

2006

Department of Radiology-Annual Executive Summary Report-July 1, 2005 to June 30, 2006

Vijay M. Rao M.D.

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DEPARTMENT OF RADIOLOGY

2005-2006 ANNUAL REPORT

Vijay M. Rao, MD
Professor and Chair

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 stay at the cutting edge of imaging research
-

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DEPARTMENT OF RADIOLOGY

Vijay M. Rao, M.D.
Professor and Chairman

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

2005-2006

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	Christopher R.B. Merritt, M.D.
PERFORMANCE IMPROVEMENT COMMITTEE	Stephen Karasick, 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
2005-2006**

PROFESSORS

Rick I. Feld, M.D.
Adam E. Flanders, M.D.
Flemming Forsberg, Ph.D.
Barry B. Goldberg, M.D.
Ethan J. Halpern, M.D., M.S.C.E.
David Karasick, M.D.
Stephen Karasick, M.D.
Alfred B. Kurtz, M.D.
Anna S. Lev-Toaff, 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.

CLINICAL PROFESSOR

Charles M. Intenzo, M.D.

RESEARCH PROFESSOR

Christopher R.B. Merritt, M.D.

EMERITUS PROFESSOR

David C. Levin, M.D.

ASSOCIATE PROFESSORS

Paul Acton, Ph.D.
Oksana H. Baltarowich, M.D.
Joseph Bonn, M.D.
David J. Eschelmann, 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.

**RESEARCH ASSOCIATE
PROFESSORS**

Ji-Bin Liu, M.D.

ASSISTANT PROFESSORS

Diane Bergin, M.D.
Diane Deely, M.D.
Steven G. Finden, D.D.S., M.D.
Eric Gingold, Ph.D.
Carin F. Gonsalves, M.D.
Angela G. Gopez, M.D.
Richard Gorniak, M.D.
Narainder Gupta, M.D.
Sung M. Kim, M.D.
Patrick L. O'Kane, M.D.
Sharon R. Segal, D.O.
Zsuzsanna Therien, M.D.
Shaoxiong Zhang, M.D., Ph.D.
Adam C. Zoga, M.D.

**CLINICAL ASSISTANT
PROFESSORS**

Haroon Durrani, M.D.
Valerie Gilliam, M.D.
Patti J. Herling, M.D.
Bentley Hollander, M.D.
Cindy Isaacson Finden, M.D.
Lynn Lucas-Fehm, M.D.
Dinesh Sharma, M.D.
Terri Tuckman, M.D.
Annina N. Wilkes, M.D.

**RESEARCH ASSISTANT
PROFESSOR**

Laurence Parker, 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]
- Ralph A. Carabasi, M.D., Professor of Surgery [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 2005-2006

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.

Drs. Susan DeWyngaert, Valerie Gilliam, Bentley Hollander, Cindy Finden, Lynn Lucas-Fehm, Zsuzsanna Therien

Cardiovascular/ Interventional Radiology

Directed by Kevin L. Sullivan, M.D.

Drs. Joseph Bonn, David Eschelman, Carin Gonsalves, Jamie Thomas

Magnetic Resonance Imaging

Directed by Donald G. Mitchell, M.D.

Drs. Diane Bergin, Diane Deely, Joshua Memelak, William Morrison, Patrick O'Kane, Catherine Piccoli, Adam Zoga

Musculoskeletal and General Diagnostic Radiology

Directed by William B. Morrison, M.D.

Drs. Diane Bergin, Diane Deely, Angela Gopez, Narainder Gupta, Patti Herling, Cindy Finden, David Karasick, Stephen Karasick, Donald Mitchell, Joshua Mamelak, Dinesh Sharma, Adam Zoga

Neuroradiology/ENT Radiology

**Directed by Adam Flanders, M.D.,
David Friedman, M.D.**

Drs. W. Scott Enochs, 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

Thoracic Radiology

Directed by Narainder Gupta, M.D.

Drs. Dinesh Sharma, Patti Herling, Charles Intenzo, David Karasick, Stephen Karasick, William Morrison

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, Catherine Piccoli, 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
2005-2006**

RESIDENTS

FIRST YEAR RESIDENTS

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

THIRD YEAR RESIDENTS

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

SECOND YEAR RESIDENTS

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

FOURTH YEAR RESIDENTS

Lauren W. Averill, M.D.
Sachin Dheer, M.D.
Ronald J. Dolin, M.D.
Elizabeth H. Hsu, M.D.
Christopher T. Kirkpatrick, M.D.
Dayna Levin, M.D.

Nuclear Medicine

Mona Preeti Natwa, M.D.
Nikki Sistrzyn, M.D.

FELLOWS

ABDOMINAL IMAGING

Bridget D. Bernardi, D.O.
David R. Fox, M.D.
Angelyn Gunn, M.D.
Joshua H. Kern, M.D.
Rebecca L. Sahlman, M.D.
Leah E. Schafer, M.D.
Robert Villani, M.D.

BODY MRI

Candace Howard-Claudio, M.D.

BODY/NEURO MRI

Justin T. Blum, M.D.
Geoffrey L. Manton, M.D.
Laura B. Klein, M.D.
John S. Farrell, M.D.

CARDIOVASCULAR/INTERVENTIONAL

Stefan V. Franciosa, D.O.
Suken Shah, M.D.
Meguru Watanabe, M.D.

MAMMOGRAPHY

Sun Ju Kim, M.D.

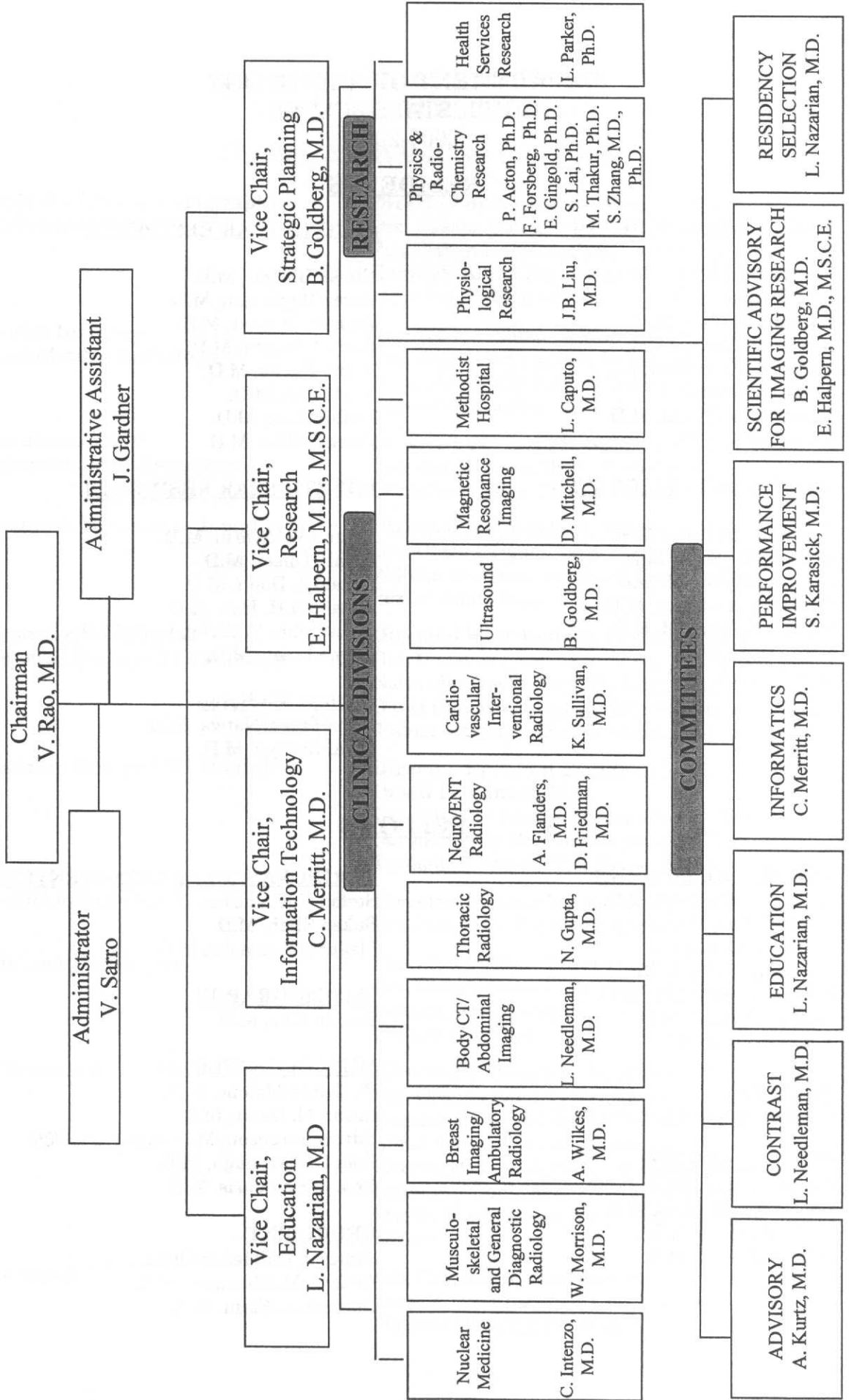
MUSCULOSKELETAL

W. James Malone, D.O.
Imran M. Omar, M.D.
Edrick Ferguson, M.D. (until 12/17/05)
Eoin C. Kavanagh, M.D.
George Koulouris, M.D.

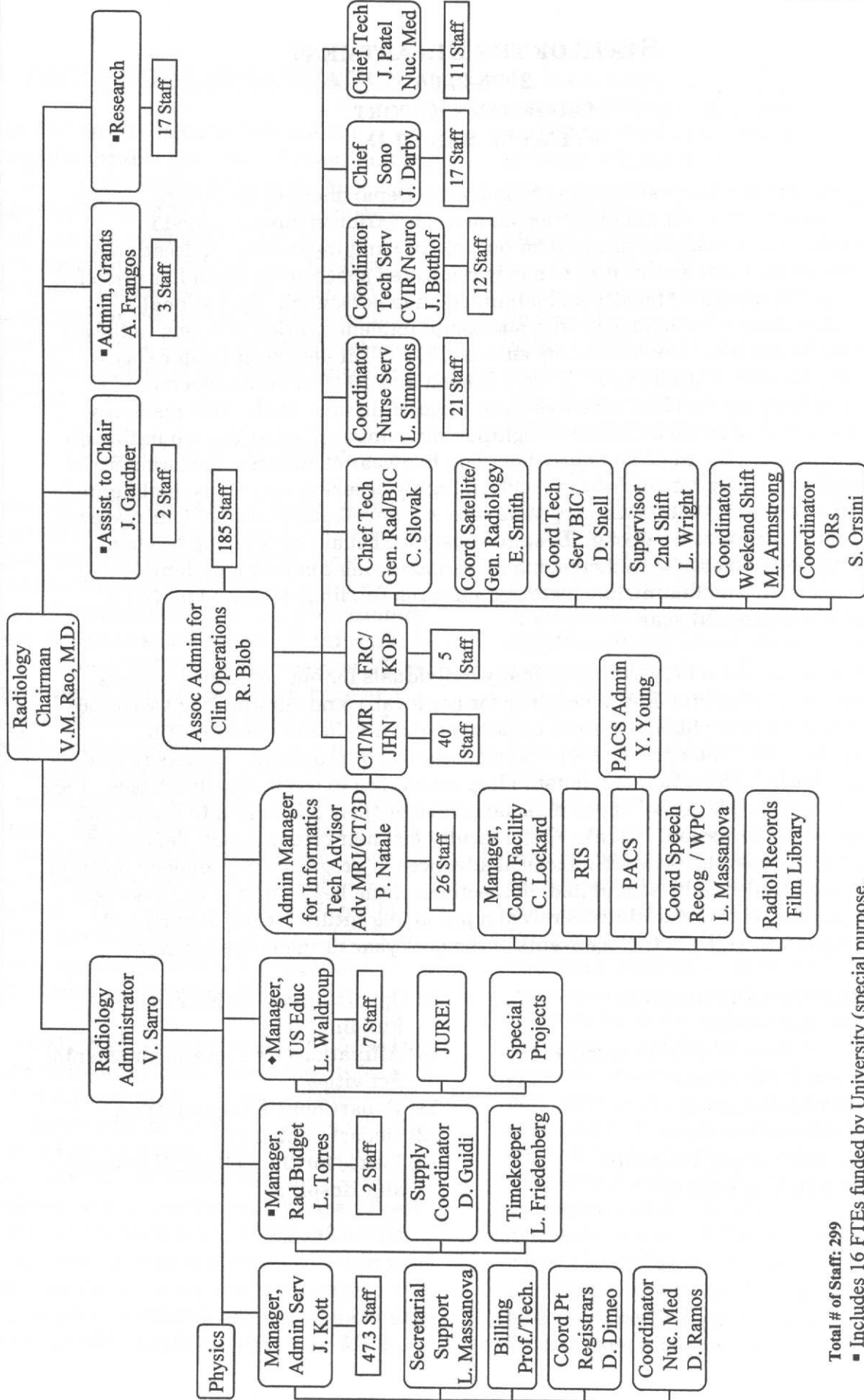
NEURO/ENT

James J. Gallagher-Ortiz, M.D.
Andrew M. Shurman, M.D.
Deborah L. Stein, M.D.

Department of Radiology (2005-2006)



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

2005-2006

CHAIRMAN'S REPORT

VIJAY M. RAO, M.D.

This past year has been an exciting time for the Department of Radiology. Major renovations of the main radiology department on 3 Gibbon have resulted in substantial improvements in space for outpatients and inpatients. Relocation of administrative team and faculty to newly renovated space on 10 Main has provided a boost to the morale of faculty and administrative personnel. Operational efficiencies have been enhanced with successful implementation of a new radiology information system. New technology such as PET/CT at Jefferson Center City Imaging, 40-slice multidetector CT on 3 Gibbon and 16-slice multidetector CT at Jefferson Hospital for Neurosciences were successfully installed. Our residency program received much deserved recognition for being ranked at the top nationally by the American Board of Radiology based on five-year cumulative performance of our residents. Many of our faculty received highly deserved accolades, highlighted later in this report. Our CME programs were expanded successfully. Our research programs continue to be strong. Despite substantial challenges facing academic radiology departments with increasing costs, increasing competition, diminishing reimbursement and diminishing external research funding, we have enjoyed a strong and successful year.

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

DEPARTMENT ORGANIZATION

Several faculty members joined our department this past year; Steven Finden, D.D.S., M.D., Richard Gorniak, M.D., Michael Wolf, M.D. in neuroradiology, and Jamie Lee Thomas, D.O. in interventional radiology. Joseph Bonn, M.D. and Catherine Piccoli, M.D. left academic for the lure of private practice. Annina Wilkes, M.D. was appointed as Interim Director of the Breast Imaging Center.

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 total procedure volume including the caseload at satellite centers was 337,844 examinations. Total work RVU's were 280,976, an increase of 17.5%. In **general radiology**, chest, bone and abdominal radiography increased by 4%, while fluoroscopic studies continued to decrease. **Jefferson Center City Imaging (JCCI)**, our outpatient imaging center, had a successful year with 27,408 procedures being performed compared with 25,059 in the previous year, a 9% growth. The center is well managed by Outpatient Imaging Affiliates, LLC, with their aggressive marketing efforts producing positive results.

In 2004-2005, new 3 Tesla and 1.5 Tesla MR units were installed on the 3rd floor of the Gibbon building to replace the outdated unit on 10 Main. There were some technical problems with the units installed, which hindered some of our clinical and research expectations. These issues have been resolved and although the primary focus is on reducing wait time for inpatient exams, the department initiated new clinical programs, including cardiac MR imaging in the **body MRI**

division and functional MRI in the **neuroradiology / head and neck radiology division**. The new MR systems will also enhance our breast MR imaging program in the **breast imaging division** for evaluating breast abnormalities and performing MRI guided breast biopsies. Workstations for reading breast MRI have been moved to a dedicated space in the breast imaging center. In addition, the breast imaging center has created a patient education area in the waiting room that has received positive feedback.

In **body CT**, one of the 16 channel multi-detector CT scanners on the 3rd floor of the Gibbon Building was upgraded to a 40-slice with enhanced computer processing. CT injectors have been upgraded to dual head injectors. This has significantly enhanced our coronary CT angiography service, allowing faster image acquisition of a larger volume of the heart and improved image resolution. Upgraded workstations, improved software, and advanced training of our technologists have led to noticeable improvements in 3-dimensional and multiplanar (sagittal, coronal and curved) reconstructed images in cardiac, colorectal, and abdominal CT imaging. Reconstruction of the images often replaces additional scanning which negates further radiation exposure and the need for more or different contrast. Visualization of the normal and abnormal appendix has been made easier with the new technology. Preoperative 3D CT scanning of pancreatic and biliary lesions for liver transplant patients has become widespread and include 3D CT angiograms of the abdominal aorta, detailed anatomy of the arterial and venous branches, facilitating surgical planning. In **neuroradiology / head and neck radiology** use of the 40-slice CT has been important in simplifying

cerebrovascular CT angiograms and performing perfusion imaging. Additionally, the installation of a new 16-slice CT and acquisition of new Vitrea workstation have improved workflow at Jefferson Hospital for the Neurosciences.

The scope of CT guided procedures has increased in the past year. The **CVIR** division is working in collaboration with the CT division in performing CT guided cryoablation or radiofrequency ablation of liver and kidney tumors, as well as CT guided injections to repair endoleaks that may complicate some endovascular abdominal aneurysm repairs. Additionally, the interventional group has instituted an outpatient consultation service and introduced new techniques such as endovenous laser therapy for varicose vein ablation and the use of the Trellis catheter for treatment of deep vein thrombosis.

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 musculoskeletal groin injuries. The program has been so successful that we now image all hip injury patients of Hahnemann University's Dr. William Myers, representing an additional 4-5 MRI pelvis and MR arthrograms per week. Additionally, the division has begun to perform simulated weight-bearing imaging at Langhorne to improve the diagnosis of musculoskeletal injuries.

Acquisition of the Siemens Biography 6 PET-CT scanner during the past year has greatly enhanced oncologic imaging in the **nuclear medicine division**. The system provides far superior diagnostic

information by combining metabolic information with anatomic detail and has been well received by the referring physicians. The **cardiothoracic radiology division** has been actively involved in interpretation of PET studies in collaboration with nuclear medicine division, and has utilized the PET-CT studies to guide thoracic biopsies. There is active collaboration with the CT division in expansion of cardiac CT services to the Emergency Department.

Two new state-of-the-art units with 3D/4D systems have been added in the **ultrasound division**. To reduce the average 30 day waiting time for an appointment for an ultrasound guided thyroid biopsy, the **division** began to offer one full day per month dedicated to thyroid biopsies. This new clinical service has reduced the waiting to 13 days and resulted in more fully utilized resources. Diagnostic and therapeutic musculoskeletal applications of ultrasound have continued to expand with a 35% increase in procedure volume over the past year, making our musculoskeletal ultrasound services one of the largest in the country.

The department has recently begun a new entrepreneurial venture working in conjunction with HealthHelp, a Houston-based radiology benefits management (RBM) firm, by providing telephone consultations with referring physicians in the midWest and South who order CT, MR and PET scans on Humana patients. Many of the major healthcare insurance carriers are instituting pre-authorization programs using RBM's to manage those programs. We are currently averaging 10-15 calls per day and hope to expand that number. Not all of our physicians are currently participating, but those who are already doing it report that it is an interesting experience that is helpful to referring physicians and patients, and

that it even has some teaching and research potential in addition, of course, to generating new revenues for the department.

The pediatric radiology practice at **A.I. duPont** remains healthy with over 72,000 procedures performed annually. Over the past year, several of the centers of excellence clinical programs have created the need for more cardiac MRI, as well as broader interventional support of the solid organ transplant and spine surgery programs. In response to clinical needs, the interventional radiology section of DuPont has expanded to offer transcatheter venous thrombolysis and radiofrequency ablation. A.I. DuPont Radiology provides an excellent opportunity for Jefferson medical students, radiology, and pediatric residents to experience pediatric radiology.

Our satellite centers represent an important component of our clinical practice. They provide a large volume of interesting case material, which benefits our training programs as well as generating significant additional revenue. However, the future of satellite centers is tenuous given increasing competition and impending drastic reductions in reimbursement for outpatient imaging centers. Bala MRI closed its doors in May 2006, and Langhorne MRI has converted to a full modality imaging center but is off to a slow start.

Department performance metrics are monitored and trended in three main categories: Faculty performance, Operations 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 the technical issues of the 1.5 and 3.0 Tesla MR units housed in the Gibbon building resolved, and plans for a new 3.0 Tesla MR unit to be placed in the Jefferson Hospital for Neurosciences, quality and volume of cases is expected to increase in the next fiscal year. In **body MRI**, MR colonography, coronary MR angiography, and cardiac MR services for evaluation of ischemic heart disease, wall motion abnormalities, myocardial viability, and ejection fraction will be offered.

In the **musculoskeletal and general diagnostic radiology division**, services at the Langhorne site will be expanded with coverage increasing to three days a week. New programs will be offered including weight-bearing MR imaging of the spine, knee and ankle, MR and CT arthrography, and possibly spine injection procedures. Additionally, it is expected that referrals for musculoskeletal CT will continue to increase for new imaging procedures such as arthroplasty and CT arthrography.

The department will continue to expand in therapeutic areas with the **interventional radiology division** planning to offer radioactive microsphere treatment of hepatic malignancies and the **cardiothoracic radiology division** providing radiofrequency ablation of primary lung tumors that are unresectable tumors, as well as in patients with comorbidities for whom surgical resection is contraindicated.

At the **breast imaging center**, the breast cancer program expansion will continue with support through fundraising. Space in the medical office building is under renovation to consolidate the diagnostic and screening mammography services. Plans include housing a dedicated breast MRI unit in the breast center. The new areas will improve patient flow and provide a more pleasant environment for the patients.

In **ultrasound**, cross-training of faculty members for musculoskeletal and gynecologic imaging will continue. The training will increase the availability of sub-specialists to perform these complex services and thereby increase the volume of the highly requested cases. New space is being renovated in Dr. Merli's suite located in 833 Chestnut Street for providing ultrasound services focused on vascular studies.

In **nuclear medicine**, coverage for PET-CT services will be expanded under the National Oncologic Patient Registry (NOPR), a reimbursement program created by the American College of Radiology in collaboration with the Academy of Molecular Imaging in which the Center for Medicare and Medicaid Services will reimburse PET-CT scans for patients with malignancies that are currently not covered by Medicare. This is a data gathering program whereby the referring clinician submits pre and post

PET scan forms, so that the impact of PET scanning on patient management is tabulated. The ultimate goal would be the approval by CMS for Medicare to permit reimbursement for those malignancies evaluated. At our institution, this will be particularly important for gynecological and pancreatic malignancies, as well as multiple myeloma.

A 64-slice multidetector CT scanner will be placed in the Emergency Department in the upcoming year. The scanner will improve service in this important facet of our service goals. Most importantly, the scanner will allow for patients presenting with chest pain to undergo a triple rule-out scan for our **Body CT** and **cardiothoracic imaging** groups to evaluate the coronary circulation, pulmonary circulation, and aorta. The new scanner will also be valuable for perfusion brain scans for **neuroradiology / head and neck radiology**.

CLINICAL WEAKNESSES

We faced several challenges in our clinical operation. Technical issues delayed the clinical use of the new 1.5T and 3T magnets in the Gibbon Building and we have not received all of the coils needed to provide state-of-the-art scans. The present breast coil limits the evaluation of both breasts and biopsy capabilities and we do not have a coil suitable for cardiac MR imaging. At the present time, the new MR scanners are reserved for imaging inpatients, limiting our outpatient referrals from some high-use specialists. The outpatient MR scanners are outdated and as a result, we have continued to be limited in many of our clinical and research capabilities during the past year. For CT imaging, the rapid growth in inpatient and emergency room CT scanning limits the number of

outpatients that can be imaged on 3 Gibbon, as well as interventional cases that could be done under CT guidance. Many of these cases which could be performed much more easily under CT guidance are performed under ultrasound or fluoroscopic guidance.

With ongoing advancements in CT and MRI technology, the technologist training has become problematic. Protocols for imaging patients and post-processing of images is becoming more and more complex and lack of proper training results in poor image quality and need for repeat scans. 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 software incompatibilities and PowerScribe limitations that have resulted in inefficiencies. Our PACS remains a limiting factor in optimal utilization of a computed radiology system, unable to handle nuclear medicine images which can currently only be read on 8 Main. Therefore, we are unable to provide comprehensive cardiothoracic service in one area. The new Stentor PACS will hopefully allow the PET-CT to be read in the consolidated reading rooms.

Lack of space remains a limitation for many areas of the department. Great strides have been made with the renovations that have been completed on 3 Gibbon and 10 Main, yet efforts are needed in other areas. There are space limitations in the breast imaging center, restricting workflow and expansion of services. This will hopefully be diminished with the renovations on the third and fourth floors of the Medical Office Building. 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. A further problem in maximally expanding clinical services is the lack of an appropriate marketing by TJUH to allow us to be competitive in promoting new clinical services

As clinical programs expand and workload increases, a strain is put on the attendings and house staff to produce timely reports. In addition, the faculty has less academic time to learn new procedures resulting in only a few faculty members who are relied upon for particular procedures, such as cardiothoracic imaging, cardiac MR, musculoskeletal ultrasound, radiofrequency ablation, and CT colonography. The demand for 24 hours a day, 7 days a week radiology services is challenging while also providing interpretation by subspecialty experts to meet the expectations of the referring physicians.

CLINICAL INFORMATICS

Clinical informatics is a vital part of the Department of Radiology, supporting the clinical, administrative, and academic missions of the department. In addition to the performance and interpretation of imaging examinations, an important responsibility of the Department of Radiology is the management of the large quantity of information generated by the department. The department must provide rapid and convenient access to

images and reports for both radiologists and referring physicians, as well as manage the scheduling, performance, billing, and quality control of its services.

Over the past year, the primary goal of the Informatics Technical Team, under the leadership of Christopher Merritt, M.D., has been to enable a seamless, integrated, and paperless workflow linking patients, referring physicians, radiologists, technologists, clerks, and administrative personnel in a responsive and efficient process. The core components required to achieve this goal are a RIS (Radiology Information System), a digital dictation and transcription system using SR (Speech Recognition) technology, and a PACS (Picture Archiving and Communication System). Having successfully implemented a state of the art RIS system and digital dictation using SR in 2004-2005, efforts of the Informatics Technical Team in 2005-2006 have been focused on the selection, purchase, and installation of a state of the art third generation PACS.

In November, 2005 negotiations were begun with Philips Medical Systems for their recently-acquired Stentor iSite PACS. A very productive team of radiology, Hospital IT, legal, and purchasing personnel participated in the completion of successful negotiations, and a contract was signed in May, 2006. The entire project has involved close interaction with personnel from Methodist Hospital, and the final PACS will provide a high level of functional integration with Methodist.

Preparation for installation of the new PACS was begun in June 2006, and continues. Installation of the PACS will take place in September - November 2006 and clinical operation is expected to begin in November - December 2006. By the end of calendar year 2006, the Department will have largely completed a

four year process to integrate RIS, PACS, and reporting functions into a largely paperless workflow with the benefit of greatly improved departmental and enterprise access to images and reports.

One of the benefits of new RIS and SR systems is improved access to detailed data for each step of the diagnostic imaging process. Over the past year, the department has facilitated access and utilization of these data to assess and monitor performance in resource utilization, availability of imaging services, and report turnaround. Regular reports provided by the RIS also form the basis for monitoring of redesigned Departmental Performance Improvement initiatives.

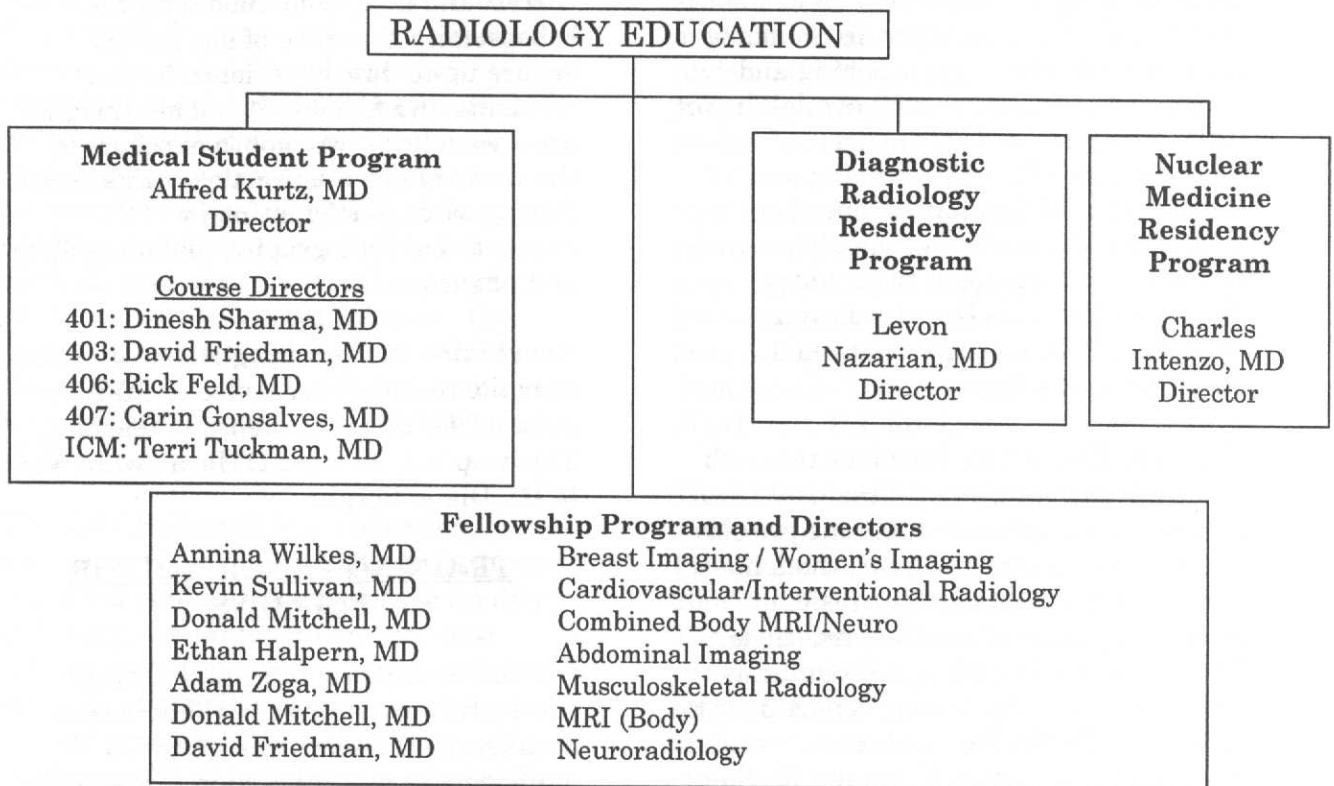
Recognizing that the Department of Radiology must interact in an effective fashion with entities throughout the Jefferson Healthcare System, the department has made great strides in strengthening its interaction and collaboration with Hospital IT and Hospital Medical Administration over the past year. Better communication has resulted in improved approaches to enterprise distribution of reports and images, expanded operating room image access, and more effective problem solving.

Looking ahead, major initiatives for 2006-2007 will include completion of PACS installation and redesign of Departmental workflow to take advantage of the integration of RIS, PACS, and SR. A major challenge in coming months will be the conversion of image data from the old Canon PACS in order to make it accessible on the new PACS system. An additional challenge will be the updating and enhancement of the departmental Informatics Technical Team to reflect completion of the transition to a largely filmless and paperless workflow,

retraining and reassigning personnel currently involved in film handling. Finally, we will explore the best use of the new capabilities to increase access of

patients and clinicians to the services of the department, and pursue integration of images into the electronic medical record.

EDUCATIONAL PROGRAMS



RESIDENCY TRAINING PROGRAM

The educational programs at Thomas Jefferson University Hospital continue to be one of the major strengths of our department. The Radiology residency program is nationally recognized as one of the top programs in the country. In fact, the residency program was recently ranked number 1 out of 197 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.

The goal of our residency program is to produce quality radiologists well trained in all aspects of diagnostic radiology.

Upon finishing their training, they will be able to comfortably pursue a career in either an academic or private practice environment. All six 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 four out of the six have chosen to stay on at Jefferson for additional fellowship training. Our Program Director Levon Nazarian, M.D. completed his first year in the position

and maintained the high standards set by former Program Director Lisa Tartaglino, M.D.

Residency Selection: This year we received approximately 550 applications for seven 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. Thanks to Program Director Levon Nazarian, M.D. for these continued outstanding results.

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. Dayna Levin, M.D. who graduated this year was nominated by our department to receive the RSNA Research and Education Foundation Roentgen Resident Research Award which was presented to her at graduation. She was nominated for her paper, Levin D, et al. Sonographic detection of lateral epicondylitis of the elbow. *Radiology* 2005; 237: 230-234. Another resident, Dr. Luis Beltran was selected to participate 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. Academy Imaging provides a brief two month exposure to the world of private practice with selected faculty while participating in conventional radiography, mammography 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. Diane Bergin.

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 will enter the program in July, 2006, and we have already filled our positions for 2007 and 2008.

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 this 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. In the most recent NRMP match, all of these positions were filled by candidates ranked within the top 10 of the match list from a pool of over one hundred applicants to our programs.

The **Musculoskeletal Fellowship program**, under the direction of Adam Zoga, M.D., graduated four strong fellows including Imran Omar, a former Jefferson resident who accepted an academic position at Northwestern University Medical Center, Eoin Kavanagh, who accepted an academic musculoskeletal position at the University of Pittsburgh Medical Center, William (Jamie) Malone, who accepted a teaching position at

Geisinger Medical Center where he will ultimately head their musculoskeletal section, and George Koulouris, who will return to private practice in his home Australia, but has agreed to return to academics at the Hospital for Joint Diseases in 2007. This was an extremely academically productive group, with multiple subspecialty scientific and review articles accepted to peer reviewed journals, and many more submissions in review or revision.

The musculoskeletal fellowship positions remain highly coveted as we received more than 40 applications for the 2007-2008 positions, and received acceptances from our top two choices, Donald Zajick from Boston Medical Center and Conor Short from Dublin, Ireland.

The **Neuroradiology/ENT Radiology Fellowship**, under the direction of David Friedman, M.D., filled four positions for 2006-2007 through the NRMP match. The division continues to provide training in advanced CT and MR imaging and reconstruction techniques, including training in 3 Tesla MR imaging

The **Breast Imaging Fellowship**, under the direction of Anina 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. Dr. Tuckman continued to serve as the coordinator of this course and has done an outstanding job. 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/ ENT radiology, and ultrasound/CT/MRI. The radiology electives remain quite popular and were completed by 108 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 8 students in attendance this year.

The neuroradiology elective was completed by 9 senior medical students. Electives in cross-sectional imaging and CVIR were completed by 5 and 4 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 Gonslaves, 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 2005 with 85 attendees.

19th Annual Philip J. Hodes Lecture: In honor of Philip J. Hodes, M.D., the Nineteenth Annual Philip J. Hodes lecture was very successful. The guest speaker was R. Nick Bryan, M.D., Ph.D., Eugene P. Pendergrass Professor and Chair of Radiology, University of Pennsylvania School of Medicine. He gave an outstanding presentation titled "The Power of Imaging: The Dilemma of Radiology". The lecture was followed by the traditional reception of the Department of Radiology.

Radiology Grand Rounds and Radiology Research Conferences: Thirty weekly conferences were held during the 2005-2006 in Radiology, alternating between Grand Rounds and Radiology Research Conference. 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 imaging, ultrasound physics, sonomammography, 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.

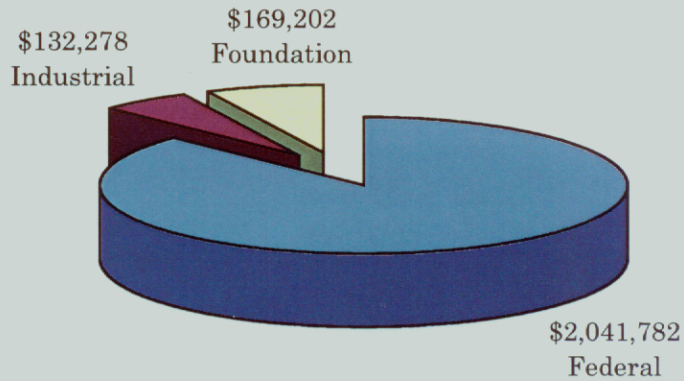
A grant awarded by the RSNA Research and Education Foundation, "Teaching the Teachers" initiative for Latin America,

continues to provide funding for the training of radiologists from the Caribbean, Central and South America at JUREI. Upon completion of the program these radiologists will return to their native countries to establish affiliated ultrasound education centers supported by educational materials and donated ultrasound equipment. A graduate of the program conducted three years ago for Africa has been recognized by RSNA for her outstanding work in founding a new JUREI-affiliated center in Nigeria. Dr. Kofoworola Oluwatoyin Soyebi, M.B. Ch.B was awarded one of only three honorary memberships in RSNA for 2006.

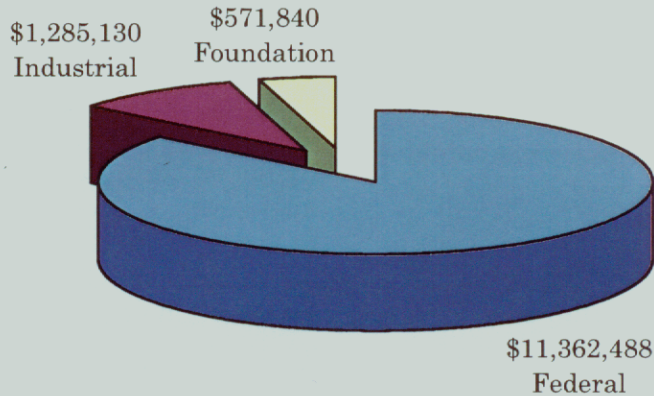
Cardiac CT Training Program: Our department began offering a new training program in cardiac CT directed by Ethan Halpern, M.D., which includes quarterly didactic courses in addition to weekly hands-on training sessions in coronary CT angiography. The quarterly courses are taught by Drs. Ethan Halpern, 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 each Thursday during 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

2005-2006 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 35 NIH or other federal grants active during the year, 6 more than the previous fiscal year, in addition to 4 foundation or medical society grants, and another 19 industrial grants. As a group, these grants brought in total current year funding of \$2,343,262, including \$1,693,057 in direct support and \$650,205 in indirect. This represents a 47% increase compared to my first year as chair 4 years ago. We had 252 publications in the medical literature (including journal articles, books and book chapters, and published

abstracts) compared with 193 the previous year. Dr. Dinesh Sharma was awarded the annual Judy Dubbs Memorial Research Award, given to the junior faculty member deemed to be the most productive in research.

The Jefferson Molecular and Biomedical Imaging Core Facility, under the direction of Mathew Thakur, Ph.D., continued to expand its role in pre-clinical research on campus providing state-of-the-art in vivo small animal imaging. The department was successful in recruiting Paul Acton, Ph.D., who brings great depth of knowledge of imaging physics and applications to the group. Departments of Cardiology, Neurology, Pathology, Radiation

Oncology, and the Farber Institute utilized the facility and gained the benefit of longitudinal functional imaging techniques. The group is currently developing several key technologies to improve molecular imaging, including adapting the microPET camera for SPECT imaging and developing a low cost method to image un-anaesthetized animals.

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. Flemming Forsberg completed a pilot study of subharmonic imaging in women with breast lesions as part of a Department of Defense sponsored grant and will use the data to apply for funding for a full-scale clinical trial. His research into contrast enhanced monitoring of angiogenesis was awarded the Bronze prize at the World Federation for Ultrasound in Medicine and Biology meeting. 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, and Dr. Ju-Bin Liu continued to assess the utility of contrast enhanced

monitoring of prostate RF ablations on his NIH grant. The faculty also continued their advances in clinical research with Drs. Rick Feld and Ethan Halpern working on real-time elastography for imaging of thyroid and prostate lesions, respectively, Dr. Levon Nazarian continuing his work into musculoskeletal ultrasound, and Dr. Laurence Needleman studying a new nonlinear imaging technique for improved depiction of liver lesions.

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. A study to examine the efficacy of contralateral breast MRI in women recently diagnosed with breast cancer was completed and we await the final results from the American College of Radiology Imaging Network statistical group. Dr. Merritt completed enrollment on a trial of the utilization of screening breast ultrasound in a high risk population and continues to follow-up on the patients. Dr. Annina Wilkes completed enrollment on an industrially funded study to evaluate breast cancer diagnosis with the use of optical imaging, a novel technology which has received a great deal of attention.

In **nuclear medicine**, Dr. Thakur continues his study on the development of probes for imaging oncogene expression, including the study of technetium-99m PNA peptides for pancreatic cancer and his NIH-funded work to examine Cu-64 PET imaging of breast cancer. Drs. Intenzo and Kim published an article evaluating the new methods of thyroid cancer surveillance, both imaging and non-imaging, as well as the role of FDG-PET, and new therapeutic strategies.

In **body MRI**, Dr. Mitchell completed his NIH grant to study the use of MR to

evaluate patients with Hepatitis C. Additionally, Dr. Mitchell serves as chair of the Gynecologic Disease Site Committee of the American College of Radiology Imaging Network cooperative group. The division has been involved in studies with GI and hematology, including a new study for MRI noninvasive measurement of hepatic iron.

In neuroradiology/ head and neck radiology, Dr. Gorniak has been actively investigating the development of a quantitative MR volumetric method for predicting verbal memory change after left temporal lobectomy in right-handed patients, as well as the development of an imaging method to localize individual electrodes with respect to specific gyri. Dr. Friedman studied improved prognosis from non-enhancing or well-circumscribed anaplastic astrocytomas. Dr. Flanders received 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, and Zhang continued their investigation into coronary CT angiography to diagnose coronary disease and for surgical planning. A study to investigate CT perfusion imaging of the prostate for detection of prostate cancer was conducted by Drs. Halpern and Ives, while Dr. Lev-Toaff continued to recruit patients for the evaluation of CT colonography.

In cardiovascular interventional radiology division, Dr. Gonsalves initiated a multicenter NIH-funded study to examine patient outcomes in renal artery stenting with medical therapy compared to medical therapy alone. Additionally, Dr. Sullivan began a multicenter trial evaluating a new technique for thrombolysis.

Our **musculoskeletal group** continued to be productive in their research publications, describing imaging findings in indirect MR arthrography, osteomyelitis, neuropathic disease of the foot, posterior tibial tendon tears, and subscapularis tendon tears to name a few. Drs. Morrison and Zoga continued their investigation of a new weight-bearing device to evaluate static and dynamic images of lower extremity joints and plan on expanding this work with the addition of a new device at one of our satellite sites.

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 nine abstract published and 11 papers published. We plan to continue the expansion of our research efforts by examining outcomes as well as utilization and utilizing more comprehensive administrative datasets, with the hopes of securing additional grant funding. There is no doubt that this work will further enhance the national reputation of our department. In recognition of Dr. David Levin's national leadership in this area, he received the 2006 Gold Medal of the American College of Radiology.

RESEARCH WEAKNESSES

Although we manage to exceed our previous research success, proper research infrastructure (funds and personnel) is necessary to be successful in research today. Continued governmental budgetary restraints makes obtaining federal support increasingly difficult, with the majority of projects requiring two

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 10 pending grant proposals, which are listed in Table 2 of the appendix. There are 6 pending

proposals for federal grants and/or subcontracts and 4 proposals to foundations and industry. The proposals cover a broad spectrum of radiology research. There are also over 12 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 six 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, evaluation of new imaging technologies with outcome and cost-benefit analyses are areas of radiology research that need to be explored. Additionally, with our state-of-the-art multi-slice CT systems and MR units, there may be an opportunity for our department to serve as a center for education for Philips, with our faculty training physicians and technologists on the latest imaging technique, such as cardiac CT, virtual colonoscopy, and proper use of novel MR techniques. Additionally, our strategic

partnership with Philips Medical Systems has been beneficial to departmental research and we plan on developing this relationship further.

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. Several of our faculty collaborated with members of gastroenterology. In CT, Dr. Needleman developed a pancreatic 3D protocol to meet the needs of Dr. Yeo and the other hepatobiliary surgeons. Dr. Lev-Toaff has been active in research and clinical activities with the Division of Gastroenterology utilizing virtual colonoscopy. Additionally, Dr. Mitchell of body MR collaborated extensively in the area of hepatology, participating with them in development of a new liver-slicing device to assure precise MRI-pathology correlation of explanted livers. Drs. Halpern, Mitchell, and Zhang have been working with cardiology in evaluating cardiac CT angiography and MR angiography and Dr. Halpern has also been collaborating with the Emergency Department to plan the deployment of the Emergency Department 64-slice CT and creating a protocol for acute chest pain with the ED. Neuroradiologists continue to collaborate with researchers in the Departments of Neurosurgery, Orthopedic Surgery, Neurology, and the Farber Institute. Our physicians in CVIR initiated a multidisciplinary clinic in the

Bodine Cancer Center between the CVIR division and the melanoma medical oncology group in evaluating patients with metastatic uveal melanoma. 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 we are excited about the upcoming Jefferson Breast Care Center and look forward to developing 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. Mitchell continued to collaborate with the MR group at Mt. Sinai Hospital in New York to evaluate high risk individuals for atherosclerotic plaques. The ultrasound and nuclear medicine physics groups collaborated on several projects with investigators at the University of Pennsylvania. 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

Implement Enterprise-Wide New Picture Archiving and

Communications System (PACS).

PACS has rapidly become the critical backbone of a progressive radiology department and hospital. After much deliberation, we have chosen a new PACS vendor to replace our old system, which served us well for 10 years, but is now badly outdated. Installing and commencing operation of a new enterprise-wide PACS is a huge undertaking, which involves not only training everyone in the department to use it, but also referring physicians and other hospital personnel as well. It also provides an opportunity to redesign department workflow among our radiologists and technologists. Also, it is necessary to redesign the roles of a number of nonphysician personnel within the department. For example, film

librarians will no longer have to handle film, but they will need to learn how to store, retrieve and otherwise handle the all digital images on the PACS. The goal is to enable a seamless, integrated and largely paperless workflow linking patients, referring physicians, radiologists, technologists, clerks and administrative personnel in a responsive and efficient manner.

New Reading Room on 3 Gibbon.

During the past year, major renovations have been made to the department, as described elsewhere in this report. One project still in progress is the new reading room on 3 Gibbon. This will centralize all imaging interpretation in chest, musculoskeletal, body CT, neuroradiology and body MRI. It should make our operation more efficient, enable cross consultation between our different radiology subspecialists and allow clinicians to come to one central area where consulting radiologists will always be available. We will be implementing the design and workflow of this large new workspace during the coming year.

Expansion of CT Services. A new 64-multidetector CT scanner is planned for installation in the ED. This will be followed by an upgrade of our 40 detector row scanner on 3 Gibbon to 64 MDCT. These additions will greatly augment our current CT capacity. Some of the most dramatic recent developments in radiology have resulted from this new CT technology. Among them are coronary CT angiography (CCTA) and CT colonography. We already have a robust CCTA program and will open up more slots to attempt to meet the progressively increasing demand for this service. Our CT colonography program also maturing and we anticipate significant growth there also. As part of all of this, we have secured a grant of two new workstations from Philips Medical Systems and will be

incorporating them into a new 3D image processing lab on 3 Gibbon.

New Breast Imaging Center. A beautiful new breast imaging center is under construction on the 4th floor of the Medical Office Building (MOB). We hope to see it open during the coming year. The center will contain new all-digital mammography units, which will enhance the quality of our mammograms, particularly in younger women or women with dense breasts. This will eventually become a facility performing primarily diagnostic mammography. Once this opens, new construction will start to convert the current breast imaging center in the MOB basement to an all screening mammography facility, which will house not only more digital mammography units, but also a dedicated breast MRI unit. By the time all of this is completed, we anticipate that the Jefferson Breast Imaging Facility and the larger Jefferson Breast Care Center, in which it will be incorporated, will be one of the nicest in the country. We look to this to strengthen the ties between our department and the Jefferson Kimmel Cancer Center. An important related goal is the recruitment of a recognized academic breast imager to serve as director of this center. Our efforts to recruit such an individual have been so far unsuccessful. Academic breast imagers are in extremely short supply, for a variety of reasons, and we will need support from the institution if we are to be able to accomplish this.

Expansion of Research Funding. Our departmental basic scientists are facing funding challenges not unlike PhD scientists across the board. Our goal is to continue relentless efforts in securing extramural grants. We are also looking to expand our academic-industry partnerships, particularly with Philips Medical Systems. I am pleased that Philips has placed an MRI scientist in our

department, provided us with the additional workstations for educational purposes, and provided some additional resources for MR research. We are now discussing with them, the possibility of expanding our research collaboration in CT and molecular imaging.

Expansion at Langhorne. We have been interpreting MR scans for Jefferson MRI in Langhorne for 15 years. This facility has changed hands over the years and is now owned by InSight Health Corporation. InSight has recently expanded this center into a multimodality imaging center, including CT, ultrasound, x-ray, mammography and soon a mobile PET scanner. There is considerable competition in that area and it will be a challenge to build up the practice, help with the marketing, provide quality clinical service, and plan for onsite coverage by our faculty.

Improve Referring Physicians and Patient Satisfaction. Pay for performance is a coming movement in all of medicine. The American College of Radiology is developing various metrics that will be used to measure performance of radiology departments. One of the primary metrics that is sure to be chosen is patient and referring physician satisfaction. We are already conducting surveys of patient satisfaction; we will continue to do this and improve our response to any complaints. We also intend to institute regular surveys of our referral base – JUP members, volunteers and nonJefferson physicians. This will allow us to not only improve our quality, but will hopefully also create more brand loyalty among our referral sources.

Five-Year Strategic Plan. JUP has requested that all departments develop a five-year strategic plan and I feel this is a good idea. This plan will cover such areas as ways to increase patient volume,

develop new clinical programs, improve faculty productivity, develop quality initiatives, retain good faculty and plan new approaches to marketing. In addition, we will be asked to identify areas where we need institutional support. I intend to involve many of our faculty in the strategic planning process.

Expand RadConsult. We have recently begun a new entrepreneurial venture working in conjunction with HealthHelp, a Houston-based radiology benefits management (RBM) firm. We provide telephone consultations with referring physicians in the midWest and South who order CT, MR and PET scans on Humana patients. Many of the major healthcare insurance carriers are instituting pre-authorization programs using RBM's to manage those programs. We are currently averaging 10-15 calls per day and hope to expand that number. Not all of our physicians are currently participating; those who are already doing it report that it is an interesting experience that is helpful to referring physicians and patients, and that it even has some teaching and research potential in addition, of course, to generating new revenues for the department.

Philanthropy. It is difficult for radiologists to attract large donations to support research and teaching, because they are not usually involved in the continuous long-term care of patients. However, we have developed several actual or potential sources. One is the Atlantic Medical Imaging Group of South Jersey, which includes several radiologists who trained at Jefferson and with whom we now have a research and teaching relationship in coronary CT angiography. They have generously agreed to fund a fellowship position in cardiothoracic imaging. Also, a potential large donor has been identified, who is interested in supporting radiology

research using a little known legal vehicle, a Medical Research Organization or MRO. We intend to pursue this and other possible philanthropic opportunities. A glaring shortcoming in the profile of our department is a lack of an endowed chair or a professorship. It is my hope that the Institutional Advancement Office for Development will work closely with us to identify potential donors.

ISSUES FOR THE COLLEGE, UNIVERSITY AND HOSPITAL

Breast Imaging Center and Support. Jefferson has made a major commitment in building a beautiful new breast care center where patients would receive comprehensive, coordinated and convenient care. One of the most important components of the breast care center is a new and enlarged breast imaging center. It will house five digital mammography units for diagnostic mammography and two more in a separate screening mammography center. The screening center will also have a dedicated breast MRI scanner. This new breast imaging center will be one of the finest in the country and will be an important source of intake of new patients for Jefferson. We appreciate the hospital's commitment to build such a top notch facility. However, success of such a center largely depends on manpower resources, both radiologists and technologists in breast imaging. The problem is that mammography/breast imaging is a loss leader for radiology departments. Additionally, there is a shortage of accomplished academic breast imagers who would qualify to head the breast imaging center and appropriate institutional resources need to be diverted to such recruitments. With our practice revenues dropping we simply cannot afford to continue to subsidize this program from clinical revenues generated

by other divisions. I have been requesting that this issue be resolved, but without success.

Marketing. I am concerned by the hospital's continued unwillingness to market radiology services. MMR, the company that operates an open MRI at 909 Walnut Street, has a full-time marketing representative for a facility that does only about 1% of our entire practice. JCCI, a joint venture between our department, the hospital and OIA, does only 7% of our entire practice and has two full-time marketing representatives. Every one of the off campus imaging centers with which we have reading contracts has marketing people. Yet the hospital has not bought into the concept of marketing our practice of over 285,000 studies on campus per year. In this era of intense competition and decreasing utilization due to initiatives such as preauthorization by payers, it is imperative to try and capture more market share by an aggressive marketing program. Our department stands ready to participate actively in this by surveying referring physicians, producing videos, developing marketing brochure content, improving our website, etc. Imaging is a large profit center for the hospital and I hope to be able to convince the administration that to maintain the edge in outpatient radiology in the face of increasing competition, a vigorous marketing program is essential.

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. The concept of MH radiology serving as an integral community division of TJUH Radiology has been discussed extensively this past year; an agreement had been put together by the Methodist Hospital administration, but was dropped because of 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. Discussion will be held in the near future about what ancillary services to provide there. This would need 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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244. Wiggins R, Flanders AE, Phillips CD: Diagnostic imaging as a teaching tool. *Proceedings of Experimental Biology 2006*, San Francisco, CA, April 2006.

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246. Wintermark M, Pedraza S, Goldsher D, Velthuis BK, Anderson JC, Flanders AE et al: Which arterial input function is correct for perfusion-CT of acute stroke patients: The one on the ischemic side or a "non-ischemic" one? *Proceedings of the 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America*, Chicago, IL, November-December 2005.
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248. Xiaobing T, Aruva M, Zhang K, Thakur M, Wickstrom E: In vivo PET imaging of CCND1 mRNA in human ER+ breast cancer xenografts with Cu-64-DOTA-PNA-peptide chimeras. *Proceedings of the 1st Meeting of the Oligonucleotide Therapeutics Society*, New York, NY, September 2005.
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250. Zhang S, Halpern EJ, Wansaicheong G, Levin DC: Computation of left ventricular ejection fraction with gated cardiac CT angiography. *AJR* 2006; 186:A46.
251. Zoga AC, Elias I, Bergin D, Morrison WB: Simulated weight-bearing MRI of the knee for the evaluation of meniscal pathology. *Proceedings of the Society of Skeletal Radiology Annual Meeting*, Tucson, AZ, March 2006.
252. Zoga AC, Morrison WB, Mamelak JD, Culp RW: Subtendinous bone marrow at the extensor carpi ulnaris as a harbinger of triangular fibrocartilage tear. *Proceedings of the 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America*, Chicago, IL, November-December 2005.

FORMAL SCIENTIFIC PRESENTATIONS

PAUL ACTON, PH.D.

- August 7-9, 2005 Annual NIBIB Grantee Meeting, Bethesda, MD
- "Molecular imaging with multipinhole SPECT"
- October 26-30, 2005 IEEE Nuclear Science Symposium and Medical Imaging Conference, Las Croabas, Puerto Rico
- "Determining the lesion detectability index along the axial and radial direction for multipinhole SPECT" (poster)
 - "A novel method for the estimation of infarct size in a reperfused rat model for pinhole SPECT" (poster)
- March 7-11, 2006 2nd Biennial Conference on Small Animal SPECT, Tucson, AZ
- "A multipinhole collimator insert for small animal SPECT imaging on PET cameras"
- March 25-29, 2006 Academy of Molecular Imaging Annual Conference, Orlando, FL
- "PET imaging of unanesthetized animals using a radioactive fiducial marker-based tracking system"
 - "Computed tomography-defined object boundary for reconstructing multiple pinhole single photon emission computed tomography images" (poster)
 - "Novel configurations of multiple pinholes for a stationary ring-detector-based pinhole single photon emission computed tomography" (poster)
 - "Simplified quantification of small animal ¹⁸FDG PET studies using a standard arterial input function" (poster)
 - "Small animal dual modality imaging using a multi-pinhole SPECT collimator insert on a PET camera" (poster)
 - "Statistical parametric mapping in small animal brain activation studies" (poster)
- June 3-7, 2006 53rd Annual Meeting of the Society of Nuclear Medicine, San Diego, CA
- "Analytical derivation of the point spread function for focusing pinhole collimator" (poster)

OKSANA H. BALTAROWICH, M.D.

- September 7-11, 2005 A Practical Approach to Ultrasound in Obstetrics & Gynecology, sponsored by Minnesota Perinatal Physicians, Allina Hospital & Clinics, Minneapolis, MN
- "How to avoid pitfalls in transvaginal sonography of the pelvis"
 - "Sonographic findings in ovarian torsion"
 - "Ultrasound evaluation of ectopic pregnancy"
 - "Ultrasound evaluation of myometrial disorders"

- September 20, 2005 Department of Radiology Grand Rounds, Kyiv Medical University, Kyiv, Ukraine
- "Sonography of right lower quadrant pain"
- September 27, 2005 Department of Radiology Grand Rounds, Lviv (Danylo Halytsky) Medical University, Lviv, Ukraine
- "Sonography of right lower quadrant pain"
- November 2-6, 2005 A Practical Approach to Ultrasound in Obstetrics & Gynecology, sponsored by Minnesota Perinatal Physicians, Allina Hospital & Clinics, Minneapolis, MN
- "How to avoid pitfalls in transvaginal sonography of the pelvis"
 - "Ultrasound evaluation of ectopic pregnancy"
 - "Ultrasound evaluation of myometrial disorders"
- March 24-26, 2006 51st Annual Convention of the American Institute of Ultrasound in Medicine, Washington, DC
- "Evaluation of the effectiveness of an ultrasound physician training program"
- April 26-29, 2006 25th Annual Meeting of the Asociacion Mexicana de Ultrasound en Medicina and Colegio de Medicos Ultrasonografistas, Ixtapa, Mexico
- "Advances in ultrasound"
 - "How to avoid pitfalls in transvaginal sonography of the pelvis"
- May 17-21, 2006 A Practical Approach to Ultrasound in Obstetrics & Gynecology, sponsored by Minnesota Perinatal Physicians, Allina Hospital & Clinics, Minneapolis, MN
- "How to avoid pitfalls in transvaginal sonography of the pelvis"
 - "Ultrasound evaluation of ectopic pregnancy"
 - "Ultrasound evaluation of myometrial disorders"
 - "Ultrasound evaluation of the first trimester pregnancy"
- May 23-26, 2006 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Sonographic evaluation of RLQ pain"
 - "Sonography of ectopic pregnancy"

DIANE BERGIN, M.D.

- October 15-16, 2005 Jefferson Lower Extremity Advanced Imaging Symposium, Thomas Jefferson University, Philadelphia, PA
- "MRI the knee extensor mechanism"
- January 3-8, 2006 Practical Musculoskeletal and Body MRI: A Problem Solving Approach, Grand Cayman Island
- "Imaging the female pelvis: When is MRI the imaging modality of choice?"
 - "MRI of the acute abdomen and pelvis"
 - "MRI of the retroperitoneum: The good, bad and the ugly"
 - "Optimization of body MRI protocols"
 - Interesting body MRI cases (workshop)

- April 30-
May 5, 2006
- American Roentgen Ray Society 106th Annual Meeting, Vancouver, BC
- “Adenomyosis: Sonographic characteristics using MRI as the gold standard”
 - “Imaging the female pelvis: Recommendation for MRI following initial pelvic sonogram”

DAVID J. ESCHELMAN, M.D.

- March 30-
April 4, 2006
- 31st Annual Scientific Meeting of the Society of Interventional Radiology, Toronto, ON
- Venous Access Workshop

RICK I. FELD, M.D.

- October 27-29, 2005
- Society of Radiologists in Ultrasound, Postgraduate Educational Course, Chicago, IL
- “How to handle the unusual request in interventional US”

ADAM E. FLANDERS, M.D.

- October 27-30, 2005
- American Academy of Physical Medicine and Rehabilitation Annual Assembly, Philadelphia, PA
- “Update on clinical imaging of spinal cord injury”
- November 27-
December 2, 2005
- 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “How to author MIRC teaching files” (refresher course)
 - “How to get radiologic images into your personal computer” (refresher course)
 - “How your radiology practice can ‘work the web’” (refresher course)
 - “Intermediate PowerPoint” (refresher course)
 - “Introduction to PowerPoint presentations: Advanced skills” (refresher course)
 - “Introduction to PowerPoint presentations: Basic skills” (refresher course)
 - “Cranial nerves, neurography” (co-moderator)
- February 22-26, 2006
- American Society of Spine Radiology Annual Symposium, Las Vegas, NV
- “Update on clinical imaging of spinal cord injury”
- March 30-31, 2006
- Annual Cerebrovascular Update 2006: A New Era for Stroke Management, Philadelphia, PA
- “Update on imaging of neurovascular disease”
- April 1-5, 2006
- American Association of Anatomists Annual Meeting, Experimental Biology 2006, San Francisco, CA
- “Mobile education in medical imaging”

April 27-30, 2006 Society for Computed Applications in Radiology, Austin, TX
• “How (not) to give a talk”

April 29-
May 5, 2006 NER Foundation Symposium 2006 & American Society of
Neuroradiology 44th Annual Meeting, San Diego, CA
• “Advanced imaging state of the art II: Spine”
• ELC Workshop

FLEMMING FORSBERG, PH.D.

August 22, 2005 Visiting Professor. Cardiovascular Imaging Center, University of
Virginia School of Medicine, Charlottesville, VA
• “Subharmonic contrast microbubble signals – Where can they take
us?”

September 18-21, 2005 2005 IEEE International Ultrasonics Symposium, Rotterdam, The
Netherlands
• “Comparing contrast-enhanced US to markers of angiogenesis in a
murine glioma model”
• “Contrast enhanced subharmonic breast imaging: Work in
progress”
• “Evaluation of shift estimation techniques for spectral-based
elastography” (poster)

October 16-19, 2005 Fourth International Conference on the Ultrasonic Measurement and
Imaging of Tissue Elasticity, Austin, TX
• “Comparative assessment of spectral and temporal adaptive
elastographic techniques”

November 27-
December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological
Society of North America, Chicago, IL
• “Comparing contrast-enhanced US measures of angiogenesis in a
murine glioma model”
• “Contrast enhanced TRUS and microvessel density correlates in
prostate cancer”
• “In vivo elastographic investigation of ethanol induced hepatic
lesions”
• “Surfactant-stabilized, nano-scale contrast agent for US Imaging”
• “Using a novel semi-automated 4D Doppler system to assess
carotid stenoses”

March 24-26, 2006 51st Annual Convention of the American Institute of Ultrasound in
Medicine, Washington, DC
• “Contrast-enhanced ultrasound-guided radio frequency ablation of
canine prostates with and without urethral and neurovascular
cooling”
• “Subharmonic ultrasound contrast imaging of breast lesions:
Initial results”
• “Vascular volume acquisitions”
• “Volume flow measurements in dialysis grafts with a novel semi-
automated 4D Doppler system”

- March 31-
April 2, 2006 Current Practice of Vascular Ultrasound, Institute for Advanced Medical Education, Las Vegas, NV
- "Principles of Doppler ultrasound"
- May 6, 2006 Michigan Ultrasound Society Spring Meeting, Grand Rapids, MI
- "Advances in ultrasound imaging: Marketing or reality?"
 - "Imaging angiogenesis with ultrasound"
- May 12, 2006 Drexel University Biomedical Seminar, Philadelphia, PA
- "Dr. Reid's Doppler legacy: Ultrasound molecular imaging using contrast agents"
- May 23-26, 2006 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "MIP composite imaging for monitoring angiogenesis"
 - "Subharmonic breast imaging: Work in progress"
- June 6, 2006 Visiting Professor, Siemens Medical Solutions, Mountain View, CA
- "Functional imaging contrast research at TJU"
 - "Research at TJU: An overview"

ERIC GINGOLD, PH.D.

- July 24-28, 2005 47th Annual Meeting of the American Association of Physicists in Medicine, Seattle, WA
- "Comparison of radiation dose using full field digital mammography and conventional screen-film mammography in a screening clinic"
- November 27-
December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Methodology for evaluating temporal and spatial resolution in cardiac CT"

BARRY B. GOLDBERG, M.D.

- September 16-18, 2005 The Eighth National Ultrasound Symposium of the Chinese Medical Association, Chengdu, China
- "Medical ultrasound: Past, present and future"
 - "New advances in ultrasound imaging"
- September 25-29, 2005 15th World Congress on Ultrasound in Obstetrics and Gynecology, Vancouver, BC
- "Advances in ultrasound breast imaging"
 - "New techniques and technologies in gynecology" (chair)
- October 27-29, 2005 Society of Radiologists in Ultrasound, Postgraduate Educational Course, Chicago, IL
- "Future direction in ultrasound lymphatic imaging"

- November 27-
December 2, 2005
- 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Detection of sentinel lymph nodes in swine with melanoma tumors: Comparison of contrast-enhanced US, nuclear medicine, and blue dye with surgical dissection"
 - "Meeting the needs of radiologic education in developing countries" (moderator)
- December 12, 2005
- David Cosgrove Retirement Meeting, London, England
- "Educational programs and teaching in ultrasound"
- December 13, 2005
- British Medical Ultrasound Society 37th Annual Scientific Meeting and Exhibition, Manchester, England
- "Ultrasound education around the globe"
- March 8, 2006
- Visiting Professor, Department of Radiology, Hahnemann Hospital, Philadelphia, Pennsylvania
- "Advances in ultrasound imaging"
- March 24-26, 2006
- 51st Annual Convention of the American Institute of Ultrasound in Medicine, Washington, DC
- "Evaluation of the effectiveness of an ultrasound physician training program"
- April 20, 2006
- Visiting Professor, St. Barnabas Medical Center, Livingston, NJ
- "Advances in 3-D and 4-D ultrasound imaging"
 - "Advances in contrast-enhanced ultrasound imaging"
- May 23-26, 2006
- The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Lymphosonography for sentinel lymph node identification and assessment of nodal status"
 - "Update on the AIUM task force and the FDA approval of ultrasound contrast agents"
- May 26-28, 2006
- 79th Annual Meeting of the Japan Society of Ultrasonics in Medicine (JSUM), Osaka, Japan
- "Medical ultrasound: Where have we been and where are we going?" (keynote lecture)
- May 28-
June 1, 2006
- 11th World Congress in Ultrasound, World Federation for Ultrasound in Medicine and Biology (WFUMB), Seoul, Korea
- Congress lecture
- "Better world with ultrasound"
 - "Detection of sentinel lymph nodes in swine with melanoma tumors: Comparison of contrast-enhanced US, nuclear medicine and blue dye with surgical dissection"
 - "Advances in 3D/4D ultrasound" (moderator)

- June 12-13, 2006 Experimental Imaging of Infectious Disease, sponsored by the Biodefense Clinical Research Branch and Diagnostic Radiology Department, NIH, Bethesda, MD
- “The potential usefulness of ultrasound in the diagnosis and treatment of infectious disease”

ANGELA G. GOPEZ, M.D.

- October 2-7, 2005 Orthopedic Topics on the Eastern Seaboard, PAs in Orthopedic Surgery, Norfolk, VA
- “MRI of the shoulder – Imaging pearls”
- October 15-16, 2005 Jefferson Lower Extremity Imaging Symposium, Thomas Jefferson University, Philadelphia, PA
- “MRI of the foot”
 - “MRI of myofascial injuries”

ETHAN J. HALPERN, M.D.

- September 28, 2005 Department of Radiology Grand Rounds, Bryn Mawr Hospital, Bryn Mawr, PA
- “Pitfalls of coronary CT angiography”
- October 27-29, 2005 Image-Guided, Minimally Invasive Diagnosis & Treatment of Prostate Cancer, Washington, DC
- “Recent advances in ultrasound imaging for prostate cancer detection”
- November 2, 2005 Department of Radiology Grand Rounds, Methodist Hospital, Philadelphia, PA
- “Clinical applications of coronary CT angiography”
- November 14, 2005 Department of Radiology Grand Rounds, Graduate Hospital, Philadelphia, PA
- “Continuing improvements in CT coronary angiography”
- November 27-
December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “Assessment of pulmonary venous anatomy during coronary CT angiography (CTA)”
 - “Targeted biopsy of the prostate: Utility of gray scale, color Doppler, and elastography for the detection of prostate cancer”
 - “Ultrasound imaging characteristics of intrascrotal masses”
- December 14, 2005 Department of Radiology Grand Rounds, Einstein Hospital, Philadelphia, PA
- “Update on coronary CT angiography”

- April 28, 2006 Annual Meeting American College of Cardiology Pennsylvania Chapter, Harrisburg, PA
- "Cardiac CT and CT angiography: Techniques and clinical applications"

CHARLES M. INTENZO, M.D.

- November 27-
December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Discordant I-131 scanning and FDG-PET in metastatic insular cell thyroid cancer"
 - "Does thyroid stunning affect patient outcome"
 - "Provider distribution changes in therapeutic radioiodine procedures performed by radiologists and nonradiologists in the USA: The negative impact of new NRC regulations upon radiologists"
- June 3-7, 2006 53rd Annual Meeting of the Society of Nuclear Medicine, San Diego, CA
- "The thymus gland: The great mimicker of anterior mediastinal adenopathy on I-131 whole body scans"

DAVID KARASICK, M.D.

- October 15-16, 2005 Jefferson Lower Extremity Advanced Imaging Symposium, Thomas Jefferson University, Philadelphia, PA
- "Arthropathies: Heel to toe"
 - "Imaging characteristics of bone tumors"
- December 5, 2005 Department of Radiology Grand Rounds, Rhode Island Hospital, Brown Medical School, Rhode Island, CT
- "Imaging of spinal tumors"
 - Complications of spinal fusion

STEPHEN KARASICK, M.D.

- May 8, 2006 Novartis Center of Excellence Program, Novartis Pharmaceuticals, Philadelphia, PA
- "Introduction to IBS"

SUNG M. KIM, M.D.

- November 27-
December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Determining the likelihood of malignancy by using dual-time point FDG PET imaging: ROC analysis"
 - "Predicting iodine-not concentrating thyroid cancer: Understanding relationship between serum thyroglobulin level and % iodine uptake"

- "Is it necessary to perform a diagnostic whole body iodine scan after immediate total thyroidectomy?"
- "FDG-PET evaluation of pulmonary parenchymal involvement and nodal spread pattern in the squamous cell carcinoma of the head and neck"
- "Is the incidence of synchronous lung malignancy higher in squamous cell carcinoma than other primary head and neck carcinomas?"

June 3-7, 2006

- 53rd Annual Meeting of the Society of Nuclear Medicine, San Diego, CA
- "Dual-time point imaging: Improving predictive value of determining malignancy from benign"

SONG LAI, PH.D.

September 1-4, 2005

- 27th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Shanghai, China
- "Analysis of 'scanner frequency' noise in fMRI time series" (poster)

November 27-
December 2, 2005

- 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Automatic versus physician-selected arterial input functions for perfusion MRI"
 - "fMRI hemodynamic response onset time is cortex- and subject-dependent: implication to optimization of fMRI activation signal detection and paradigm design"

May 6-12, 2006

- 14th Scientific Meeting & Exhibition, International Society for Magnetic Resonance in Medicine, Seattle, WA
- "Mutual information estimation using k-space data: an application for eddy-current distortion correction in diffusion tensor imaging"
 - "MediCAD: An integrated visualization system for DTI and fMRI fusion with anatomical MRI for presurgical planning" (poster)

May 10, 2006

- 6th Annual Susceptibility Weighted Imaging (SWI) Meeting, Seattle, WA
- "Making SENSE of SWI at 3T"

June 11-15, 2006

- 12th Annual Meeting of the Organization for Human Brain Mapping, Florence, Italy
- "A multiparametric study using fMRI and DTI on a multiple sclerosis patient" (poster)

DAVID C. LEVIN, M.D.

July 29-31, 2005

- RSNA Business Strategies for Radiology Leaders, Chicago, IL
- "Turf issues: Part 1"
 - "Turf issues: Part 2"
 - "What to do about the radiology manpower crises"

- August 13, 2005 Annual Meeting, Virginia Chapter, American College of Radiology ,
Virginia Beach, VA
- "Current status of the battle against self-referral in imaging"
 - "Do radiologists have any future in cardiac imaging?"
- September 16, 2005 Visiting Professor, Department of Radiology, Beth Israel Deaconess
Medical Center-Harvard Medical School, Boston, MA
- "Self-referral and overutilization in imaging: What can be done about it?"
- September 24, 2005 Pennsylvania Radiological Society, Philadelphia, PA
- "Overutilization and the role of insurers and radiologists"
- October 19, 2005 Maryland Radiological Society, Baltimore, MD
- "Self-referral in diagnostic imaging: The problem it poses for our health care system and what can be done about it"
- October 19, 2005 Department of Radiology, University of Maryland Medical Center,
Baltimore, MD
- "How to understand aortic and anomalies using embryologic concepts"
 - "What every radiologist needs to know about coronary artery disease"
- October 20, 2005 Visiting Professor, Department of Radiology, Johns Hopkins Medical
Institutions, Baltimore, MD
- "Do radiologists have a role in cardiac imaging?"
 - "What every radiologist needs to know about coronary artery disease"
- October 27-28, 2005 Economics of Diagnostic Imaging 2005: National Symposium,
Arlington, VA
- "Cardiac imaging: The upcoming mother of all turf battles"
 - "The future of radiology: Pessimistic and optimistic views"
 - "The role of health plans in controlling costs and utilization"
 - "What to do about the radiology manpower crisis"
- November 15, 2005 American Heart Association, Dallas, TX.
- "Issues of self-referral in cardiac imaging"
- November 27-
December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological
Society of North America, Chicago, IL
- "Current practice patterns and recent trends in breast biopsy among radiologists and surgeons"
 - "Recent trends in utilization of vascular ultrasound by radiologists, surgeons, cardiologists, and other physicians"
 - "Self-referral in imaging: Scope of the problem and possible remedies"
 - "Turf issues: How to deal with them"
 - "What every radiologist needs to know about the coronary arteries"
- January 14, 2006 Coronary CTA for the Radiologist, Continuing Education Course,
Orlando, FL
- "Coronary artery anatomy, pathophysiology, and disease patterns - Part I"
 - "Coronary artery anatomy, pathophysiology, and disease patterns - Part II"

- March 12-16, 2006 Thoracic Imaging 2006, Society of Thoracic Radiology Annual Meeting, Orlando, FL
- “The role of radiologists in cardiac CT and MR” (Benjamin Felson Memorial Lecture)
- March 18-19, 2006 South Carolina Chapter, American College of Radiology, Charleston, SC
- “Should it be radiologists or cardiologists who do cardiac CT and MR?”
 - “What are the consequences of self-referral in imaging for our health care system?”
 - “What every radiologist should know about coronary artery disease”
- March 24, 2006 Next Generation Cardiovascular Imaging, Continuing Education Course, Boston, MA
- “How hospitals, radiologists, and cardiologists can interact to capitalize on the growth of cardiac imaging”
- May 2, 2006 Visiting Professor, Brigham and Women’s Hospital-Harvard Medical School, Boston, MA
- “Cardiac CT and MR – Should it be done by radiologists or cardiologists?”
 - “What every radiologist needs to know about the coronary arteries”
- May 2, 2006 Massachusetts Radiological Society, Residents and Fellows Section, Boston, MA
- “Self-referral in imaging – What is it doing to our health care system and what can be done about it?”
- May 3, 2006 Visiting Professor, Department of Radiology, Massachusetts General Hospital-Harvard Medical School, Boston, MA
- “Cardiac CT and MR – Should it be done by radiologists or cardiologists?”
 - “What every radiologist needs to know about the coronary arteries”
- May 8, 2006 Coronary CTA for the Radiologist, Continuing Education Course, Las Vegas, NV
- “Coronary artery anatomy and congenital anomalies”
 - “Who should do coronary CTA – Radiologists or cardiologists?”

ANNA S. LEV-TOAFF, M.D.

- September 16-18, 2005 Third International Ultrasound Symposium, Ankara, Turkey
- “3D Ultrasound in gynecology”
 - “3D Ultrasound in obstetrics”
 - “3D Ultrasound in obstetrics and gynecology” (hands-on workshop)
- September 25-29, 2005 15th World Congress on Ultrasound in Obstetrics and Gynecology, Vancouver, BC
- “Increasing detection of adenomyosis on ultrasound: Imaging characteristics on transvaginal ultrasound using MRI as the gold standard”

- November 27-
December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Problem solving in the female pelvis: Making a more specific diagnosis"
- February 10-12, 2006 Gynecology and Women's Imaging Ultrasound Course, University of Toronto, Toronto, ON
- "3-D ultrasound: A problem solving tool in pelvic imaging"
 - "Focus on images: Lessons from practice"
 - "Uterine fibroids: Mundane to challenging"
 - "Uterine sonography: Making a more specific diagnosis"
- March 24-26, 2006 51st Annual Convention of the American Institute of Ultrasound in Medicine, Washington, DC
- "Adenomyosis: ommon and uncommon manifestations on ultrasound and magnetic resonance imaging"
 - "Practical approaches to the clinical use of 3-dimensional ultrasound" (categorical course)
 - "Sonohysterography: Technical pointers and diagnostic tips" (meet the professor)
- March 31-
April 2, 2006 25th Annual Ultrasound Symposium, North Carolina Ultrasound Society, Myrtle Beach, SC
- "Sonohysterography"
 - "The postmenopausal pelvis"
- April 30-
5, 2006 American Roentgen Ray Society 106th Annual Meeting, Vancouver, May BC
- "Applications of 3D ultrasound in gynecologic imaging (categorical course)"
 - "Ultrasound evaluation of uterine anomalies" (categorical course)
- May 23-26, 2006 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Sonohysterography: Pictorial essay"
 - "Ultrasound of the uterus: How good can we get?"
- June 8-10, 2006 Advances in 3D/4D Ultrasound, Institute for Advanced Medical Education, Las Vegas, NV
- "Panel: Other applications of volume sonography in gynecology"
 - "Understanding uterine malformations"
 - "Volume sonography and sonohysterography"

JI-BIN LIU, M.D.

- August 7-9, 2005 Annual NIBIB Grantee Meeting, Bethesda, MD
- "Contrast-enhanced US for monitoring radiofrequency ablation of canine prostate"

- September 6, 2005 Visiting Professor, Inner Mongolia Ultrasound Institute of the Ordos Central Hospital, Ordos, China
- “Contrast-enhanced ultrasound imaging: Vascular and nonvascular”
- September 8, 2005 Visiting Professor, Shandong Medical Imaging Research Institute, Jinan, China
- “Interventional ultrasound: Diagnosis and therapy”
- September 16-18, 2005 The Eighth National Ultrasound Symposium of the Chinese Medical Association, Chengdu, China
- “Intraoperative ultrasound: Its role for renal tumor surgery”
- November 27-
December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- “Contrast US-guided RF ablation of canine prostates with and without urethral and neurovascular cooling” (poster)
- December 3-4, 2005 Interventional Ultrasound and Minimal Invasive Surgery Symposium, Third Hospital of Zhong-Shan University, Guangzhou, China
- “Advances in contrast ultrasound imaging and interventional ultrasound”
 - “Endoluminal ultrasound: Its applications in gastrointestinal tract”
 - “Interventional ultrasound: A review”
 - “Intraoperative ultrasound: Its role for renal tumor surgery”
 - “Laparoscopic ultrasound: Its role in laparoscopic surgery”
 - “New developments of US-guided radiofrequency ablation of tumors”
 - “Sonohysterography: Technical considerations and clinical uses”
- February 28, 2006 Drexel-Jefferson Academic Alliance for Biomedical Engineering, Philadelphia, PA
- “2D and 3D endoluminal ultrasound”
 - “Intraoperative ultrasound”
- March 24-26, 2006 51st Annual Convention of the American Institute of Ultrasound in Medicine, Washington, DC
- “Contrast-enhanced ultrasound-guided radiofrequency ablation of canine prostates with urethral and neurovascular cooling”
- May 23-26, 2006 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “Monitoring prostate ablation with contrast: An update”
- May 28-
June 1, 2006 11th World Congress in Ultrasound, World Federation for Ultrasound in Medicine and Biology (WFUMB), Seoul, Korea
- Congress lecture
- “Contrast-enhanced ultrasound for guiding RF ablation of prostates with urethral and neurovascular cooling”

CHRISTOPHER R.B. MERRITT, M.D.

- May 23-26, 2006 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Breast ultrasound: Physics"
 - "Breast ultrasound: BIRADS"
- November 14, 2005 Frontiers in Imaging Workshop, sponsored by the University of Pennsylvania, Philadelphia, PA
- "Frontiers in ultrasound"
- October 28-30, 2005 15th Annual Meeting of the Society of Radiologists in Ultrasound, Chicago, IL
- "Liver biopsy"
- September 16-18, 2005 Third International Ultrasound Symposium, Ankara, Turkey
- "Carotid ultrasound"
 - "New applications of ultrasound"
 - "Ultrasound of renal transplants"

DONALD G. MITCHELL, M.D.

- September 10-11, 2005 Advanced Body MRI, American College of Radiology Categorical Course, Santa Monica, CA
- "Body MRI technical overview"
 - "Focal lesions – Noncirrhotic"
 - "SAMS ARS session"
- October 22-23, 2005 Advanced Body MRI, American College of Radiology Categorical Course, Amelia Island, FL
- "Body MRI technical overview"
 - "Focal lesions – Noncirrhotic"
 - "SAMS ARS session"
- November 27-
December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Early invasive cervical cancer: Pretreatment determination of tumor size and uterine involvement by MRI and CT in the ACRIN-6651/GOG-183 intergroup study"
 - "Hepatic fibrosis in compensated Hepatitis C infection: MR imaging, MR spectroscopy, and pathologic staging"
 - "Liver MR imaging: Technique and advanced imaging" (refresher course)
- January 3-8, 2006 Practical Musculoskeletal and Body MRI: A Problem Solving Approach, Grand Cayman Island
- "Body MR from 0.3T to 3.0T"
 - "Complex pancreatic cystic masses"
 - "Nodules in the cirrhotic liver"
 - "Central scars in abdominal masses"

- February 24-25, 2006 Transatlantic Image-Based Brachytherapy Contouring Workshop for Cervix Cancer, Dulles, VA
- "Update on ACRIN cervical cancer trials"
- April 3-7, 2006 29th Annual Course of the Society of Computed Body Tomography and Magnetic Resonance, Phoenix, AZ
- "MRI of the liver"
 - "Nodules in cirrhotic liver"
 - "Techniques for abdominal MRI"
- May 6-12, 2006 14th Scientific Meeting & Exhibition, International Society for Magnetic Resonance in Medicine, Seattle, WA
- "The Hepatitis C patient: Early diagnosis of cirrhosis and HCC"

WILLIAM B. MORRISON, M.D.

- September 28-
October 1, 2005 International Skeletal Society 32nd Annual Refresher Course, Singapore
- "MRI of diabetic pedal infection" (debate)
- October 15-16, 2005 Jefferson Lower Extremity Advanced Imaging Symposium, Thomas Jefferson University, Philadelphia, PA
- "Infection, inflammatory disease and the diabetic extremity"
 - "MDCT applications in the lower extremity"
 - "Approach to MRI of the joints" (roundtable)
- November 27-
December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "MRI of the post-operative shoulder"
 - "Vertebroplasty in the U.S.: Utilization and prevalence of multiple and repeat procedures"
 - "MR imaging of the knee and shoulder: New concepts and controversies" (refresher course)
- January 3-8, 2006 Practical Musculoskeletal and Body MRI: A Problem Solving Approach, Grand Cayman Island
- "Direct vs indirect MR arthrography: How, when and why?"
 - "MR of musculoskeletal infection: Controversies and rules of thumb"
 - "MR of shoulder instability: Tips to tell labral variation from tear"
 - "MR of the ankle and foot: Simplifying the complex"
 - "MR of the elbow: A simplified approach"
 - "MRI of the knee menisci: Tricks and tips"
 - "The painful hip: Impingement, labral tear and DDx"
 - "Using MR artifacts to your advantage"
 - "How I approach an ankle/foot case" (workshop)
 - "How I approach a knee case" (workshop)
 - "How I approach a shoulder case" (workshop)
- March 5-8, 2006 Society of Skeletal Radiology Annual Meeting, Tucson, AZ
- "Use of a novel percutaneous biopsy localization device: Initial musculoskeletal experience"

- March 18, 2006 Surgery and Rehabilitation of the Hand Symposia, sponsored by The Hand Rehabilitation Foundation, Philadelphia, PA
- "MRI of the wrist"
 - "Diagnosis of chronic wrist pain" (panelist)
- March 28, 2006 Armed Forces Institute of Pathology, Washington, DC
- "MR imaging of the elbow"
- April 5-8, 2006 Imaging 2006: Hot Topics and Current Issues, New York Roentgen Society, New York, NY
- "Direct vs indirect MR arthrography"
- April 28-29, 2006 Pacific Northwest Radiological Society 60th Annual Meeting, Vancouver, BC
- "Imaging the hip labrum"
 - "Shoulder instability"
- April 30-
May 5, 2006 American Roentgen Ray Society 106th Annual Meeting, Vancouver, BC
- "Use of a novel percutaneous biopsy localization device: Initial musculoskeletal experience"
 - "Foot and ankle infection" (instructional course)
 - "MR imaging of the knee: A practical approach" (instructional course)
- May 6-12, 2006 14th Scientific Meeting & Exhibition, International Society for Magnetic Resonance in Medicine, Seattle, WA
- "MRI of the wrist and hand"
 - "New horizons in MSK MRI"
 - "Overuse injuries in elite athletes"
- May 31, 2006 Department of Orthopedic Surgery Grand Rounds, New England Baptist Hospital, Boston, MA
- "MRI of the hip: Dysplasia, impingement and labral tear"

LEVON N. NAZARIAN, M.D.

- May 23-26, 2006 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Musculoskeletal Ultrasound" (course director)
 - "Introduction to musculoskeletal ultrasound"
 - "Musculoskeletal US vs MRI: Which to choose?"
 - "Ultrasound of the elbow"
 - "Ultrasound of the foot and ankle"
 - "Ultrasound of soft tissue masses"
- April 30-
May 5, 2006 American Roentgen Ray Society 106th Annual Meeting, Vancouver, BC
- "Musculoskeletal disease seen during vascular testing"
 - "Ultrasound of common foot and ankle abnormalities"

- March 29, 2006 Department of Physical Medicine and Rehabilitation Grand Rounds, Temple University Hospital, Philadelphia, PA
- "Musculoskeletal ultrasound in psychiatry"
 - "Ultrasound guided musculoskeletal interventions"
- March 24-26, 2006 51st Annual Convention of the American Institute of Ultrasound in Medicine, Washington, DC
- "Ultrasound guided sports medicine therapy"
 - "Ultrasound applications in sports medicine"
 - "Interventional musculoskeletal ultrasound categorical course" (moderator)
- November 27-December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "US-guided percutaneous needle tenotomy for treatment of common extensor tendinosis in the elbow"
- November 6-8, 2005 15th Annual International Conference of Musculoskeletal Ultrasound Society, Orlando, FL
- "New technologies in musculoskeletal ultrasound"
 - "Ultrasound guided sports medicine therapy"
- October 27-30, 2005 American Academy of Physical Medicine and Rehabilitation Annual Assembly, Philadelphia, PA
- "Foot and ankle ultrasound: Techniques, pitfalls, and common conditions"
 - "Musculoskeletal ultrasound in physiatry: A broad sweep"
- October 15-16, 2005 Jefferson Lower Extremity Advanced Imaging Symposium, Thomas Jefferson University, Philadelphia, PA
- "Ultrasound applications in the lower extremity"
- September 23-25, 2005 34th Annual Diagnostic Ultrasound in Obstetrics and Gynecology and Abdomen, Johns Hopkins University School of Medicine, Baltimore MD
- "Ultrasound of the knee, ankle, and foot"
 - "Ultrasound of the shoulder"
 - "Ultrasound-guided musculoskeletal interventions"
- September 16-18, 2005 Musculoskeletal Ultrasound for the Rheumatologist: The Antonio J. Reginato Course, UMDNJ-Cooper University Hospital, Camden, NJ
- "Interventional procedures in musculoskeletal ultrasound"
 - "Introduction to musculoskeletal ultrasound"
 - "Ultrasound of the elbow"
- August 19-21, 2005 Musculoskeletal Ultrasound: A Practical, Hands-On Approach, American Institute of Ultrasound in Medicine Regional Course, New York, NY
- Course Director
 - "Elbow ultrasound"
 - "General concepts of musculoskeletal ultrasound"

- August 5-6, 2005 Musculoskeletal Sonography in Sports Medicine: Update and Workshop, Department of Radiology, University of Innsbruck, Innsbruck, Austria
- "New aspects of US-guided therapy in sports medicine"
 - "Ultrasound of the shoulder"

LAURENCE NEEDLEMAN, M.D.

- October 6-9, 2005 Society of Diagnostic Medical Sonography Annual Conference, Dallas, TX
- "Liver malignancies and ablative technologies: A boom for liver ultrasound"
 - "Renal artery stenosis"
 - "Spectral Doppler interpretation: Why do waveforms look the way they do"
- October 28-30, 2005 15th Annual Meeting of the Society of Radiologists in Ultrasound, Chicago, IL
- "Complications"
 - "Politics of ultrasound screening"
 - "Interventional ultrasound panel discussion" (moderator)
- November 18-19, 2005 15th Annual Advances in Vascular Imaging and Diagnosis Symposium, Montefiore Medical Center, New York, NY
- "Doppler waveforms: Why arterial waveforms look the way they do and how to avoid the pitfalls of Doppler spectral analysis and interpretation"
 - "Interesting arterial disease cases"
 - "Interesting venous disease cases"
- January 22-26, 2006 Eighteenth Annual International Symposium on Endovascular Therapy, Miami Beach, FL
- "Carotid stents: Live case scanning"
 - "How well do you understand Duplex? An interactive quiz"
 - "Interpretation of carotid Duplex exams: An overview"
 - "The upper extremity venous exam: Technique and interpretation"
- February 24, 2006 2006 Scientific and Clinical Update on Pancreatic Cancer, hosted by Thomas Jefferson University, Philadelphia, PA
- "Pancreatic imaging 2006"
- March 4, 2006 St. Louis Metro Area Sonographers Society Day Symposium Benefiting the Leland Melson Scholarship Fund, St. Louis, MO
- "Liver malignancies and ablative technologies"
 - "Vascular and nonvascular groin masses"
- March 24-26, 2006 51st Annual Convention of the American Institute of Ultrasound in Medicine, Washington, DC
- "Innovations in ultrasound guided intervention: Future applications of minimally invasive therapy"
 - "Interpretation of carotid ultrasound"
- March 24, 2006 Visiting Professor, Georgetown University Hospital, Washington, DC
- "Case Review"

- "Vascular Ultrasound"
- April 30-
 May 5, 2006 American Roentgen Ray Society 106th Annual Meeting, Vancouver, BC
 - "Approach to diagnosis: A case-based imaging review ultrasound: Vascular ultrasound"
- May 23-26, 2006 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
 - "Aneurysms"
 - "Cardinal features in vascular disease"
 - "Case Interpretation"
 - "Cases and Panel Discussion"
 - "Measurements"
 - "Upper Extremity Veins"
- June 1-4, 2006 Society of Vascular Ultrasound 29th Annual Meeting, Philadelphia, PA
 - "Spectral Doppler waveforms: Why do they look like they do?"
 - "Hemodynamics Session" (moderator)

PATRICK L. O'KANE, M.D.

- June 15, 2006 Bi-Annual Summit Meeting, Trinational Chernobyl Project, Washington, DC
 - "Performance comparison of Toshiba and Terason equipment in thyroid nodule detection"

LAURENCE PARKER, PH.D.

- November 27-
 December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
 - "Practice patterns in ultrasound of the genitourinary (GU) tract"
 - "Utilization of imaging in the Medicare population for backaches: Findings from the 2002 Part B Medicare data"

VIJAY M. RAO, M.D.

- September 21-25, 2005 American Society of Head and Neck Radiology 39th Annual Meeting, San Francisco, CA
 - "Imaging the postoperative patient"
- November 27-
 December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
 - "Growth in MR imaging among nonradiologist physicians in recent years"
 - "Sinonasal imaging"
- March 8, 2006. Visiting Professor, Department of Radiology, Mercy Catholic Medical Center, Fitzgerald Mercy Division, Darby, PA
 - "Sinonasal imaging"

- February 15, 2006 Department of Radiology Grand Rounds, University of Maryland, Baltimore, MD
- "Interesting case conference"
 - "Pre- and post-operative sinonasal imaging"

KEVIN L. SULLIVAN, M.D.

- November 27-
December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Immunoembolization"

MATHEW L. THAKUR, PH.D.

- September 1-3, 2005 12th International Symposium of the International Society of Radiolabeled Blood Elements, Villigen, Switzerland
- "NeutroSpect new results"
 - "Stem cells: A regenerative pharmaceutical"
- October 15-19, 2005 18th Annual Congress of the European Association of Nuclear Medicine, Istanbul, Turkey
- "Imaging oncogene mRNA"
 - "Role of neutrophil specific antibodies in imaging infection"
- October 28, 2005 Annual Meeting of the New England Chapter of the Society of Nuclear Society of Nuclear Medicine, Newport, RI
- "Peptides in oncology imaging"
- Annual Meeting of the New England Chapter of the Society of Nuclear Society of Nuclear Medicine,
- November 14-17, 2005 International Symposium on Trends in Radiopharmaceuticals, International Atomic Energy Agency, Vienna, Austria
- "Pharmacology of radiolabeled peptides"
- December 6, 2005 20th Annual Congress of Association of Latin American Societies of Biology and Nuclear Medicine
- "Genomic approaches to molecular imaging"
 - "Introduction to the Society of Radiolabeled Blood Elements"
 - "New trends in radiopharmaceuticals for diagnosing infection/inflammation"
- January 10, 2006 Department of Radiology Grand Rounds, M.D. Anderson Cancer Center, Houston, TX
- "Targeting oncogene expression for diagnosis and therapy"
- January 23-27, 2006 International Conference on Application of Radiotracers in Chemical, Environmental and Biological Sciences, Saha Institute of Nuclear Physics, Kolkata, India
- "Applications of radiotracers in biological sciences"
- March 27-29, 2006 34th Annual Meeting of the British Nuclear Medicine Society, Manchester, England
- "Approach to imaging oncogene expression"

PAMELA VAN TASSEL, M.D.

- September 21-25, 2005 American Society of Head and Neck Radiology 39th Annual Meeting, San Francisco, CA
- "Orbital and ocular emergencies"

ANNINA N. WILKES, M.D.

- May 23-26, 2006 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Sonomammography tutorial" (program director)
 - "Breast ultrasound – Normal and developmental anatomy and scanning techniques"
 - "Mammographic – Sonographic correlation"

SHAOXIONG ZHANG, M.D., PH.D.

- April 30-
May 5, 2006 American Roentgen Ray Society 106th Annual Meeting, Vancouver, BC
- "Computation of left ventricular ejection fraction with gated cardiac CT angiography"

ADAM C. ZOGA, M.D.

- October 15-16, 2005 Jefferson Lower Extremity Advanced Imaging Symposium, Thomas Jefferson University, Philadelphia, PA
- Course Director
 - "MRI of the ankle"
 - "The posterolateral corner of the knee"
 - "Approach to MRI of the joints" (roundtable)
- November 27-
December 2, 2005 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Subtendinous bone marrow at the extensor carpi ulnaris as a harbinger of triangular fibrocartilage tear"
- January 3-8, 2006 Practical Musculoskeletal and Body MRI: A Problem Solving Approach, Grand Cayman Island
- "Imaging of arthritis: Why MRI?"
 - "MRI of the hand, wrist and finger: Common and uncommon pathologies I need to know"
 - "Optimization of musculoskeletal protocols from 0.3T to 3T"
 - "Rotator cuff disease and impingement: What the referring clinician wants to know"
 - "Musculoskeletal unknown case review"
 - "How I approach a shoulder case?" (workshop)

- March 5-8, 2006 Society of Skeletal Radiology Annual Meeting, Tucson, AZ
- "Simulated weight-bearing MRI of the knee for evaluation of meniscal pathology"
- March 18, 2006 Surgery and Rehabilitation of the Hand Symposia, sponsored by The Hand Rehabilitation Foundation, Philadelphia, PA
- "The role of imaging in management of scaphoid disease"
- May 16, 2006 The Delaware Radiology Society, Wilmington, DE
- "MRI of the ankle"
- April 20, 2006 Department of Radiology Grand Rounds, Albert Einstein Medical Center, Philadelphia, PA
- "Direct and indirect MR arthrography"
 - "MRI of persistent ankle pain"

HONORS, EDITORIAL ACTIVITIES, SERVICE TO REGIONAL OR NATIONAL ORGANIZATIONS

PAUL D. ACTON, PH.D.

- Member, NIH Study Section (ZRG1-SBIB)
- Member, Organizing Committee, Academy of Molecular Imaging Annual Meeting
- External Reviewer, Fund for Scientific Research (FWO), Belgium
- Member, Editorial Board, *European Journal of Nuclear Medicine*
- Reviewer, *European Journal of Nuclear Medicine*
- Reviewer, *IEEE Transactions in Nuclear Science*
- Reviewer, *Journal of Nuclear Medicine*
- Reviewer, *Life Sciences*
- Reviewer, *Neoplasia*
- Reviewer, *Neuroscience Letters*
- Reviewer, *Physics in Medicine and Biology*
- Paper "Optimal number of pinholes in multi-pinhole SPECT for mouse brain imaging – A simulation study" selected as Highlight of 2005 by *Physics in Medicine and Biology*

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
- Vice President, Ukrainian Medical Association of North America, Pennsylvania Chapter
- Member, Advisory Editorial Board, *Ukrainian Radiological Journal*

DIANE BERGIN, M.D.

- Reviewer, *American Journal of Roentgenology*
- A. Edward O'Hara, M.D. Award for Excellence in Teaching, Department of Radiology, Thomas Jefferson University, 2006

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*

RICK I. FELD, M.D.

- Chair, Exam Development Task Force (Abdomen), American Registry of Diagnostic Medical Sonographers
- Secretary, Philadelphia Roentgen Ray Society
- Member, Board of Directors, Pennsylvania Radiological Society

- Member, Executive Board, Philadelphia Roentgen Ray Society
- Member, Ultrasound Section on Human Resources, American College of Radiology
- Member, Program Committee, Philadelphia Roentgen Ray Society
- Alternate 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, Contrast Agents for ER, Bristol Meyers Squibb Diagnostics
- Consultant Neuroradiologist, Neuron Therapeutics, Inc
- Consultant, Task Force on Electronic Information, American Society of Neuroradiology
- Consultant, Medical Policy, Independence Blue Cross
- Consultant, Medical Review, Independence Blue Cross
- Consultant Neuroradiologist, Geron Corporation
- Guest Speaker, Contrast Speakers' Bureau, Bristol Meyers Squibb Diagnostics
- Chair, Neuroradiology/ENT Subcommittee, RadLex
- Member, Electronics Communications 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, XDS-I Technical Subcommittee, Radiological Society of North America
- Member, Radiological Society of North America -SIIM Educational Panel
- Member, Scientific Exhibits Awards Committee, 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America
- Member, Radiology Informatics Subcommittee, Education Exhibit Committee, 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 Ultrasonics, Ferroelectrics & Frequency Control*
- Reviewer, *International Journal of Cancer*

- Reviewer, *Medical Engineering & Physics*
- Reviewer, *Medical Physics*
- Reviewer, *Radiology*
- Reviewer, *Ultrasonic Imaging*
- Reviewer, *Ultrasound in Medicine and Biology*
- Reviewer, *The Swedish Research Council*
- Reviewer, *Ultrasonics*
- Bronze Price for best scientific presentation "Assessing angiogenesis in murine glioma and breast tumor models with contrast-enhanced US", the 11th Congress of the World Federation for Ultrasound in Medicine and Biology, Seoul, Korea, May 28-June 2, 2006.

DAVID P. FRIEDMAN, M.D.

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

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
- Associate Editor, *Medical Physics*
- Reviewer, *Medical Physics*
- Reviewer, *Radiology*

BARRY B. GOLDBERG, M.D.

- Certificate of Recognition, Drexel University, 2005
- 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, Fiftieth Anniversary Committee, American Institute of Ultrasound in Medicine
- 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, 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 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 Technical Expert, 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, Advisory Committee, *Ultrasonidos en Medicina*
- 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 Medecine Ultrasonore*
- Member, Editorial Board, *Journal of Clinical Ultrasound in Medicine*
- Member, Editorial Board, *Journal of Ultrasound in Medicine*
- Member, Editorial Board, *Ultrasound International Journal*
- 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*

- 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, 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*
- Named as one of the "Top 10 Radiologists", *Medical Imaging*, 2006

CARIN F. GONSALVES, M.D.

- Reviewer, *Journal of Vascular and Interventional Radiology*

ETHAN J. HALPERN, M.D.

- Member, Ultrasound Committee, American College of radiology Imaging Network
- Member, Public Information Advisors Network, Radiological Society of North America
- Consultant to the Editor, *Radiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Annals of Internal Medicine*
- Reviewer, *Ultrasound in Medicine and Biology*

CHARLES M. INTENZO, M.D.

- Physician of the Year Award, National Republican Congressional Committee, 2005
- Associate Editor, *Radiology*
- Reviewer, *Radiographics*

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.

- Dean's Citation, Significant Contributions to the Advancement of Education, Jefferson Medical College, 2006
- 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, 28th Annual International Conference of the IEEE Engineering in Medicine and Biology Society
- 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.

- American College of Radiology Gold Medal, 2005
- Vice Chairman, Commission on Medical Insurance, Pennsylvania Radiological Society
- Vice Chairman, Committee on Radiology Practice and Management, Pennsylvania Radiological Society
- Delegate, Philadelphia County Medical Society, Pennsylvania Medical Society House of Delegates
- Member, Advisory Committee on Diagnostic Imaging Policy, American College of Radiology
- 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, Media Spokesperson Group, American College of Radiology
- Member, Research and Education Foundation Program Committee, Radiological Society of North America
- Member, Council on Policy and Governmental Affairs, Pennsylvania Medical Society
- Member, Committee on Radiology Practice and Management, Pennsylvania Radiological Society
- Member, Public Relations and Marketing Committee, Pennsylvania Radiological Society
- Member, Committee on Diagnostic Radiology, Pennsylvania Radiological Society
- Member, Publications Committee, Pennsylvania Radiological Society
- Member, Program Committee for the Annual Meeting, Pennsylvania Radiological Society
- Scientific Advisor, Research and Education Fund, Radiological Society of North America
- Member, Editorial Board, *Journal of the American College of Radiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Radiology*

ANNA S. LEV-TOAFF, M.D.

- Member, Education and Research Committee, American Institute of Ultrasound in Medicine
- 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, Board of Directors, The Roentgen Fund, American Roentgen Ray Society
- Member, Maintenance of Certification Coordinating Committee, American Board of Radiology
- Member, Strategic Planning Committee, College of Physicians
- 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
- Director, Body MRI Educational Product, MR Training Initiative, American College of Radiology
- Member, Gynecologic Cancer Steering Committee, National Cancer Institute
- Member, Committee on Abdominal Imaging, Commission on Body Imaging, American College of Radiology
- Member, Publications Committee, International Society for Magnetic Resonance in Medicine
- Member, Abdominal Committee, RADLEX
- Associate Editor, *Journal of Magnetic Resonance Imaging*
- Member, Editorial Board, *Abdominal Imaging*
- Member, Editorial Board, *Journal of Computer Assisted Tomography*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Academic Radiology*
- Editor's Recognition Award with Distinction, *Radiology*
- Distinguished Committee Service Award, American College of Radiology

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, Scientific Poster Committee, 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America
- Member, Editorial Board, *Seminars in Musculoskeletal Radiology*
- Reviewer, *American Journal of Roentgenology*

- Reviewer, *Journal of the American Medical Association*
- Reviewer, *Radiology*
- Reviewer, *Skeletal Radiology*

LEVON N. NAZARIAN, M.D.

- Dean's Citation, Significant Contributions to the Advancement of Education, Jefferson Medical College, 2006
- Chair, Ultrasound Item Writing Committee, American Board of Radiology
- Co-Director, Introduction to Research Program, American Roentgen Ray Society
- Member, Research Committee, Society of Radiologists in Ultrasound
- 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, *American Journal of Roentgenology*
- Associate Editor, *Journal of Ultrasound in Medicine*
- Associate Editor, *Radiology*
- Member, Editorial Board, *Journal of the British Medical Ultrasound Society*
- Reviewer, *Journal of Rheumatology*

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
- Member, Board of Directors, Intersocietal Commission on Accreditation of Vascular Labs
- Member, Clinical Standards Committee, American Institute of Ultrasound in Medicine
- Member, Committee on Bylaws, Philadelphia Roentgen Ray Society
- Member, Practice Guideline Collaborative Subcommittee for the Performance of an Ultrasound Examination of the Abdomen or Retroperitoneum, American College of Radiology and American Institute of Ultrasound in Medicine
- Member, Practice Guideline Collaborative Subcommittee for the Performance of P Noninvasive Physiologic Evaluation of the Lower Extremities, American College of Radiology and American Institute of Ultrasound in Medicine
- Member, Practice Guideline Collaborative Subcommittee for the Performance of Vascular Ultrasound for Postoperative Assessment of Dialysis Access, American College of Radiology and American Institute of Ultrasound in Medicine
- Member, Practice Guideline Collaborative Subcommittee for the Performance of 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 Transcranial Doppler, American College of Radiology and American Institute of Ultrasound in Medicine
- Member, Practice Guideline Collaborative Subcommittee for the Performance of Ultrasound Vascular Mapping for Preoperative Planning of Dialysis Access, American College of Radiology and American Institute of Ultrasound in Medicine
- 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 Trinational Chernobyl Project

VIJAY M. RAO, M.D.

- Achievement Award, Association of Program Directors in Radiology, 2006
- Woman of Distinction Award, *Philadelphia Business Journal*
- Chair, Gold Medical Awards Committee, American Society of Head and Neck Radiology
- 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, Editorial Board, *Journal of the American College of Radiology*
- Association of Program Directors in Radiology Liaison to Society of Chairmen of Academic Radiology Departments
- Reviewer, Scientific Exhibits, *Radiographics*, Radiological Society of North America
- Reviewer, Scientific Abstracts, 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America
- Reviewer, Scientific Abstracts, 54th Annual Meeting of the Association of University Radiologists
- Reviewer, Scientific Abstracts, 39th Annual Meeting of the American Society of Head and Neck Radiology
- Reviewer, Scientific Abstracts, 44th Annual Meeting of the American Society of Neuroradiology
- Reviewer, *Academic Radiology*
- Reviewer, *American Journal of Neuroradiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *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 "Best Doctors in America 2005-2006", *Philadelphia Magazine*
- Named as one of the "Top 10 Radiologists", *Medical Imaging*, 2006
- Named as one of "America's Top Doctors for Cancer 200", Castle Connolly Medical Ltd.

KEVIN L. SULLIVAN, M.D.

- Dean's Citation, Faculty Mentoring, Jefferson Medical College, 2006

LISA M. TARTAGLINO, M.D.

- Examiner, Neuroradiology, Oral Boards, American Board of Radiology
- Proctor, Written Boards, American Board of Radiology, Philadelphia Site
- Member, Finance Committee, Association of Program Directors in Radiology
- 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
- President, Molecular Imaging Center of Excellence, Society of Nuclear Medicine
- 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
- Lead Member, National Radionuclide Availability Task Force, 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
- Organizer, Continuing Medication Education, World Federation of Nuclear Medicine and Biology, 2006
- Member, Scientific Program Committee, World Federation of Nuclear Medicine and Biology, 2006
- 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*
- Member, Editorial Board, *Spanish Journal of Nuclear Medicine*
- 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*

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.

- Guest Speaker, Speakers Bureau, Susan A. Komen Foundation
- 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
- 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, 91st Annual Meeting of the Radiological Society of North America
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Radiology Case Reports*

APPENDIX

Table 1 ACTIVE GRANTS

Table 2 PENDING GRANTS

TABLE 1

Active Grants

07/01/05 - 06/30/06

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

NIH/OTHER FEDERAL GRANTS

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Acton, P. R78701	Improved Molecular Imaging with SPECT	NIH R01 EB001809	09/10/03 - 07/31/07	\$361,931	\$202,681	\$564,612
Acton, P. R78801	Imaging Stem Cell Implants in Neurodegenerative Diseases	NIH R01 NS048315	07/01/05 - 03/31/08	\$177,438 (current fiscal yr)	\$99,365 (current fiscal yr)	\$276,803 (current fiscal yr)
Acton, P. R78901	Statistical Analysis of Radionuclide Images	NIH R01 EB002774	08/03/05 - 07/31/07	\$387,675	\$216,641	\$604,316
Flanders, A. Z40101 (subcontract)	Cross-enterprise Access to Cancer Imaging Data	NIH (NCI) thru Hx Technologies	12/01/05 - 11/30/06	\$139,917 (current fiscal yr)	\$78,354 (current fiscal yr)	\$218,271 (current fiscal yr)
Flanders, A. Z40401	caBIG - In Vivo Imaging Workspace	NIH (NCI) thru Booz Allen Hamilton Inc	10/01/05 - 09/30/06	\$217,198	\$121,630	\$338,828
Forsberg, F. R70101	Contrast-Enhanced US Detection of Angiogenesis	NIH (NCI) R21 CA93907	08/15/03 - 07/31/06 no cost extension	\$12,101	\$6,777	\$18,878
Forsberg, F. X07401	Estimation of Tumor Angiogenesis with Contrast Enhanced Subharmonic Ultrasound Imaging	U.S. Army Medical Research Acq. DAMD17-00-1-0464	07/01/00 - 07/31/05 no cost extension	\$9,093 (current fiscal yr)	\$5,092 (current fiscal yr)	\$14,185 (current fiscal yr)
				\$25,000	\$14,000	\$39,000
				\$14,058 (current fiscal yr)	\$7,873 (current fiscal yr)	\$21,931 (current fiscal yr)
				\$250,000	\$142,500	\$392,500
				\$59,514 (current fiscal yr)	\$33,923 (current fiscal yr)	\$93,437 (current fiscal yr)
				\$204,342	\$89,967	\$294,309
				\$673 (current fiscal yr)	\$0 (current fiscal yr)	\$673 (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	\$371,930 --- \$82,773 (current fiscal yr)	\$169,250 --- \$29,891 (current fiscal yr)	\$541,180 --- \$112,664 (current fiscal yr)
Forsberg, F. Z22801 (subcontract)	2 and 3D Imaging of Contrast Agents in Animal Models	NIH thru Medical Diagnostic Research Foundation R01 CA72895	08/01/01 - 06/30/06 no cost extension	\$117,788 --- \$11,410 (current fiscal yr)	\$67,140 --- \$6,504 (current fiscal yr)	\$184,928 --- \$17,914 (current fiscal yr)
Forsberg, F. Z39101 (subcontract)	Sonothrombolysis of Vascular Clots with Targeted Microbubbles	NIH (SBIR) thru ImaRx R44 HL071433	08/30/05 - 06/30/06	\$46,779 --- \$34,494 (current fiscal yr)	\$26,196 --- \$19,317 (current fiscal yr)	\$72,975 --- \$53,811 (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 - 08/31/06	\$45,756 --- \$0 (current fiscal yr)	\$25,623 --- \$0 (current fiscal yr)	\$71,379 --- \$0 (current fiscal yr)
Forsberg, F. Z41301 (subcontract)	High Resolution Dermatological Scanning Acoustic Microscope	NIH thru J&W Medical, LLC R43 ES12362	11/25/05 - 08/31/06	\$33,317 --- \$11,098 (current fiscal yr)	\$18,658 --- \$6,215 (current fiscal yr)	\$51,975 --- \$17,313 (current fiscal yr)
Goldberg, B. R74401	US Detection of Sentinel Lymph Nodes in Melanoma	NIH (NCI) R01 CA100370	08/01/04 - 07/31/07	\$611,254 --- \$118,913 (current fiscal yr)	\$348,415 --- \$66,591 (current fiscal yr)	\$959,669 --- \$185,504 (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 - 12/31/06	\$20,000 --- \$3,194 (current fiscal yr)	\$5,000 --- \$1,171 (current fiscal yr)	\$25,000 --- \$4,365 (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 --- \$0 (current fiscal yr)	\$13,160 --- \$0 (current fiscal yr)	\$65,800 --- \$0 (current fiscal yr)
Halpern, E. X07901	Intermittent Ultrasound Imaging of Prostate Cancer	U.S. Army Medical Research Acq. DAMD17-01-1-0061	08/01/01 - 08/31/05 second no cost extension	\$369,720 --- \$4,500 (current fiscal yr)	\$218,134 --- \$2,520 (current fiscal yr)	\$587,854 --- \$7,020 (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 - 12/31/06	\$20,842 --- \$0 (current fiscal yr)	\$5,211 --- \$0 (current fiscal yr)	\$26,053 --- \$0 (current fiscal yr)
Lai, S. A74201	Jefferson Magnetic Resonance Imaging Physics Program	Commonwealth of Pennsylvania Department of Health	03/17/04 - 01/31/06	\$416,667 --- \$59,405 (current fiscal yr)	\$237,500 --- \$33,861 (current fiscal yr)	\$654,167 --- \$93,266 (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 --- \$42,963 (current fiscal yr)	\$0 --- \$0 (current fiscal yr)	\$125,000 --- \$42,963 (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 --- \$94,435 (current fiscal yr)	\$146,008 --- \$53,827 (current fiscal yr)	\$421,008 --- \$148,262 (current fiscal yr)
Merritt, C. Z32301	Screening Breast US in High Risk Women	NIH thru ACRIN (cooperative group)	01/01/04 - 12/31/06	\$154,000 --- \$18,888 (current fiscal yr)	\$38,500 --- \$4,722 (current fiscal yr)	\$192,500 --- \$23,610 (current fiscal yr)
Mitchell, D. G07401	ACR Commonwealth of PA Participant Institution	PA Department of Health thru ACRIN (cooperative group)	01/01/06 - 12/31/06	\$5,200 --- \$0 (current fiscal yr)	\$1,300 --- \$0 (current fiscal yr)	\$6,500 --- \$0 (current fiscal yr)
Mitchell, D. R67501	Hepatitis C: Grading and Staging by MR	NIH (NIDDK) R03 DK062765	03/01/03 - 11/30/05 no cost extension	\$200,000 --- \$44,504 (current fiscal yr)	\$87,256 --- \$12,970 (current fiscal yr)	\$287,256 --- \$57,474 (current fiscal yr)
Mitchell, D. Z19201	Role of Radiology in the Pretreatment Evaluation of Invasive Cervical Cancer	NIH thru ACRIN (cooperative group)	01/01/00 - 12/31/05	\$20,657 --- \$0 (current fiscal yr)	\$5,164 --- \$360 (current fiscal yr)	\$25,821 --- \$360 (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 - 12/31/06	\$24,000 -- \$8,078 (current fiscal yr)	\$6,000 -- \$2,720 (current fiscal yr)	\$30,000 -- \$10,798 (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 - 12/31/06	\$61,609 -- \$0 (current fiscal yr)	\$15,402 -- \$0 (current fiscal yr)	\$77,011 -- \$0 (current fiscal yr)
O'Kane, P. Y00501	IPA for Chornobyl Research Unit	NIH (NCI)	04/01/06 - 03/31/07	\$6,118 -- \$0 (current fiscal yr)	\$0 -- \$0 (current fiscal yr)	\$6,118 -- \$0 (current fiscal yr)
Piccoli, C. X08301	Quantification of the Benefits of Pendant Mammography	U.S. Army Medical Research Acq. DAMD17-00-1-0650	09/20/01 - 10/19/05 no cost extension	\$53,723 -- \$18,472 (current fiscal yr)	\$25,777 -- \$7,639 (current fiscal yr)	\$79,500 -- \$26,111 (current fiscal yr)
Rao, V. A75001	PET-CT Imaging of Breast Cancer	Commonwealth of Pennsylvania Department of Health	05/01/04 - 04/30/08	\$1,180,833 -- \$60,430 (current fiscal yr)	\$30,167 -- \$5,620 (current fiscal yr)	\$1,211,000 -- \$66,050 (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 -- \$106,050 (current fiscal yr)	\$0 -- \$0 (current fiscal yr)	\$1,603,311 -- \$106,050 (current fiscal yr)
Rao, V. Z24701	ACRIN Core Institute Grant	NIH thru ACRIN (cooperative group)	01/01/02 - 12/31/06	\$52,506 -- \$11,078 (current fiscal yr)	\$13,126 -- \$2,770 (current fiscal yr)	\$65,632 -- \$13,848 (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 - 12/31/06	\$59,781 -- \$6,975 (current fiscal yr)	\$14,945 -- \$1,744 (current fiscal yr)	\$74,726 -- \$8,719 (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 -- \$161,724 (current fiscal yr)	\$476,118 -- \$90,566 (current fiscal yr)	\$1,609,737 -- \$252,290 (current fiscal yr)

Zoga, A. Z24601 R76901	A Phase I/II Study of Percutaneous Radiofrequency Ablation of Bone Metastases Using CT Guidance Metastases Using CT Guidance	NIH thru ACRIN (cooperative group) R01 CA109231	11/11/01 - 12/31/06	\$27,156 --- \$1,115 (current fiscal yr)	\$6,789 --- \$0 (current fiscal yr)	\$33,945 --- \$1,115 (current fiscal yr)
TOTAL NIH/FEDERAL FUNDING				\$8,563,453 --- \$1,407,827 (current fiscal yr)	\$2,799,035 --- \$633,955 (current fiscal yr)	\$11,362,488 --- \$2,041,782 (current fiscal yr)
CURRENT YEAR NIH/ FEDERAL FUNDING						

Active Grants

07/01/05 - 06/30/06

(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
Goldberg, B. F65701	Teach the Teachers	Radiologic Society of North America	07/01/04 - 06/30/07	\$300,000 -- \$69,063 (current fiscal yr)	\$0 -- \$0 (current fiscal yr)	\$300,000 -- \$69,063 (current fiscal yr)
Piccoli, C. A72801	Breast Cancer Research Infrastructure	Breast Health Institute	11/01/03 - 06/30/06	\$25,000 -- \$8,859 (current fiscal yr)	\$0 -- \$0 (current fiscal yr)	\$25,000 -- \$8,859 (current fiscal yr)
Rao, V. A74501	Department of Radiology Health Services Research Program	National Coalition for Quality Diagnostic Imaging Services	01/01/04 - 12/31/05	\$90,000 -- \$51,843 (current fiscal yr)	\$0 -- \$0 (current fiscal yr)	\$90,000 -- \$51,843 (current fiscal yr)
Rao, V. F65401	Center for Research on Utilization of Imaging Services	American College of Radiology	01/01/04 - 5/16/07	\$156,840 -- \$39,437 (current fiscal yr)	\$0 -- \$0 (current fiscal yr)	\$156,840 -- \$39,437 (current fiscal yr)
TOTAL NON-PROFIT FUNDING CURRENT YEAR NON-PROFIT FUNDING				\$571,840 -- \$169,202 (current fiscal yr)	\$0 -- \$0 (current fiscal yr)	\$571,840 -- \$169,202 (current fiscal yr)

Active Grants

07/01/05 - 06/30/06

(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	\$9,469	\$47,344
Flanders, A. A53601	ADCON-L MRI Research Project	GliaTech	09/01/01 - 12/31/05	\$25,000	\$6,250	\$31,250
Flanders, A. H93301	Evaluation of Acute Stroke Patients with Perfusion CT	Philips Medical Systems	08/06/03 - 08/05/05	\$6,160	\$1,040	\$7,200
Forsberg, F. A85401	High Frequency Contrast Enhanced Prostate Imaging	B&K Medical	06/28/05 - 12/14/05	\$5,300	\$0	\$5,300
Goldberg, B. A55101	Ultrasound Contrast Imaging of Lymph Nodes with Metastatic Melanoma	Amersham Health	11/15/01 - 12/31/05	\$36,748	\$13,195	\$49,943
Goldberg, B. A63001	Contrast Enhanced Ultrasound Imaging of Sentinel Lymph Nodes and Lymphatic Channels (Lymphosonography) in Swine with Melanoma Tumors	Amersham Health	11/25/02 - 12/31/05	\$18,396	\$6,604	\$25,000
Goldberg, B. D73801	Diagnostic Imaging Studies (Core, Preclinical, Clinical)	Amersham Health	11/18/96 - 12/31/05	\$635,000	\$152,500	\$787,500
				\$20,809	\$0	\$20,809
				(current fiscal yr)	(current fiscal yr)	(current fiscal yr)

Halpern, E. A70901	Pilot Evaluation of Early Myocardium Defect Detection with Cardiac CT	Philips Medical Systems	08/06/03 - 08/05/05	\$2,150 --- \$0 (current fiscal yr)	\$0 --- \$0 (current fiscal yr)	\$2,150 --- \$0 (current fiscal yr)
Halpern, E. A80201	Targeted Biopsy of the Prostate after Short-Term Dutasteride	GlaxoSmithKline	09/30/04 - 12/31/50	\$40,762 --- \$10,263 (current fiscal yr)	\$10,191 --- \$6,040 (current fiscal yr)	\$50,953 --- \$16,303 (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 --- \$18,080 (current fiscal yr)	\$20,476 --- \$2,975 (current fiscal yr)	\$104,878 --- \$21,055 (current fiscal yr)
Morrison, W. H42601	PolyLok Lumbar Interbody Fusion Device	Cortek, Inc. (Core Lab)	02/15/02 - 12/31/05	\$9,927 --- \$0 (current fiscal yr)	\$1,986 --- \$0 (current fiscal yr)	\$11,913 --- \$0 (current fiscal yr)
Needleman, L. H60401	Astrazeneca METEOR study (Protocol # 4522IL/0088)	Astrazeneca Pharmaceuticals	05/01/02 - 08/30/06	\$13,840 --- \$6,208 (current fiscal yr)	\$3,460 --- \$0 (current fiscal yr)	\$17,300 --- \$6,208 (current fiscal yr)
Needleman, L. H94001	A Phase 3, Open-Label, Multicentre Study to Determine Efficacy and Safety of VISIPAQUE (Iodixanol) Injection for Use in Intravenous Contrast-Enhanced CT Angiography of Abdominal Visceral Vessels	Amersham Health	10/20/03 - 12/31/50	\$14,836 --- \$0 (current fiscal yr)	\$3,420 --- \$0 (current fiscal yr)	\$18,256 --- \$0 (current fiscal yr)
Needleman, L. H94101	A Phase 3, Open-Label, Multicentre Study of Efficacy and Safety of VISIPAQUE (Iodixanol) in Subjects with Suspected Peripheral Arterial Occlusive Disease Undergoing Intravenous Contrast-Enhanced Computed Tomography Angiography	Amersham Health	10/20/03 - 12/31/50	\$7,034 --- \$310 (current fiscal yr)	\$1,680 --- \$0 (current fiscal yr)	\$8,714 --- \$310 (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 -- \$1,500 (current fiscal yr)	\$2,000 -- \$0 (current fiscal yr)	\$12,000 -- \$1,500 (current fiscal yr)
Rao, V. A81401	Cardiac CTA vs Invasive Coronary Angiography	Philips Medical Systems	08/23/04 - 12/31/05	\$40,500 -- \$15,190 (current fiscal yr)	\$9,500 -- \$0 (current fiscal yr)	\$50,000 -- \$15,190 (current fiscal yr)
Sharma, D. A81301	Digital Imaging Research	AGFA Corporation	11/15/04 - 11/30/07	\$21,633 -- \$4,902 (current fiscal yr)	\$4,783 -- \$0 (current fiscal yr)	\$26,416 -- \$4,902 (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 ComfotScan 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 -- \$6,310 (current fiscal yr)	\$2,500 -- \$2,500 (current fiscal yr)	\$12,500 -- \$8,810 (current fiscal yr)
TOTAL INDUSTRIAL FUNDING				\$1,033,273	\$251,857	\$1,285,130
CURRENT YEAR INDUSTRIAL FUNDING				\$116,028	\$16,250	\$132,278
TOTAL FUNDING				\$10,168,566	\$3,050,892	\$13,219,458
TOTAL CURRENT YEAR FUNDING				\$1,693,057	\$650,205	\$2,343,262

TABLE 2

Pending Grants
 07/01/05 - 06/30/06
 (Report reflects entire award period and first year of award)

NIH/OTHER FEDERAL GRANTS

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Acton, P.	PET for Imaging Small Animals	NIH	04/01/07 - 03/31/08	\$487,202	\$0	\$487,202
Forsberg, F. (subcontract)	IVUS Detection of Rupture Prone Plaques	NIH thru Dartmouth University	04/01/08 - 03/31/11	\$149,789	\$82,384	\$232,173
Forsberg, F.	Subharmonic Microbubble Signals for Pressure Estimation	NIH	12/01/06 - 11/30/08	\$275,000	\$145,908	\$420,908
Goldberg, B. (subcontract)	Development of a New Class of Contrast Agents	NIH thru Drexel University	07/01/06 - 06/31/11	\$187,167	\$102,942	\$290,109
Halpern, E.	Prostate Cancer Detection with Contrast-enhanced Ultrasound and Dutasteride Pretreatment	NIH	07/01/06 - 06/30/09	\$1,026,368	\$564,503	\$1,590,871
Morrison, W. (subcontract)	Skeletal Growth Mechanism in Clubfoot Treatment	NIH thru Drexel University	07/01/06 - 06/30/08	\$10,020	\$5,511	\$15,531
				\$4,936 (-01 year)	\$2,715 (-01 year)	\$7,651 (-01 year)
				\$2,135,546	\$901,248	\$3,036,794
			TOTAL NIH GRANT FUNDING			
			TOTAL FIRST YEAR NIH FUNDING	\$966,219 (-01 year)	\$265,781 (-01 year)	\$1,232,000 (-01 year)

Pending Grants
 07/01/05 - 06/30/06
 (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
Forsberg, F.	Intra-Cardiac Pressure Measurements Using Subharmonic Microbubble Signals	American Heart Association	07/01/06 - 06/30/08	\$109,090	\$10,910	\$120,000
				\$54,545 (-01 year)	\$5,455 (-01 year)	\$60,000 (-01 year)
			TOTAL NIH GRANT FUNDING	\$109,090	\$10,910	\$120,000
			TOTAL FIRST YEAR NIH FUNDING	\$54,545 (-01 year)	\$5,455 (-01 year)	\$60,000 (-01 year)

Pending Grants
07/01/05 - 06/30/06

(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.	Assessment of CAD System for Breast Cancer Diagnosis	Almen Labs	09/05/06 - 11/19/06	\$7,664	\$1,916	\$9,580
Forsberg, F.	Assessment of B&K Scanner for Liver and Prostate Evaluations	B&K Medical	10/01/06 - 12/31/06	\$6,692	\$0	\$6,692
Halpern, E.	Pilot Study of Microflow Imaging Technology to Improve Contrast-Enhanced Imaging of Prostate Cancer	Bristol-Myers Squibb Medical Imaging	06/26/06 - 12/31/50	\$5,500	\$0	\$5,500
				\$5,500	\$0	\$5,500
				\$19,856	\$1,916	\$21,772
			TOTAL INDUSTRIAL FUNDING	\$19,856	\$1,916	\$21,772
			TOTAL PENDING FUNDING	\$2,264,492	\$914,074	\$3,178,566
			TOTAL FIRST YEAR INDUSTRIAL FUNDING	\$1,040,620	\$273,152	\$1,313,772
			TOTAL FIRST YEAR PENDING FUNDING	(-01 year)	(-01 year)	(-01 year)