007      Georgetown University Hospital, Washington, DC
- Boards review

- June 23-24, 2007      Jefferson Musculoskeletal Imaging Symposium: Anatomic and Imaging Correlation in the Upper and Lower Extremity, Thomas Jefferson University, Philadelphia, PA
- "Imaging of the sternoclavicular and acromioclavicular joints"
  - "MRI of the menisci: Pre- and post-operative assessment"
  - "How the experts take a case"

### **LEVON NAZARIAN, M.D.**

- October 13, 2006      Visiting Professor, Peking University Third Hospital, Beijing, China
- "General concepts of musculoskeletal ultrasound"
- October 14-16, 2006      International Musculoskeletal and Interventional Ultrasound Symposium, Beijing, China
- "Review of musculoskeletal US"
  - "Shoulder US: Common pathology"
  - "Foot and ankle US: Anatomy and pathology"
  - "Knee and hip US: Anatomy and pathology"
  - "Interventional musculoskeletal US"
- October 19-22, 2006      Advances in Sonography, 16<sup>th</sup> Annual Meeting and Postgraduate Course of the Society of Radiologists in Ultrasound, San Francisco, CA
- "Ultrasound of the ankle and foot"
- November 15, 2006      Department of Radiology Grand Rounds, Albert Einstein Medical Center, Philadelphia, PA
- "General concepts of musculoskeletal ultrasound"
- December 17, 2006      Musculoskeletal Ultrasound Seminar, sponsored by the Fundacion de Educacion Medica Continuada of PR, Bayamon, Puerto Rico
- "General concepts of musculoskeletal ultrasound"
  - "Ultrasound of the shoulder"
  - "Ultrasound of the elbow"
  - "Ultrasound of the hand and wrist"
  - "Ultrasound of the hip and knee"
  - "Ultrasound of the foot and ankle"
- February 24-26, 2007      9<sup>th</sup> Annual Hand Surgery Symposium, Philadelphia, PA
- "Imaging of tennis elbow: Ultrasound / MRI"
- March 15-18, 2007      Annual Convention of the American Institute of Ultrasound in Medicine, New York, NY
- "Organizing a musculoskeletal US practice: The prerequisites"
  - "Prerequisites for the diagnostic and therapeutic standardized musculoskeletal US examination"
  - "Interventional musculoskeletal US update" (meet the professor)

- May 1-4, 2007      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Musculoskeletal ultrasound" (moderator)
  - "Introduction to musculoskeletal ultrasound"
  - "To inject or not to inject – Interventional ultrasound"
  - "Foot and ankle"
  - "Ultrasound of soft tissue masses"
  - "Color Doppler in musculoskeletal ultrasound"
  - "Musculoskeletal ultrasound"
- May 6-11, 2007      107<sup>th</sup> Annual Meeting of the American Roentgen Ray Society, Orlando, FL
- "Subscapularis tendon tears: A common sonographic finding in symptomatic post-arthroplasty shoulders"

### **LAURENCE NEEDLEMAN, M.D.**

- October 19-22, 2006      Advances in Sonography, 16<sup>th</sup> Annual Meeting and Postgraduate Course of the Society of Radiologists in Ultrasound, San Francisco, CA
- "Plenary session: Communication" (moderator)
  - "Unusual (and a few usual) arterial lesions"
- November 17-18, 2006      Advances in Vascular Imaging and Diagnosis 18<sup>th</sup> Symposium and Workshops on Management and Clinical Issues, Cleveland Clinic, New York, NY
- "Panel on aorta and visceral vascular" (moderator)
  - "How best to image the renal arteries: CT, MRA or Duplex ultrasound: Competing or complementary modalities"
  - "Interesting cerebrovascular case studies"
- January 28-  
February 1, 2007      19<sup>th</sup> International Symposium on Endovascular Therapy, Hollywood, FL
- "Advanced carotid Duplex interpretation: Beyond the routine cases"
  - "Unusual cerebrovascular abnormalities: Case presentations"
  - "Controversies in lower extremity venous Duplex"
  - "Screening for PVD and AAA: Who, when and how"
  - "Panel discussion: Duplex screening; the role of Duplex in the era of MRA and CTA"
- March 15-18, 2007      Annual Convention of the American Institute of Ultrasound in Medicine, New York, NY
- "Venous insufficiency: Diagnosis and management"
- March 24-25, 2007      Color Doppler Ultrasound Seminar, Medical Technology Management Institute, Chicago, IL
- "How well do you know Doppler: A quiz"
  - "Lower extremity veins, DVT and venous insufficiency"
  - "Carotid arteries: Plaque, stenosis and stents"
  - "Doppler jeopardy"
  - "Lower extremity arteries: Exam technique and clinical role"



- April 29-  
May 2, 2007      Ultrasound/Women's Imaging, sponsored by the Department of Radiology, Harvard Medical School, Boston, MA
- "Abdominal Doppler (excluding the liver)"
  - "Renal ultrasound and other imaging"
  - "Controversies in venous ultrasound"
- May 1-4, 2007      The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Vascular ultrasound imaging and Doppler" (moderator)
  - "Spectral Doppler: Why do waveforms work the way they do?"
  - "Non atherosclerotic arterial disease"
  - "Upper extremity venous evaluation"
  - "Vascular (arterial and venous)"
- May 18-20, 2007      5<sup>th</sup> Annual Vascular Ultrasound Meeting, Adriatic Vascular Ultrasound Society, Portoroz, Slovenia
- "Ultrasound of peripheral veins"
  - "Doppler of carotid and vertebral arteries"
  - "Cases analysis"
- June 7-9, 2007      30<sup>th</sup> Annual Conference of the Society of Vascular Ultrasound, Baltimore MD
- "Hemodynamics session panel" (moderator)
  - "Carotid waveform analysis: Beyond peak systolic velocity"

### **PATRICK O'KANE, M.D.**

- Jan 16-20, 2007      Department of Radiology, University of Arizona, Tucson, AZ
- "Introduction to Doppler ultrasound principles"
  - "Doppler ultrasound applications"
  - Boards review
- May 6-11, 2007      107<sup>th</sup> Annual Meeting of the American Roentgen Ray Society, Orlando, FL
- "Comparison of thyroid nodule detectability using 7.5 MHz and 10MHz systems: Results of the Ukrainian-American study of thyroid cancer following the Chernobyl accident"
- June 11-13, 2007      7<sup>th</sup> Tri-national Meeting of the Advisory Group on Implementation of International Chernobyl Thyroid Projects, sponsored by the National Institutes of Health, Kiev, Ukraine
- "The significance of ultrasound conspicuity in detection rates of thyroid cancer subtypes"

### **LAURENCE PARKER, PH.D.**

- November 26-  
December 1, 2006      92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "How are rotator cuff patients imaged in the Medicare population?"

- "Utilization of headache evaluation imaging in the Medicare population: 2004"

### **VIJAY M. RAO, M.D.**

- September 27-  
October 1, 2006      40<sup>th</sup> Annual Meeting of the American Society of Head and Neck Radiologists, Phoenix, AZ
- "Imaging of petrous apex"
- October 26-29, 2006      21<sup>st</sup> Annual Economics of Diagnostic Imaging 2006: National Symposium, Arlington, VA
- "Turf wars in radiology" (seminar)
  - "Recent trends in payments for private office MRI, CT and PET"
  - "Entrepreneurship for hospital-based radiology departments"
- November 26-  
December 1, 2006      92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Sinonasal imaging: Normal anatomy, anatomic variants, and inflammation" (categorical course)
  - "Radiology by nonradiologists: Problems and solutions" (categorical course)
  - "Neuroradiology/head and neck: Head and neck: Temporal bone)" (moderator)
  - "Health services, policy, and research: Practice management and quality)" (moderator)
  - "Neuroimaging workload trends in recent years: Comparison between radiologists and neurologists"

### **KEVIN SULLIVAN, M.D.**

- March 1-6, 2007      32<sup>nd</sup> Annual Scientific Meeting of the Society of Interventional Radiology, Seattle, WA
- "New frontiers in interventional oncology: Diagnosis, treatment, and evaluating response. New drugs for TACE and immunotherapy"
- May 14-17, 2007      Annual Meeting of the World Conference on Interventional Oncology, Washington DC
- "Image-guided interventional therapies for melanoma and other liver metastases"

### **MATHEW L. THAKUR, PH.D**

- September 30-  
October 4, 2006      19<sup>th</sup> European Annual Congress of the European Association of Nuclear Medicine, Athens, Greece
- "In vivo microPET imaging of CCND1 mRNA in breast cancer xenograft model using Cu-64 labeled antisense peptide nucleic acid peptide probes"
  - "Cu-64-peptide PET imaging of VPAC1 oncogene product in breast tumors"

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|---------------------|---|
| October 22-27, 2006 | <p>9<sup>th</sup> Congress of the World Federation of Nuclear Medicine &amp; Biology, Seoul, Korea</p> <ul style="list-style-type: none"> <li>• "Genomic and proteomic approaches to MI of cancer"</li> <li>• "Targeting VPAC1 oncogene receptors for PET imaging of breast cancer"</li> <li>• "New PET radiopharmaceuticals and their applications"</li> <li>• "Peptides and peptide nucleic acids for PET imaging"</li> <li>• "In vivo agents for labeling leukocytes"</li> </ul> |
| November 11, 2006   | <p>Translational Research Symposium, Juntendo University, Tokyo, Japan</p> <ul style="list-style-type: none"> <li>• "Molecular imaging future possibilities" (keynote lecture)</li> </ul>   |
| November 9-11, 2006 | <p>46<sup>th</sup> Annual Meeting of the Japanese Society of Nuclear Medicine, Kogoshima, Japan</p> <ul style="list-style-type: none"> <li>• "Molecular imaging role in oncologic diagnosis and therapy"</li> <li>• "Molecular imaging in nuclear medicine"</li> </ul>  |
| January 31, 2007    | <p>IBA Molecular, Louvain-La-Neuve, Belgium</p> <ul style="list-style-type: none"> <li>• "PET imaging of hormone dependent cancers: An update"</li> </ul>   |
| March 10, 2007      | <p>International Atomic Energy Agency, Vienna, Austria</p> <ul style="list-style-type: none"> <li>• "Molecular imaging"</li> </ul>  |

### **ANNINA WILKES, M.D.**

- |               |  |
|---------------|--|
| May 1-4, 2007 | <p>The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ</p> <ul style="list-style-type: none"> <li>• "Breast ultrasound tutorial" (moderator)</li> <li>• "Breast ultrasound: Indicators and anatomy"</li> </ul> |
|---------------|--|

### **SHAOXIONG ZHANG, M.D., PH.D.**

- |                                  |   |
|----------------------------------|---|
| July 13-16, 2006                 | <p>1<sup>st</sup> Annual Scientific Meeting of the Society of Cardiovascular Computed Tomography, Washington, DC</p> <ul style="list-style-type: none"> <li>• "Assessment of the aortic valve area and morphology during cardiac CTA"</li> </ul>                      |
| November 26-<br>December 1, 2006 | <p>92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL</p> <ul style="list-style-type: none"> <li>• "The optimal ECG phases for coronary artery assessment with gated cardiac CT angiography"</li> </ul> |
| May 6-11, 2007                   | <p>107<sup>th</sup> Annual Meeting of the American Roentgen Ray Society, Orlando, FL</p> <ul style="list-style-type: none"> <li>• "Comparison of coronary CTA with conventional invasive coronary angiography"</li> </ul>   |

**ADAM C. ZOGA, M.D.**

- September 6, 2006      Department of Radiology, Northwestern University Medical Center, Chicago, IL
- "MRI sports ankle injury"
- October 21-22, 2006      Jefferson Musculoskeletal Imaging Symposium: Imaging Orthopaedic Dilemmas and Advances, Thomas Jefferson
- "Shoulder impingement syndromes"
  - "MRI of the ankle"
  - "MRI evaluation of athletic pubalgia"
  - "Direct and indirect MR arthrography"
- November 26-  
December 1, 2006      92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Shoulder sports imaging" (refresher course)
- January 9, 2007      Department of Orthopedic Surgery, Philadelphia College of Osteopathic Medicine, Philadelphia, PA
- "Shoulder imaging overview"
- February 26-28 2007      Clinical Issues for 2007, Radiological Society of North America Refresher Course, Phoenix, AZ
- "Shoulder sports imaging"
- February 21, 2007      Department of Radiology Grand Rounds, Hartford Hospital, Hartford, CT
- "MRI of athletic pubalgia and the 'sports hernia'"
- April 30, 2007      Department Grand Rounds, Christiana Hospital, Newark, DE
- "Imaging hip pain in the young adult"
- May 6-11, 2007      107<sup>th</sup> Annual Meeting of the American Roentgen Ray Society, Orlando, FL
- "Imaging groin pain in the young adult" (keynote lecture)
  - "Hips and more"
- June 8, 2007      8<sup>th</sup> Annual Philadelphia Sports Medicine Congress, Philadelphia PA
- "MRI findings in athletic pubalgia & 'sports hernia'"
- June 23-24, 2007      Jefferson Musculoskeletal Imaging Symposium: Anatomic and Imaging Correlation in the Upper and Lower Extremity, Thomas Jefferson University, Philadelphia, PA
- "Superior labral tears"
  - "MR imaging of cruciate ligaments: Pre- and post-operative assessment"
  - "Posteromedial and posterolateral corner injuries"

## HONORS, EDITORIAL ACTIVITIES, SERVICE TO REGIONAL OR NATIONAL ORGANIZATIONS

### OKSANA H. BALTAROWICH, M.D.

- Member, Thyroid Advisory Group for U.S., Belarus and Ukraine Cooperative Studies of Post-Chernobyl Thyroid Disease, National Cancer Institute, National Institutes of Health
- Member, Executive Committee, Friends of Radiology in Ukraine
- Member, Advisory Board, Ukrainian Medical Association of North America, Pennsylvania Chapter
- Chief Proctor, American Board of Radiology September 2006 Written Examinations, Philadelphia, PA
- Member, Advisory Editorial Board, *Ukrainian Radiological Journal*

### DIANE BERGIN, M.D.

- Reviewer, *American Journal of Roentgenology*
- Reviewer, *British Journal of Radiology*
- Reviewer, *Medical Science Monitor*

### DAVID J. ESCHELMAN, M.D.

- Member, Relative Value Update Advisory Committee, Society of Interventional Radiology
- Member, Editorial and Advisory Board, *Journal of Vascular and Interventional Radiology*
- Abstract Reviewer, 32<sup>nd</sup> Annual Scientific Meeting, Society of Interventional Radiology

### RICK I. FELD, M.D.

- Vice President, Philadelphia Roentgen Ray Society
- Member, Board of Directors, Pennsylvania Radiological Society
- Member, Executive Board, Philadelphia Roentgen Ray Society
- Member, Program Committee, Philadelphia Roentgen Ray Society
- Councilor, Pennsylvania, American College of Radiology
- Associate Editor, *Journal of Ultrasound in Medicine*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Clinical Imaging*
- Reviewer, *Journal of American Medical Association*
- Reviewer, *Journal of Clinical Ultrasound*
- Reviewer, *Journal of Ultrasound in Medicine*
- Reviewer, *Journal of Vascular and Interventional Radiology*



### **ADAM E. FLANDERS, M.D.**

- Consultant Neuroradiologist, Geron Corporation
- Chair, Neuroradiology/ENT Subcommittee, RADLEX, Radiological Society of North America
- Co-chair, Medical Imaging Resource Center (MIRC), Radiological Society of North America
- Member, Radiology Informatics Committee, Radiological Society of North America
- Member, Electronic Learning Center, American Society of Neuroradiology
- Member, Informatics Committee, American Society of Spine Radiology
- Member, Audiovisual Committee, American Society of Neuroradiology
- Member, Nominating Committee, American Society of Neuroradiology
- Member, XDS-I Technical Subcommittee, Radiological Society of North America
- Member, Radiological Society of North America -SIIM Educational Panel
- Member, Radiology Informatics Subcommittee, Education Exhibit Committee, Radiological Society of North America
- Member, MRI Committee, RADLEX, Radiological Society of North America
- Abstract Reviewer, InfoRad, Radiological Society of North America
- Associate Editor, Informatics (infoRAD), *Radiographics*
- Imaging Editor, *Yearbook in Ophthalmology*
- Reviewer, *American Journal of Neuroradiology*
- Reviewer, *Journal of Digital Imaging*
- Reviewer, *Neuroradiology*
- Reviewer, *The New England Journal of Medicine*
- Reviewer, *Radiological Society of North America Electronic Journal*

### **FLEMMING FORSBERG, PH.D.**

- Member, Technical Standards Committee, *American Institute of Ultrasound in Medicine*
- Member, Advisory Editorial Board, *Ultrasound in Medicine and Biology*
- Member, Advisory Editorial Board, *Journal of Ultrasound in Medicine*
- Reviewer, *Acoustic Research Letters Online*
- Reviewer, *Circulation*
- Reviewer, *Journal of Ultrasound in Medicine*
- Reviewer, *IEEE Transactions on Medical Imaging*
- Reviewer, *IEEE Transactions on Ultrasonics, Ferroelectronics & Frequency Control*
- Reviewer, *International Journal of Cancer*
- Reviewer, *Medical Engineering & Physics*
- Reviewer, *Medical Physics*
- Reviewer, *Radiology*
- Reviewer, *Veterinary Radiology & Ultrasound*
- Reviewer, *Ultrasonic Imaging*
- Reviewer, *Ultrasound in Medicine and Biology*
- Reviewer, *The Swedish Research Council*
- Reviewer, *Ultrasonics*

### **DAVID P. FRIEDMAN, M.D.**

- Member, Editorial Board, *Current Problems in Diagnostic Radiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Journal of Computer Assisted Tomography*

## **GEOFFREY A. GARDINER, JR., M.D.**

- Associate Editor, Interventional Radiology Section, *Year Book of Diagnostic Radiology*

## **ERIC GINGOLD, PH.D.**

- Member, Radiography and Fluoroscopy Subcommittee, American Association of Physicists in Medicine
- Member, Task Group 116, Exposure Indicator in Digital Radiography, 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
- Image Quality Phantom Reviewer, MRI Accreditation Program, American College of Radiology
- Associate Editor, *Medical Physics*
- Reviewer, *Medical Physics*
- Reviewer, *Radiology*

## **BARRY B. GOLDBERG, M.D.**

- President, Radiology Outreach Foundation
- 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
- Chairman, Committee on International Relations and Education, Radiological Society of North America
- Chairman, Outstanding Researcher/Outstanding Educator Award Review Panel, Research and Education Foundation, Radiological Society of North America
- Chair, Education Committee, World Federation for Ultrasound in Medicine and Biology
- Consultant, Diagnostic Ultrasound, Nuclear Medicine Service, Veterans Administration
- Medical Advisor, Ultrasonic Procedures, Blue Shield of Pennsylvania
- Resource Advisor, March of Dimes Birth Defects Foundation
- 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, Board of Directors, Breast Cancer and Women's Health Ultrasound Foundation
- Member, International Liaison Committee, Ultrasound in Medicine and Biology
- Member, International Organizing Committee, International Congress of the Ultrasonic Examination of the Breast
- 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, Research and Education Fund Committee, American Institute of Ultrasound in Medicine
- Member, Global Steering Group for Education and Training in Diagnostic Imaging, World Health Organization

- Member, Outstanding Researcher Award Review Panel, Radiological Society of North America Research and Education Foundation
- Member, Past Presidents Committee, American Institute of Ultrasound in Medicine
- Member, Outstanding Research/Educator Award Review Panel, 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, Education and Research Fund Committee, American Institute of Ultrasound in Medicine
- 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, Centennial Committee, Philadelphia Roentgen Ray Society
- 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, Corporate Affairs Committee, Society of Radiologists in Ultrasound
- Representative, Management of Adnexal Masses, American College of Radiology
- Co-Opted Councilor, World Federation for Ultrasound in Medicine and Biology
- Ultrasonography Coordinator, Topics in Radiology, *Journal of American Medical Association*
- Member, International Consultant Committee, *Revista Argentina de Radiologia*
- 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*
- Editorial Consultant, *Applied Radiology*
- Editorial Consultant, *Chest*
- Editorial Consultant, *Medcom Faculty of Medicine*
- Editorial Consultant, *Pediatrics*
- Member, Editorial Board, *Advances in Echo Enhancement*
- Member, Editorial Board, *Archives of Clinical Imaging*
- Member, Editorial Board, *Journal d'Echographie et de Medicine Ultrasonore*
- Member, Editorial Board, *Journal of Clinical Ultrasound in Medicine*
- Member, Editorial Board, *Journal of Ultrasound in Medicine*
- Member, Editorial Board, *Ultrasound International*
- Member, Editorial Board, *Archives in Clinical Imaging*
- Member, Editorial Board, *Clinics in Diagnostic Ultrasound*
- Member, Editorial Board, *Journal of Surgical Ultrasonology*
- Member, Editorial Board, *Journal of Ultrasound in Medicine and Biology*
- Member, Editorial Board, *Radiologia*
- Member, Editorial Board, *Ultrasound International Journal*
- Member, Editorial Board Committee, *Acta Clinica Croatica*
- Member, Editorial Committee, *Journal Ultrasonido*
- Overseas Editorial Adviser, *Borno Medical Journal*
- Member, Editorial Advisory Board, *West African Journal of Ultrasound*
- Member, Advisory Editorial Board, *Ultrasound in Medicine and Biology*
- Member, Advisory Committee, *Ultrasonidos en Medicina*
- Member, International Editorial Board, *Giornale Italiano di Ecografia Journal*
- Member, International Advisory Board, *Indian Journal of Medical Ultrasound*
- Member, International Advisory Board, *Turkish Journal of Diagnostic and Interventional Radiology*

- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Cancer*
- Reviewer, *Gastroenterology*
- Reviewer, *Gastrointestinal Endoscopy*
- Reviewer, *Health Devices*
- Reviewer, *Journal of the National Cancer Institute*
- Reviewer, *The New England Journal of Medicine*
- Reviewer, *Radiology*
- Certificate of Honor, named as "Fourth Place Radiologist", *Medical Imaging*, 2007

#### **CARIN F. GONSALVES, M.D.**

- Reviewer, *Journal of Vascular and Interventional Radiology*
- A. Edward O'Hara, M.D. Award for Excellence in Teaching, Department of Radiology, Thomas Jefferson University, 2007

#### **RICHARD J. GORNIK, M.D.**

- Reviewer, Neuroradiology and Spine, *Radiology Case Reports*  
(<http://radiology.casereports.net>)

#### **ETHAN J. HALPERN, M.D.**

- Member, Ultrasound Committee, American College of Radiology Imaging Network
- Member, Public Information Advisors Network, Radiological Society of North America
- Member, Research Committee, Society of Radiologists in Ultrasound
- Grant Reviewer, Imaging Guided Interventions Study Section, National Institute of Biomedical Imaging and BioEngineering, National Institutes of Health
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Annals of Internal Medicine*
- Reviewer, *Radiology*
- Reviewer, *Ultrasound in Medicine and Biology*

#### **CHARLES M. INTENZO, M.D.**

- Consultant to the Editor, *Radiology*
- Reviewer, *Journal of the American Roentgen Ray Society*
- Reviewer, *Radiographics*
- Reviewer, *Radiology*

#### **DAVID KARASICK, M.D.**

- Editor-in-Chief, *Seminars in Musculoskeletal Radiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Radiology*
- Reviewer, *Skeletal Radiology*

### **STEPHEN KARASICK, M.D.**

- Examiner, Genitourinary Section, American Board of Radiology
- Examiner, Gastrointestinal Section, American Board of Radiology
- Reviewer, *Radiology*
- Reviewer, *American Journal of Roentgenology*

### **SUNG M. 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, *Journal of Nuclear Medicine*
- Reviewer, Nuclear Medicine Subcommittee, Education Exhibit Committee, Radiological Society of North America

### **ALFRED B. KURTZ, M.D.**

- Member, Clinical Standards Committee, American Institute of Ultrasound in Medicine
- Member, Endowment for Research and Education Committee, American Institute for Ultrasound in Medicine
- Member, Editorial Board, *Journal of Ultrasound in Medicine*
- Member, Manuscript Review Panel, *American Journal of Roentgenology*
- Member, Editorial Advisory Board, *Diagnostic Journal*
- Reviewer, *Radiology*
- Reviewer, *Radiographics*

### **SONG LAI, PH.D.**

- Grant Reviewer, Brain Disorders and Clinical Neuroscience Study Section, National Institutes of Health
- Grant Reviewer, In Vivo Imaging and Bioengineering Research Study Section, National Institutes of Health
- Grant Reviewer, National Sciences and Engineering Research Council of Canada
- Abstract Reviewer, 1<sup>st</sup> Conference of the Chinese Society of Magnetic Resonance in Medicine
- Reviewer, *Human Brain Mapping*
- Reviewer, *IEEE Transactions on Medical Imaging*
- Reviewer, *Journal of Magnetic Resonance Imaging*
- Reviewer, *Magnetic Resonance Imaging*
- Reviewer, *Magnetic Resonance in Medicine*
- Reviewer, *Magnetic Resonance Materials in Biology, Physics and Medicine*
- Reviewer, *Medical Physics*
- Reviewer, *NMR in Biomedicine*
- Reviewer, *NeuroImage*
- Reviewer, *Stroke*



### **DAVID C. LEVIN, M.D.**

- Member, Task Force on Imaging, Pennsylvania Medical Society
- Member, Medicare Coverage Advisory Committee (MCAC), Centers for Medicare and Medicaid Services
- Member, Task Force on Cardiovascular Imaging, American College of Radiology
- Member, Committee on Radiologist Resources of the Commission on Human Resources, American College of Radiology
- Member, Research and Education Foundation Program Committee, Radiological Society of North America
- Member, Advisory Committee on Diagnostic Imaging Policy, American College of Radiology
- Member, Media Spokesperson Group, American College of Radiology
- Member, Editorial Board, *Journal of the American College of Radiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Radiology*
- Exceptional Reviewer, *Journal of the American College of Radiology*
- 77<sup>th</sup> Annual Preston Hickey Lecturer, Michigan Radiological Society

### **ANNA S. LEV-TOAFF, M.D.**

- Member, Women's Imaging Appropriateness Criteria, American College of Radiology
- Member, Advisory Panel, Women's Imaging Online, American Roentgen Ray Society
- Member, Editorial Board, *Journal of Ultrasound in Medicine*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Radiology*
- Reviewer, *Journal of Ultrasound in Medicine*
- Reviewer, *Ultrasound in Obstetrics and Gynecology*

### **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*
- Grant Reviewer, National Natural Science Foundation of China
- Reviewer, *Chinese Journal of Ultrasonography*
- Reviewer, *Journal of Clinical Ultrasound*
- Reviewer, *Journal of Ultrasound in Medicine*
- Reviewer, *Ultrasonics*
- Reviewer, *Ultrasound in Medicine and Biology*

### **LYNN LUCAS-FEHM, M.D.**

- Member, Board of Directors, Philadelphia County Medical Society
- Member, Board of Directors, KePRO, subsidiary of Pennsylvania Medical Society

### **CHRISTOPHER R.B. MERRITT, M.D.**

- Trustee, American Board of Radiology
- Chair, Ultrasound Examination Committee, American Board of Radiology
- Member, Maintenance of Certification Coordinating Committee, American Board of Radiology
- Member, Strategic Planning Committee, College of Physicians
- Member, Curriculum Committee, Society of Radiologists in Ultrasound
- Contributing Editor, *Breast Diseases Quarterly*
- Advisory Editor, *Ultrasound in Medicine and Biology*
- Advisory Editor, *Ultrasound Quarterly*
- Reviewer, *Academic Radiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Radiology*

### **DONALD G. MITCHELL, M.D.**

- Chair, Gynecology Disease Site Committee, American College of Radiology Imaging Network
- Chair, MRI Committee, RADLEX, Radiological Society of North America
- Member, Gynecologic Cancer Steering Committee, National Cancer Institute
- Member, Committee on Abdominal Imaging, Commission on Body Imaging, American College of Radiology
- Member, Abdominal Committee, RADLEX, Radiological Society of North America
- Managing Editor, Body MRI Teaching File Project, American College of Radiology
- Associate Editor, *Journal of Magnetic Resonance Imaging*
- Member, Editorial Board, *Abdominal Imaging*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Radiographics*
- Editor's Recognition Award with Distinction, *Radiology*
- Certificate of Outstanding Leadership, American College of Radiology Imaging Network
- Distinguished Committee Service Award Certificate of Merit, American College of Radiology (completion of service on Neuro Commission on Neuroradiology and Magnetic Resonance, Committee on Research & Technology Assessment)
- Certificate of Merit, Education Exhibit, Radiological Society of North America, (Yoshikawa T, Kawamitsu, Mitchell DG, Ohno Y, et al: Focal liver lesions ADC measurement of abdominal organs and lesions using parallel imaging technique)
- 2006 Outstanding Teacher Award, Outstanding Speaker in the Clinical MRI Course, 14<sup>th</sup> Annual Meeting of the International Society for Magnetic Resonance in Medicine

### **WILLIAM B. MORRISON, M.D.**

- Member, Expert Panel on Musculoskeletal Radiology, American College of Radiology Appropriateness Criteria, American College of Radiology
- Member, Expert Panel on Musculoskeletal Radiology, Continuous Professional Improvement Series, American College of Radiology
- Member, Program Subcommittee, American Roentgen Ray Society
- Member, Electronic Communications Committee, Society of Skeletal Radiology
- Member, Finance Committee, Society of Skeletal Radiology
- Corporate Liaison, Society of Skeletal Radiology
- Chair, Scientific Poster Committee, Musculoskeletal Section, 92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America

- Associate Editor, Musculoskeletal Section, *Radiology*
- Member, Editorial Board, *Skeletal Radiology*
- Member, Consulting Editorial Board, *Seminars in Musculoskeletal Radiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Journal of the American Medical Association*
- Reviewer, *Osteoarthritis and Related Research*
- Reviewer, *Radiology*
- Reviewer, *Skeletal Radiology*

### **LEVON N. NAZARIAN, M.D.**

- Chair, Ultrasound Clinical Examination Committee, American Board of Radiology
- Co-Director, Introduction to Research Program, American Roentgen Ray Society
- Member, Board of Governors, American Institute of Ultrasound in Medicine
- Member, Public Information Advisors Network, Radiological Society of North America
- Member, Publication Committee and Editorial Policy Subcommittee, American Roentgen Ray Society
- Member, Annual Convention Committee, American Institute of Ultrasound in Medicine
- Member, Regional Course Committee, American Institute of Ultrasound in Medicine
- Associate Editor, *Journal of Ultrasound in Medicine*
- Associate Editor, *Radiology*
- Assistant Editor, *American Journal of Roentgenology*
- Member, Editorial Board, *Journal of the British Medical Ultrasound Society*
- Reviewer, *Academic Radiology*
- Reviewer, *Archives of Dermatology*
- Reviewer, *Journal of Rheumatology*
- Reviewer, *Radiology Case Reports*
- Reviewer, *Ultrasound in Medicine and Biology*
- Reviewer, *Ultrasound Quarterly*

### **LAURENCE NEEDLEMAN, M.D.**

- Chair, Regional Course Committee, American Institute of Ultrasound in Medicine
- Chair, Program Committee, Society of Radiologists in Ultrasound
- Member, Board of Directors, Pennsylvania Radiological Society
- Secretary, Board of Directors, Intersocietal Commission on Accreditation of Vascular Labs
- Member, Clinical Standards Committee, American Institute of Ultrasound in Medicine
- Member, Ultrasound Guidelines and Standards Committee, American College of Radiology
- Member, Practice Guideline Collaborative Subcommittee for the Performance of an Ultrasound Examination of the Extracranial Cerebrovascular System, American College of Radiology and American Institute of Ultrasound in Medicine
- Member, Practice Guideline Collaborative Subcommittee for the Performance of Physiologic Evaluation of Extremity Arteries, American College of Radiology and American Institute of Ultrasound in Medicine
- Member, Practice Guideline Collaborative Subcommittee for the Performance of Renal Artery Duplex Sonogram, American College of Radiology and American Institute of Ultrasound in Medicine

- Member, Practice Guidelines Comments Reconciliation Committee for the Practical Use of Contrast Media, American College of Radiology
- Member, Public Information Advisors Network, Radiological Society of North America
- Member, Editorial Board, *Journal of Ultrasound in Medicine*
- Reviewer, Ultrasound Accreditation, American College of Radiology
- Reviewer, *Journal of Ultrasound in Medicine*

### **PATRICK L. O'KANE, M.D.**

- Consultant, NIH Trinitational Chernobyl Project

### **VIJAY M. RAO, M.D.**

- Chair, Nominating Committee, American Society of Head and Neck Radiology
- Member, Executive Committee, American Society of Head and Neck Radiology
- Member, Committee on Government Issues, Association of Program Directors in Radiology
- Member, Scientific Program Committee, Radiological Society of North America
- Member, Research and Education Evaluation Committee, Radiological Society of North America
- Member, Editorial Board, *Journal of the American College of Radiology*
- Reviewer, Scientific Exhibits, *Radiographics*, Radiological Society of North America
- Reviewer, Scientific Abstracts, 92<sup>nd</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America
- Reviewer, Scientific Abstracts, 55<sup>th</sup> Annual Meeting of the Association of University Radiologists
- Reviewer, Scientific Abstracts, 40<sup>th</sup> Annual Meeting of the American Society of Head and Neck Radiology
- Reviewer, Scientific Abstracts, 45<sup>th</sup> Annual Meeting of the American Society of Neuroradiology
- Reviewer, *Academic Radiology*
- Reviewer, *American Journal of Neuroradiology*
- Reviewer, *Radiographics*
- Reviewer, *Radiology*
- Exceptional Reviewer, *Journal of the American College of Radiology*
- Editors Certificate of Recognition, Review of Scientific Exhibits, *Radiographics*
- Editor's Certificate of Recognition, Review of Manuscripts, *Radiographics*
- Named as one of the "Top Doctors in Radiology", *Philadelphia Magazine*
- Named as one of the "Top 10 Radiologists", *Medical Imaging*, 2006
- Named as one of "America's Top Doctors for Cancer", Castle Connolly Medical Ltd.

### **SHARON R. SEGAL, M.D.**

- Member, CME Committee, American Osteopathic College of Radiology

### **KEVIN L. SULLIVAN, M.D.**

- Grant Reviewer, Society of Interventional Radiology Foundation
- Abstract Reviewer, *Radiographics*

## **LISA M. TARTAGLINO, M.D.**

- Proctor, Written Boards, American Board of Radiology, Philadelphia Site
- Reviewer, *Radiology*

## **MATHEW L. THAKUR, PH.D.**

- Delegate-at-Large, Society of Nuclear Medicine
- Member, Board of Governors, Greater New York Chapter of the Society of Nuclear Medicine
- Member, Board of Directors, 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
- Chair, Molecular Imaging Task Force, Society of Nuclear Medicine
- Chair, International Task Force, Society of Nuclear Medicine
- Chair, Award Committee, Society of Nuclear Medicine
- Chair, Nomination Committee, Society of Nuclear Medicine
- Chair, Molecular Imaging Center of Excellence Task Force on Awards and Grants, Society of Nuclear Medicine
- Liason, Radiopharmaceutical Science Council to Society of Nuclear Medicine Board of Directors, Society of Nuclear Medicine
- *Ad hoc* member, Grant Review Service, National Institutes of Health
- Member, Grant Review Service, Foundation for Medical Research, Vienna, Austria
- Member, Education Research Committee, Society of Nuclear Medicine
- Member, Financial Committee, Society of Nuclear Medicine
- Member, International Science Committee, International Society of Radiolabeled Blood Elements
- Member, Public Relations Committee, Society of Nuclear Medicine
- Member, Physicians Self-Referral Task Force, Society of Nuclear Medicine
- Member, Board of Directors, Eagle Alliance
- Member, Industry Summit, Society of Nuclear Medicine
- Organizer, Molecular Imaging Summit, Society of Nuclear Medicine
- Organizer, Molecular Imaging Symposium, 9<sup>th</sup> Congress of the World Federation of Nuclear Medicine & Biology, Seoul, Korea
- Member, In Vivo Cellular and Molecular Imaging Centers Study Section, National Institutes of Health
- Member, Editorial Board, *European Journal of Nuclear Medicine*
- 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*
- Reviewer, *Bioorganic and Medicinal Chemistry*
- Reviewer, *Diabetes*
- 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, *Nuclear Medicine Communications*
- Reviewer, *Post Graduate Medical Journal, London, England*
- Reviewer, *Oncology*
- Reviewer, *Veterinary Journal of Pharmaceuticals and Therapy*

#### **TERRI TUCKMAN, M.D.**

- Director of Students, Board of Directors of the American Medical Women's Association
- Member, Professional Development Committee, American Medical Women's Association
- Member, Committee on Gender Equity, American Medical Women's Association

#### **ANNINA N. WILKES, M.D.**

- Director, American Medical Women's Association
- Member, Women's Health Committee, American Medical Women's Association
- Member, Reach to Recovery Program Committee, American Cancer Society
- Member, Medical Advisory Board, Linda Creed Breast Cancer Foundation
- Member, Medical Advisory Board, Speakers Bureau, Susan Komen Foundation
- International Visiting Professor, Radiologic Society of North America

#### **SHAOXIONG ZHANG, PH.D.**

- Member, International Reviewers Panel, *Medical Science Monitor*
- Reviewer, *American Journal of Roentgenology*

#### **ADAM C. ZOGA, M.D.**

- Member, Expert Panel, Musculoskeletal Radiology Appropriateness Criteria, American College of Radiology;
- Member, Radiographics Scientific Poster Review Committee, 92<sup>nd</sup> Annual Meeting of the Radiological Society of North America
- Member, Finance Committee, Society of Skeletal Radiology
- Guest Editor, Hot Topics in Orthopedic Imaging, *Seminars in Musculoskeletal Radiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Radiology Case Reports*
- 2007 Judith Dubbs Memorial Research Award

## **APPENDIX**

**Table 1      ACTIVE GRANTS**

**Table 2      PENDING GRANTS**

## Active Grants

07/01/06 - 06/30/07

(Report reflects entire award period and current fiscal year of award)

TABLE 1

## NIH/OTHER FEDERAL GRANTS

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Acton, P. R78801	Imaging Stem Cell Implants in Neurodegenerative Diseases	NIH R01 NS048315	07/01/05 - 03/31/08	\$388,255 \$110,036 (current fiscal yr)	\$216,966 \$61,620 (current fiscal yr)	\$605,221 \$171,656 (current fiscal yr)
Flanders, A. Z40101 (subcontract)	Cross-enterprise Access to Cancer Imaging Data	NIH (NCI) thru Hx Technologies	12/01/05 - 11/30/07	\$35,312 \$26,634 (current fiscal yr)	\$19,774 \$14,649 (current fiscal yr)	\$55,086 \$41,283 (current fiscal yr)
Flanders, A. Z40401	caBIG - In Vivo Imaging Workspace	NIH (NCI) thru Booz Allen Hamilton Inc	10/01/05 - 09/29/07	\$40,000 \$20,174 (current fiscal yr)	\$22,400 \$11,095 (current fiscal yr)	\$62,400 \$31,269 (current fiscal yr)
Forsberg, F. R70101	Contrast-Enhanced US Detection of Angiogenesis	NIH (NCI) R21 CA93907	08/15/03 - 07/31/06 no cost extension	\$250,000 \$13,568 (current fiscal yr)	\$142,500 \$7,734 (current fiscal yr)	\$392,500 \$21,302 (current fiscal yr)
Forsberg, F. R84301	Subharmonic Microbubble Signals for Pressure Estimation	NIH (NHLBI) R21 HL081892	01/15/07 - 12/31/09	\$330,284 \$18,024 (current fiscal yr)	\$145,968 \$9,913 (current fiscal yr)	\$476,252 \$27,937 (current fiscal yr)
Forsberg, F. X08901	Ultrasound Activated Contrast Imaging for Prostate Cancer Detection	U.S. Army Medical Research Acq. DAMD17-03-1-0119	03/01/03 - 03/31/07 no cost extension	\$313,301 \$76,255 (current fiscal yr)	\$118,618 \$26,253 (current fiscal yr)	\$431,919 \$102,508 (current fiscal yr)
Forsberg, F. Z39101 (subcontract)	Sonothrombolysis of Vascular Clots with Targeted Microbubbles	NIH (SBIR) thru ImaRx R44 HL071433	08/30/05 - 06/30/07	\$70,239 \$31,845 (current fiscal yr)	\$39,334 \$17,514 (current fiscal yr)	\$109,573 \$49,359 (current fiscal yr)

Forsberg, F. Z41001 (subcontract)	Broad Band Single Crystal Transducers for Contrast Agent Harmonic Imaging	NIH thru TRS Ceramics, Inc. R44 RR018016	09/25/05 - 08/31/07	\$45,756 --- \$4,071 (current fiscal yr)	\$25,623 --- \$2,239 (current fiscal yr)	\$71,379 --- \$6,310 (current fiscal yr)
Forsberg, F. Z41301 (subcontract)	High Resolution Dermatological Scanning Acoustic Microscope	NIH thru J&W Medical R43 ES12362	11/15/05 - 08/31/06	\$33,317 --- \$0 (current fiscal yr)	\$18,658 --- \$0 (current fiscal yr)	\$51,975 --- \$0 (current fiscal yr)
Goldberg, B. R74401	US Detection of Sentinel Lymph Nodes in Melanoma	NIH (NCI) R01 CA100370	08/01/04 - 07/31/08	\$611,254 --- \$176,303 (current fiscal yr)	\$348,415 --- \$71,998 (current fiscal yr)	\$959,669 --- \$248,301 (current fiscal yr)
Goldberg, B. Z16602	American College of Radiology Cooperative Group Mechanism of the ACR Imaging Network	NIH thru ACRIN (cooperative group)	01/01/02 - 12/31/07	\$24,000 --- \$4,703 (current fiscal yr)	\$6,000 --- \$753 (current fiscal yr)	\$30,000 --- \$5,456 (current fiscal yr)
Goldberg, B. Z26902 (subcontract)	Development of a New Class of Ultrasound Contrast Agents	NIH thru Drexel University R01 HL52901	08/01/06 - 06/30/08	\$73,643 --- \$1,429 (current fiscal yr)	\$40,504 --- \$815 (current fiscal yr)	\$114,147 --- \$2,244 (current fiscal yr)
Gonsalves, C. Z38301 (subcontract)	CORAL: Cardiovascular Outcomes in Renal Atherosclerotic Lesions	NIH thru Medical University of Ohio	07/05/05 - 03/31/10	\$52,640 --- \$200 (current fiscal yr)	\$13,160 --- \$50 (current fiscal yr)	\$65,800 --- \$250 (current fiscal yr)
Halpern, E. R83101	US Prostate Cancer Detection with Dutasteride Pretreatment	NIH (NCI) R01 CA118003	07/14/06 - 06/30/09	\$729,338 --- \$133,361 (current fiscal yr)	\$401,136 --- \$72,825 (current fiscal yr)	\$1,130,474 --- \$206,186 (current fiscal yr)
Intenzo, C. Z37201	Positron Emission Tomography Pre- and Post-treatment Assessment for Locally Advanced Non-small Cell Lung Carcinoma	NIH thru ACRIN (cooperative group)	01/01/05 - 12/31/06	\$16,000 --- \$0 (current fiscal yr)	\$4,000 --- \$0 (current fiscal yr)	\$20,000 --- \$0 (current fiscal yr)
Intenzo, C. Z39401	ACRIN 6665: GLEEVEC for Primary and Recurrent Operable Malignant GIST (in collaboration with RTOG-S-0132)	NIH thru ACRIN (cooperative group)	01/01/05 - 12/31/07	\$20,842 --- \$0 (current fiscal yr)	\$5,211 --- \$0 (current fiscal yr)	\$26,053 --- \$0 (current fiscal yr)

Lai, S. AB1501	Functional and Anatomical Connectivity MRI Study of Brain Tumor Infiltration: Application to Neurosurgery	Commonwealth of Pennsylvania Department of Health	01/01/05 - 12/31/08	\$125,000 -- \$62,588 (current fiscal yr)	\$0 -- -- (current fiscal yr)	\$125,000 -- \$62,588 (current fiscal yr)
Lai, S. R78901	Statistical Analysis of Radionuclide Images	NIH R01 EB002774	08/03/05 - 07/31/08	\$326,350 -- \$87,482 (current fiscal yr)	\$182,755 -- \$48,115 (current fiscal yr)	\$509,105 -- \$135,597 (current fiscal yr)
Liu, J. R70401	Contrast US Guided RF Ablation for Prostate Cancer	NIH (NIBIB) R21 EB002794	09/20/03 - 08/31/07 no cost extension	\$275,000 -- \$37,156 (current fiscal yr)	\$146,008 -- \$21,178 (current fiscal yr)	\$421,008 -- \$58,334 (current fiscal yr)
Merritt, C. Z32301	Screening Breast US in High Risk Women	NIH thru ACRIN (cooperative group)	01/01/04 - 12/31/07	\$154,000 -- \$20,754 (current fiscal yr)	\$38,500 -- \$5,188 (current fiscal yr)	\$192,500 -- \$25,942 (current fiscal yr)
Mitchell, D. G07401	ACR Commonwealth of PA Participant Institution	PA Department of Health thru ACRIN (cooperative group)	01/01/06 - 12/31/08	\$15,600 -- \$5,200 (current fiscal yr)	\$3,900 -- \$1,300 (current fiscal yr)	\$19,500 -- \$6,500 (current fiscal yr)
Mitchell, D. Z32401	American College of Radiology Cooperative Group Mechanism of the ACR Imaging Network	NIH thru ACRIN (cooperative group)	01/01/04 - 12/31/07	\$32,000 -- \$8,313 (current fiscal yr)	\$8,000 -- \$1,352 (current fiscal yr)	\$40,000 -- \$9,665 (current fiscal yr)
Morrison, W. G07501	ACRIN PA 4001: Multicenter Trial on MR Image Markers of Knee Articular Cartilage Damage in Osteoarthritis	PA Department of Health thru ACRIN (cooperative group)	01/01/06 - 12/31/08	\$61,609 -- \$39,146 (current fiscal yr)	\$15,402 -- \$9,787 (current fiscal yr)	\$77,011 -- \$48,933 (current fiscal yr)
Morrison, W. Z45501 (subcontract)	Skeletal Development in Clubfoot Treatment	NIH thru Drexel University R21 AR053255	09/01/06 - 07/31/07	\$4,344 -- \$0 (current fiscal yr)	\$2,389 -- \$360 (current fiscal yr)	\$6,733 -- \$360 (current fiscal yr)
O'Kane, P. Y00501	IPA for Chornobyl Research Unit	NIH (NCI)	04/01/06 - 10/31/07	\$6,118 -- \$892 (current fiscal yr)	\$0 -- \$0 (current fiscal yr)	\$6,118 -- \$892 (current fiscal yr)



Rao, V. M04601	Health Care Facilities and Other Construction	Health Resources and Services Administration C76 HF00170-01	07/01/01 - 05/30/07 no cost extension	\$1,603,311 --- \$1,005,381 (current fiscal yr)	\$0 --- \$0 (current fiscal yr)	\$1,603,311 --- \$1,005,381 (current fiscal yr)
Rao, V. Z24701	ACRIN Core Institute Grant	NIH thru ACRIN (cooperative group)	01/01/02 - 12/31/06	\$52,506 --- \$866 (current fiscal yr)	\$13,126 --- \$216 (current fiscal yr)	\$65,632 --- \$1,082 (current fiscal yr)
Rao, V. Z30201	MRI Evaluation of the Contralateral Breast in Women with a Recent Diagnosis of Breast Cancer	NIH thru ACRIN (cooperative group)	04/01/03 - 03/31/07	\$66,029 --- \$10,324 (current fiscal yr)	\$9,496 --- \$2,581 (current fiscal yr)	\$75,525 --- \$12,905 (current fiscal yr)
Thakur, M. R76901	PET Imaging of Breast Cancer Using Oncogene Expression	NIH (NCI) R01 CA109231	04/01/05 - 03/31/09	\$1,133,619 --- \$267,925 (current fiscal yr)	\$476,118 --- \$147,359 (current fiscal yr)	\$1,609,737 --- \$415,284 (current fiscal yr)
Thakur, M. R78701	Improved Molecular Imaging with SPECT	NIH R01 EB001809	09/10/03 - 07/31/08	\$584,211 --- \$146,253 (current fiscal yr)	\$320,955 --- \$85,637 (current fiscal yr)	\$905,166 --- \$231,890 (current fiscal yr)
Zoga, A. Z24601	A Phase I/II Study of Percutaneous Radiofrequency Ablation of Bone Metastases Using CT Guidance	NIH thru ACRIN (cooperative group) R01 CA109231	11/11/01 - 12/31/06	\$1,810 --- \$112 (current fiscal yr)	\$453 --- \$308 (current fiscal yr)	\$2,263 --- \$1,115 (current fiscal yr)
TOTAL NIH/FEDERAL FUNDING				\$7,475,688	\$2,785,369	\$10,261,057
CURRENT YEAR NIH/ FEDERAL FUNDING				\$2,308,995	\$620,839	\$2,929,834

Active Grants

07/01/06 - 06/30/07

(Report reflects entire award period and current fiscal year of award)

**FOUNDATION/NON-PROFIT ORGANIZATION GRANTS**

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Forsberg, F. F75001	Intra-Cardiac Pressure Measurements	American Heart Association	07/01/06 - 06/30/08	\$109,090 -- \$47,008 (current fiscal yr)	\$10,910 -- \$4,701 (current fiscal yr)	\$120,000 -- \$51,709 (current fiscal yr)
Goldberg, B. F65701	Teach the Teachers	Radiologic Society of North America	07/01/04 - 06/30/08	\$300,000 -- \$79,790 (current fiscal yr)	\$0 -- \$0 (current fiscal yr)	\$300,000 -- \$79,790 (current fiscal yr)
Rao, V. F65401	Center for Research on Utilization of Imaging Services	American College of Radiology	01/01/04 - 5/16/08	\$306,840 -- \$55,751 (current fiscal yr)	\$0 -- \$0 (current fiscal yr)	\$306,840 -- \$55,751 (current fiscal yr)
<b>TOTAL NON-PROFIT FUNDING</b>				\$715,930	\$10,910	\$726,840
<b>CURRENT YEAR NON-PROFIT FUNDING</b>				\$182,549	\$4,701	\$187,250
				(current fiscal yr)	(current fiscal yr)	(current fiscal yr)

## Active Grants

07/01/06 - 06/30/07

(Report reflects entire award period and current fiscal year of award)

## INDUSTRIAL GRANTS

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Feld, R. A86201	Real-time Elastography for the Evaluation of Thyroid Nodules	Hitachi Medical Corporation	09/29/05 - 09/28/06	\$37,875 \$12,893 (current fiscal yr)	\$9,469 \$0 (current fiscal yr)	\$47,344 \$12,893 (current fiscal yr)
Flanders, A. A53601	ADCON-L MRI Research Project	GliaTech	09/01/01 - 12/31/50	\$25,000 \$0 (current fiscal yr)	\$6,250 \$0 (current fiscal yr)	\$31,250 \$0 (current fiscal yr)
Forsberg, F. A94201	Assessment of B&K Scanner for Liver and Prostate Evaluations	B&K Medical	10/01/06 - 10/31/06	\$6,692 \$4,176 (current fiscal yr)	\$0 \$0 (current fiscal yr)	\$6,692 \$4,176 (current fiscal yr)
Forsberg, F. J19501	Assessment of CAD System for Breast Cancer Diagnosis	Almen Laboratories	09/05/06 - 11/19/06	\$7,664 \$6,691 (current fiscal yr)	\$1,916 \$1,916 (current fiscal yr)	\$9,580 \$8,607 (current fiscal yr)
Halpern, E. A94101	Pilot Study of Microflow Imaging Technology	Bristol-Myers Squibb	06/26/06 - 12/31/50	\$5,500 \$1,173 (current fiscal yr)	\$0 \$0 (current fiscal yr)	\$5,500 \$1,173 (current fiscal yr)
Halpern, E. J13801	Correlation of Contrast-Enhanced Sonography to ProstaScint Scan Imaging of the Prostate	Cytogen Corporation	02/22/06 - 12/31/50	\$84,402 \$18,750 (current fiscal yr)	\$20,476 \$13,500 (current fiscal yr)	\$104,878 \$32,250 (current fiscal yr)

O'Kane, P. A66301	Accuracy of Contrast-Enhanced Sonography for Detection of Traumatic Injuries to Solid Abdominal Organs Compared with Conventional (Non-Contrast) Sonography and Computed Tomography	Bristol-Myers Squibb	03/18/03 - 12/31/50	\$10,000 ----- \$0 (current fiscal yr)	\$2,000 ----- \$0 (current fiscal yr)	\$12,000 ----- \$0 (current fiscal yr)
Rao, V. A81401	Cardiac CTA vs Invasive Coronary Angiography	Philips Medical Systems	08/23/04 - 06/30/07	\$160,000 ----- \$14,419 (current fiscal yr)	\$40,000 ----- \$39,000 (current fiscal yr)	\$200,000 ----- \$53,419 (current fiscal yr)
Sharma, D. A81301	Digital Imaging Research	AGFA Corporation	11/15/04 - 11/30/07	\$21,633 ----- \$2,945 (current fiscal yr)	\$4,783 ----- \$0 (current fiscal yr)	\$26,416 ----- \$2,945 (current fiscal yr)
Sullivan, K. J15101	STRIDE 1: Does Early Safe Thrombus Removal in DVT have an Effect on Patient Outcomes?	Bacchus Vascular, Inc.	03/08/06 - 03/07/07	\$13,710 ----- \$2,500 (current fiscal yr)	\$2,803 ----- \$0 (current fiscal yr)	\$16,513 ----- \$2,500 (current fiscal yr)
Wilkes, A. A82601	A Multicenter, Prospective, Blinded Reader Study to Determine the Sensitivity and Specificity of the ComfortScan System to Detect Malignancy as an Adjunct to Mammography in Patients <= 50 Years of Age (DOBI-1009)	DOBI Medical International	02/15/05 - 12/31/50	\$10,000 ----- \$0 (current fiscal yr)	\$2,500 ----- \$0 (current fiscal yr)	\$12,500 ----- \$0 (current fiscal yr)
<b>TOTAL INDUSTRIAL FUNDING</b>				\$382,476	\$90,197	\$472,673
<b>CURRENT YEAR INDUSTRIAL FUNDING</b>				\$63,547	\$54,416	\$117,963
<b>TOTAL FUNDING</b>				\$8,574,094	\$2,886,476	\$11,460,570
<b>TOTAL CURRENT YEAR FUNDING</b>				\$2,555,091	\$679,956	\$3,235,047

TABLE 2

NIH/OTHER FEDERAL GRANTS

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Forsberg, F.	Contrast-Enhanced 3D Subharmonic Breast Imaging	NIH	12/01/07 - 11/30/11	\$1,917,207	\$493,414	\$2,410,621
Forsberg, F.	Noninvasive Subharmonic Pressure Estimation for Monitoring Breast Cancer Response to Neoadjuvant Therapy	U.S. Army Medical Research Acq.	04/01/08 - 03/31/11	\$299,966	\$164,981	\$464,947
Forsberg, F. (subcontract)	Use of Tactile Breast Imager for Mass Pre-Screening	NIH thru Artann Laboratories	01/01/08 - 12/31/09	\$96,724	\$53,198	\$149,922
Lai, S.	MRI Assessment of Axonal Damage and Monitoring Treatment in Multiple Sclerosis	NIH	07/01/07 - 06/30/19	\$275,000	\$151,250	\$426,250
Mitchell, D.	ACRIN PA 4002: Angle Interleaved Projection Reconstruction with K-Space Weighted Image Reconstruction for Dynamic Contrast MRI of Cancer Therapy Response	PA Department of Health thru ACRIN (cooperative group)	07/01/06 - 06/30/09	\$66,717	\$10,728	\$77,445
Morrison, W. (subcontract)	Bone Micro-Architecture and Micro-Vasculature in Type 2 Diabetes	NIH thru Micro MRI	10/01/08 - 11/30/09	\$194,585	\$53,425	\$248,010
Nazarian, L. (subcontract)	High Intensity Focused Ultrasound Therapy for Chronic Tendonitis	NIH thru Riverside Research Institute	04/01/08 - 03/31/10	\$120,628	\$66,345	\$186,973



Thakur, M.	Oncogenic Approaches to PET Imaging of Prostate Cancer	NIH	12/01/07 - 11/30/10	\$1,141,175 --- \$382,474 (-01 year)	\$627,648 --- \$210,361 (-01 year)	\$1,768,823 --- \$592,835 (-01 year)
Wolf, M.	ACRIN 6677: A Randomized Phase II Trial of Bevacizumab with Irinotecan or with Temozolomide in Recurrent Glioblastoma	NIH thru ACRIN (cooperative group)		\$8,000 --- \$8,000 (-01 year)	\$2,000 --- \$2,000 (-01 year)	\$10,000 --- \$10,000 (-01 year)
			TOTAL NIH GRANT FUNDING	\$4,120,002	\$1,622,989	\$5,742,991
			TOTAL FIRST YEAR NIH FUNDING	\$1,058,084 (-01 year)	\$482,251 (-01 year)	\$1,540,335 (-01 year)

Pending Grants

07/01/06 - 06/30/07

(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
Thakur, M.	PET Imaging of Cancer Gene Expression in Prostate Cancer	Prostate Cancer Foundation	02/01/07 - 01/31/08	\$100,000 -- \$100,000 (-01 year)	\$0 -- \$0 (-01 year)	\$100,000 -- \$100,000 (-01 year)
Zhang K. post-doctoral fellow	PET Molecular Imaging of Prostate Cancer by Targeting VP AC1 Receptors	Society of Nuclear Medicine	07/01/07 - 06/30/08	\$8,000 -- \$8,000 (-01 year)	\$0 -- \$0 (-01 year)	\$8,000 -- \$8,000 (-01 year)
TOTAL NIH GRANT FUNDING				\$108,000	\$0	\$108,000
TOTAL FIRST YEAR NIH FUNDING				\$108,000 (-01 year)	\$0 (-01 year)	\$108,000 (-01 year)

Pending Grants  
07/01/06 - 06/30/07

(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
Forsberg, F.	Clinical Evaluation: Philips Pathfinder Ultrasound System	Philips Medical Systems	09/01/07 - 08/31/08	\$5,440 -- \$5,440 (-01 year)	\$1,360 -- \$1,360 (-01 year)	\$6,800 -- \$6,800 (-01 year)
Intenzo, C.	A Phase I Open Label Single Center Safety Study of [F-18]FLT	Siemens Molecular Imaging	10/01/07 - 12/31/07	\$40,000 -- \$40,000 (-01 year)	\$10,000 -- \$10,000 (-01 year)	\$50,000 -- \$50,000 (-01 year)
<b>TOTAL INDUSTRIAL FUNDING</b>						
				\$45,440	\$11,360	\$56,800
				--	--	--
				\$45,440	\$11,360	\$56,800
				(-01 year)	(-01 year)	(-01 year)
<b>TOTAL PENDING FUNDING</b>						
				\$4,273,442	\$1,634,349	\$5,907,791
<b>TOTAL FIRST YEAR PENDING FUNDING</b>						
				\$1,211,524	\$493,611	\$1,705,135
				(-01 year)	(-01 year)	(-01 year)