1999

Department of Radiology-Annual Executive Summary Report-July 1, 1998 to June 30, 1999

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Thomas Jefferson University

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DEPARTMENT OF RADIOLOGY

David C. Levin, M.D.
Professor and Chairman

Alfred B. Kurtz, M.D.
Professor and Vice Chairman

1998-99

DEPARTMENT CLINICAL DIVISIONS AND DIRECTORS

BREAST IMAGING  Stephen A. Feig, M.D.
BODY CT  Richard J. Wechsler, M.D.
CARDIOVASCULAR/INTERVENTIONAL RADIOLOGY  Geoffrey A. Gardiner, Jr., M.D.
GENERAL DIAGNOSTIC RADIOLOGY  Mark Schweitzer, M.D.
MAGNETIC RESONANCE IMAGING  Donald G. Mitchell, M.D.
NEURORADIOLOGY/ENT RADIOLOGY  Vijay M. Rao, M.D.
David Friedman, M.D.
NUCLEAR MEDICINE  Charles Intenzo, M.D.
PEDIATRIC RADIOLOGY  George W. Gross, M.D.
ULTRASOUND  Barry B. Goldberg, M.D.
ACADEMY IMAGING  Catherine Piccoli, M.D.

DEPARTMENTAL COMMITTEES AND CHAIRMEN

ADVISORY COMMITTEE  Alfred B. Kurtz, M.D.
EDUCATION COMMITTEE  Vijay M. Rao, M.D.
RESEARCH COMMITTEE  Barry B. Goldberg, M.D.
RESIDENCY SELECTION COMMITTEE  Levon Nazarian, M.D.
QUALITY ASSURANCE COMMITTEE  Paul W. Spirm, M.D.
COMPUTER COMMITTEE  Victor Sarro
CONTRAST COMMITTEE  Richard J. Wechsler, M.D.
RADIOLOGY DEPARTMENT FACULTY RANK
1998-99

PROFESSORS
Stephen A. Feig, M.D.
Barry B. Goldberg, M.D.
David Karasick, M.D.
Alfred B. Kurtz, M.D.
David C. Levin, M.D.
Donald G. Mitchell, M.D.
Vijay M. Rao, M.D.
Mark E. Schweitzer, M.D.
Mathew Thakur, Ph.D.
Richard J. Wechsler
Simon Vinitski, Ph.D.

RESEARCH PROFESSOR
Gary S. Shaber, M.D.
Christopher Merritt, M.D.

CLINICAL PROFESSOR
Stephen Karasick, M.D.

ASSOCIATE PROFESSORS
Rick I. Feld, M.D.
Adam E. Flanders, M.D.
Flemming Forsberg, Ph.D.
David P. Friedman, M.D.
Geoffrey A. Gardiner, Jr., M.D.
Ethan J. Halpern, M.D.
Charles M. Intenzo, M.D.
Anna S. Lev-Toaff, M.D.
Levon Nazarian, M.D.
Laurence Needleman, M.D.
Eric K. Outwater, M.D.
Kevin L. Sullivan, M.D.
Lisa M. Tartaglino, M.D.

CLINICAL ASSOCIATE PROFESSOR
Paul Spirn, M.D.

RESEARCH ASSOCIATE PROFESSOR
P. Macke Consigny, Ph.D.

ASSISTANT PROFESSORS
Joseph Bonn, M.D.
Diane M. Deely, M.D.
Scott Enochs, M.D.
David Eschelman, M.D.
Dione Farria, M.D.
Maurice Fitzpatrick, M.D.
Michael Hollander, M.D.
Pamela Johnson, M.D. (p/t)
Sung M. Kim, M.D.
Andrew A. Maidment, Ph.D.
Catherine W. Piccoli, M.D.
Ana Salazar, M.D. (p/t)
Sharon R. Segal, D.O. (p/t)
Rosita Shah, M.D.

CLINICAL ASSISTANT PROFESSORS
Terri Tuckman, M.D. (p/t)
Elaine Wolk, M.D. (p/t)

RESEARCH ASSISTANT PROFESSORS
Ji-Bin Liu, M.D.
William Tao Shi, Ph.D.

INSTRUCTORS
Cindy Isaacson, M.D. (p/t)
Annina Wilkes, M.D. (p/t)

PROFESSORS EMERITI
Jack Edeiken, M.D.
Benjamin M. Galkin, M.S.
Robert O. Gorson, M.S.

HONORARY PROFESSORS
A. Edward O'Hara, M.D.
FACULTY WITH SECONDARY APPOINTMENTS IN RADIOLOGY

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

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

Ralph A. Carabasi, M.D, Professor of Surgery [primary]  
Professor of Radiology [secondary]

Donald Myers, M.D., Assistant Professor of Neursurgery [primary]  
Instructor in radiology [secondary]

Joel S. Raichlen, M.D., Clinical Associate Professor of Medicine [primary]  
Clinical Associate Professor of Radiology [secondary]

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

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

Ronald J. Wapner, M.D., Professor of Obstetrics and Gynecology [primary]  
Professor of Radiology [secondary]
DEPARTMENT OF RADIOLOGY
David C. Levin, M.D., Chairman
Alfred B. Kurtz, M.D., Vice Chairman

CLINICAL DIVISIONS 1998-99

General Diagnostic Radiology
(pulmonary, skeletal, gastrointestinal
genitourinary radiology)

Directed by Mark Schweitzer, M.D.
Drs. Diane Deely, Cindy Isaacson, David Karasick, and
Stephen Karasick, Anna Lev-Toaff, Ana Salazar,
Gary Shaber, Rosita Shah, Paul Spirn, Richard Wechsler

Breast Imaging/Ambulatory Radiology

Directed by Stephen Feig, M.D.
Drs. Dione Farnia, Jane Hughes, Cindy Isaacson,
Catherine Piccoli, Annina Wilkes, Elaine Wolk

Cardiovascular/Interventional Radiology

Directed by Geoffrey Gardiner, M.D.
Drs. Joseph Bonn, David Eschelman, Kevin Sullivan

Neuroradiology/ENT Radiology

Directed by Vijay Rao, M.D., David Friedman, M.D.
Drs. Scott Enochs, Maurice Fitzpatrick, Adam Flanders,
Michael Hollander, Lisa Tartaglino

Ultrasound

Directed by Barry Goldberg, M.D.
Drs. Rick Feld, Ethan Halpern, Pamela Johnson, Alfred
Kurtz, Anna Lev-Toaff, Donald Mitchell, Levon Nazarian,
Laurence Needleman, Eric Outwater, Catherine Piccoli,
Ana Salazar, Sharon Segal, Terri Tuckman, Annina Wilkes

Body Computed Tomography

Directed by Richard Wechsler, M.D.
Drs. Rick Feld, Ethan Halpern, Alfred Kurtz, Anna Lev-
Toaff, Levon Nazarian, Laurence Needleman, Ana Salazar, Rosita Shah, Paul Spirn

Magnetic Resonance Imaging

Directed by Donald Mitchell, M.D.
Drs. Diane Deely, Eric Outwater, Catherine Piccoli,
Mark Schweitzer

Nuclear Medicine

Directed by Charles Intenzo, M.D.
Dr. Sung Kim

Radiological Physics

Drs. Flemming Forsberg, Andrew Maidment, William Tao
Shi, Simon Vinitski

Health Services Research

Lawrence Parker, Ph.D.

Physiological Research

Macke Consigny, Ph.D., Ji-Bin Liu, M.D.

Radiopharmaceutical Research

Mathew Thakur, Ph.D.
DEPARTMENT OF RADIOLOGY
HOUSESTAFF ROSTER
1998-1999

RESIDENTS

FIRST YEAR RESIDENTS
Jaime Checkoff, M.D.
Aaron Shiloh, M.D.
Dennis C. Lin, M.D.
Barry J. Livstone, M.D.
Douglas Montgomery, M.D.
Jonathan Morgan, M.D.

SECOND YEAR RESIDENTS
Sandip Basak, M.D.
Sandra O. Allison, M.D.
Richard W. Epstein, M.D.
Jennifer K. Fan, M.D.
Andrew Kwak, M.D.
Jennifer D. Tobey, M.D.

THIRD YEAR RESIDENTS
Glenn Articolo, M.D.
Steven Epstein, M.D.
Angela J. Gessner, M.D. chief resident
Antje Greenfield, M.D.
Jeffrey Mondschein, M.D. chief resident
Jennifer Park, M.D.

FOURTH YEAR RESIDENTS
Marie A. Eason, M.D.
Eric S. Korenman, M.D.
Philip S. Lim, M.D.
Lawrence D. Lo, M.D.
Anne L. Moch, M.D.
Mark A. Rosen, M.D.

NUCLEAR MEDICINE
Mohab Alexander, M.D.
Liliya Yanovskaya, M.D.

FELLOWS

US/CT/MRI
Kevin Ibach, M.D.
Farzam Kashanian, M.D.
Lisa Winer Pinheiro, M.D.
Michael Ramjattansingh, M.D.
Douglas Shusterman, M.D.
Elizabeth Tan, M.D.
Robert N. Waxman, M.D.
Charlene Whitfill, M.D
Susan DeWyngaert, M.D.

NEURO/ENT
Anthony G. Caramico, M.D.
Gordon Heller, M.D.
Robert Morales, M.D.
Dinesh Sharma, M.D.

MUSCULOSKELETAL
Steven Moss, M.D.

CARDIOVASCULAR/INTERVENTIONAL
Carin Gonsalves, M.D.
William Mitchell, M.D.
David Sperling, M.D.

BODY/NEURO MRI
Ric Bradford, D.O.
Vartan Igidbashian, D.O.

BREAST IMAGING
H.D. Sarah Rovno, M.D.

BODY MRI
Huan Tran, M.D.
This past year presented difficult challenges, but our faculty and other department personnel rose to
the occasion and we had a good year. Perhaps the most difficult challenge facing us and the hospital
is the very competitive nature of the healthcare market place. Many major academic institutions
around the country are facing serious financial crises. Among these are well known centers like
Stanford/UCSF, Brigham and Women's-Massachusetts General Hospital, Beth Israel/Deaconess, the
University of Texas/Galveston, the Hospital of the University of Pennsylvania and others. By
contrast, Thomas Jefferson University Hospital has managed to hold its head above water
financially, and this is a great tribute to the Jefferson leadership. This has been achieved largely
through a major cost-cutting campaign, which inevitably has created some painful problems for
clinical services like ours. All of this has been compounded by the increasingly predatory practices of
the major healthcare insurance carriers in the Philadelphia region, the two largest of which have
jointly achieved what is essentially monopoly power.

Despite the problems, I feel quite positive about the accomplishments of the past year. Our faculty
has had to take on an increasing clinical load, while at the same time maintaining its dedication to
research and education. In spite of time constraints, many faculty members continued to conduct
high quality research and we maintained our position as one of the leading research centers within
academic radiology. Our teaching programs continue to be strong. In our residency recruitment this
past year, we obtained our five candidates from among our top ten choices in the match. Our
graduating fellows virtually all obtained their positions of choice, and three of our six graduating
residents elected to stay right here to take fellowships. These facts attest to the strength of our
reputation in education.

This report will focus upon the following areas: (1) Clinical activities during 1998-99, (2) Planned
new clinical programs, (3) Clinical weaknesses, (4) Research accomplishments, (5) Research
weaknesses, (6) Opportunities for extramural funding, (7) Department administration, (8)
Affiliations and interdepartmental activities, (9) Department goals, and (10) Issues for the college,
university and hospital. Dr. Vijay Rao will present a separate report on our educational programs
immediately following this.

Judy Dubbs, Dara Killion, and Rae Persick provided much assistance in compiling this annual
report, and I want to publicly extend my gratitude for all the work they put into it.

CLINICAL ACTIVITIES

After a 6% increase in on-campus procedure volume a year ago, we had another 6% increase this
past year. Both body CT and body MRI volume increased 21%. In neuroradiology, CT increased 11%
and MRI 6%. These numbers would undoubtedly have been even higher if we hadn't run out of
capacity. CVIR procedures and mammography were both up almost 7%. In the general diagnostic
division, significant increases were seen in gastrointestinal and chest exams. Nuclear medicine was
up 4% and ultrasound 3.4%.

In MRI we commenced operation of our new open MRI unit in the Clinical Office Building (COB).
This was a badly needed addition to our MRI service. Although there were initially some glitches,
these have now been taken care of, and the growth in procedure volume there has been nothing short
of astounding. After only half a year of operation, we are already up to approximately 15 cases per
day – a very rapid startup for any new venture. Because of the demand, we are already operating
the unit nights and weekends. We installed the LX computer upgrade and the echo speed gradient
system on one of our high field GE magnets in the COB. The new gradient system allows snapshot
T2-weighted techniques like MR cholangiopancreatography and fetal imaging, as well as faster 3D gadolinium-enhanced sequences that are useful for MR angiography. In addition to obstetrical imaging, MR arthrography (both direct and indirect) also showed considerable growth. Volume at our MRI unit in Bala grew (after several relatively slow early years) and is now averaging 13 cases per day.

In Ultrasound, perhaps the most dramatic development was the introduction of the radiofrequency-induced tumor ablation (RITA) procedure. This shows considerable promise as an effective way of treating primary and metastatic liver tumors. Another new interventional procedure has been the use of direct thrombin injection into pseudoaneurysms – this has proven to be a good technique for obliterating these lesions. In general, the growth in interventional ultrasound has been dramatic. It is not unusual to see 12-15 cases per day of US-guided biopsies, drainages, ablations, intraoperative and other types of procedures. Drs. Nazarian and Schweitzer have developed musculoskeletal US as an important new application. They are using US not only for diagnosis but also for guiding direct injections of steroids and other medications into tendons, ligaments, joints, and bursae. Under Dr. Lev-Toaff's leadership, we saw continued growth in sonohysterography and 3D US imaging in obstetrical and gynecologic diagnosis. Growth was also seen in prostate US and endoscopic US of the gastrointestinal tract.

In Body CT, we opened up our spiral scanner in the COB evenings and weekends in response to the need to provide more slots. This led to a large increase in body CT volume. There was increasing use of 3D CT angiography. This technique is now used to evaluate renal donors, aortic aneurysms, and patients with suspected renovascular hypertension. Donors often no longer have to undergo catheter angiography. There was also increasing use of CT for detection of pulmonary emboli, as well as skeletal CT for evaluation of suspected fractures and other types of bone lesions.

At the Breast Imaging Center, our daily clinical volume had grown progressively because of rapidly increasing demand. Eventually this created major stresses and strains upon both the professional and technical staff, necessitating somewhat of a reduction in the daily clinical load. We passed our FDA-administered MQSA inspection at both the BIC and the screening center. A new and better system for sending written communications to patients was instituted. The BIC received ACR accreditation for stereotactic core breast biopsy and we are applying for similar accreditation for US-guided biopsy. Under the leadership of Dr. Cathy Piccoli, increasing use of breast MRI occurred, and she began performing MR guidance for surgical breast biopsy.

In CVIR, a badly needed third procedure laboratory was opened. This room contains an all-digital Philips angiographic unit which has outstanding capabilities. Image quality with the digital capture is so good that serial film angiography is no longer necessary. This greatly speeds up the procedures and saves on the cost of film. The unit also allows for rotational angiography and bolus chase technique. The group had their first experience at placing endovascular stent grafts. They also experienced growth in the use of chemoembolization of metastatic liver tumors, as well as in the treatment of fibroids by uterine artery embolization. This technique is now attracting widespread attention; although fibroids are benign lesions, they are very vascular and seem to respond well to occlusion of the vascular supply. We are now doing several cases of this type each week. CVIR is now placing most tunneled dialysis catheters. Dr. Bonn began performing a very interesting new procedure that has only been done a few times before – percutaneous cannulation of the thoracic duct for embolization of leaking lymphatics in patients with chylothorax.

The Neuroradiology/Head and Neck Radiology division introduced diffusion-weighted MRI for the early diagnosis of stroke. Earlier in the year, our capacity to perform this sequence was limited due to malfunction of the echo planar upgrade. After considerable bickering with GE, they finally acknowledged that the fault was theirs rather than that of the Main 10 environment and they fixed the problem once and for all. The division also saw growth in both MRA and CTA of the carotid and
intracranial arteries. Dr. Lisa Tartaglino has become our resident expert in CTA in these areas. The neuroradiology, body MRI, and body CT divisions continued their use of our PACS (picture archiving and communication system). As a result of the diligent efforts of Drs. Andrew Maidment and Michael Albert, working in conjunction with Canon, steady improvement in functionality of the PACS occurred. Loading and formatting on the system, which had been formidable problems earlier on, have been made more efficient.

In Nuclear Medicine, there was increasing use of two relatively new techniques as an adjunct to surgery. One was sentinel node imaging during breast cancer surgery; the other was the use of a gamma probe to localize parathyroid adenomas during neck exploration. In the therapeutic area, they began using high dose I-131 treatment of metastatic well-differentiated thyroid cancer and toxic thyroid nodules. Other studies that saw increasing use were dual isotope thallium/sestaMIBI stress myocardial perfusion imaging (a means of expediting throughput), Tc-99m-CEA for staging colorectal carcinoma, and brain SPECT in studying chronic pain syndromes.

Our outside contracts continue to be a significant source of teaching material and revenue to the department. These contracts include coverage at Wills Eye Hospital, the CMI (formerly TME) MRI units in Langhorne and Bala Cynwyd, Academy Imaging Center, and the joint venture between Jefferson and MMR for the open MRI unit at the COB. The latter is of course the very first venture that began just this year. As the academic year closed out, we were negotiating still another outside contract – this one for covering an MRI unit in Marlton, NJ, owned by Medical Resources, Inc. (the owners of Academy Imaging). We have now signed the contract and will commence coverage of that unit during the coming academic year. That will bring us up to a total of 9 MRI units and a clinical case load in MRI that is undoubtedly one of the highest among all academic radiology departments in the country. All of these contracts have meant a large amount of additional work for the divisions involved. I'd like to especially single out the neuroradiology division, who have absorbed a large share of this increased load, as well as Dr. Cathy Piccoli who again provided excellent leadership at Academy Imaging. She, together with Drs. Lev-Toaff, Wilkes, and Farria each devoted 20% of their time to coverage at AI.

PLANNED NEW CLINICAL PROGRAMS

Having completed installation of a third angiography room on Gibbon 5, we will now proceed to replace the two existing angio rooms with new Philips units. We are about to install a DEXA scanner in nuclear medicine. This unit is badly needed, as there is increasing attention being paid to the problem of osteoporosis in women. Also in nuclear medicine, we will be installing a molecular coincidence detection unit. This will allow us to implement PET-type imaging using 18-fluorodeoxyglucose (FDG) for imaging and staging lung cancer, lymphoma, melanoma, colorectal cancer, and also for mapping epileptic foci. We will begin our coverage of the MRI unit in Marlton. Not too far from there, we will commence radiology operations in the new Jefferson satellite in Voorhees. Initially we will have x-ray, screening mammography, and US capability in that building.

In addition to new facilities and equipment, we plan to improve our clinical capabilities in certain areas. As new software becomes available, we hope to introduce perfusion MR imaging as well as other types of functional MRI. We will begin offering CT-guided fine needle aspirations and biopsies of head and neck masses. Two new faculty members will offer new services in which they were trained prior to coming to Jefferson. Dr. George Holland has expertise in cardiac and vascular MR. Dr. William Morrison (one of our former residents) has expertise in discography, vertebroplasty, epidural steroid injections, facet joint injections, and nerve blocks.

Finally, we will continue planning several new ventures which are on the horizon. For example, we will continue working on a web-based technique of distributing images from our PACS directly to the PCs of referring physicians in their offices, as well as to places like the ED and operating rooms. We
are going to try and expand the PACS to include our ultrasound division. We are holding discussions with the hospital administration and the vascular surgeons about developing a joint vascular disease center. We are also involved in the planning of the new Kimmel Cancer Center, which will hopefully be built over the two garages on the north side of Locust Street. If things go according to plan, this building will house a new and enlarged Breast Imaging Center.

CLINICAL WEAKNESSES

Perhaps our biggest problem in the clinical area is the considerable backlogs that have developed for MRI, CT, mammography, and vascular US examinations. It is frustrating to all of us not to be able to provide expeditious service to our patients and referring clinicians in these areas. This problem is almost inevitable, given the rapid growth in admissions and other clinical activity at TJUH. A related problem is the rather serious shortage of trained technologists in MR and CT. To compound the difficulty, the hospital's cost-cutting campaign has necessitated that we reduce positions in the film library and elsewhere and this has made it increasingly hard to provide good service. All these things have produced a number of complaints from referring physicians. At the Breast Imaging center, as noted earlier, the workload became so heavy as to cause undue stress upon the staff. Scheduling had to be reduced, which of course increased the backlogs even further.

I greatly appreciate the support of the hospital administration in providing us with badly needed equipment, as mentioned earlier. However, we still have additional needs. Right now, for example, our US equipment is getting outdated in many areas. Fortunately or unfortunately, this is a technology which is rapidly undergoing change. The same thing is happening in CT, where multislice detectors are coming into use. The current generation of spiral CT scanners here at Jefferson lack subsecond scanning capability, instant reconstruction, and they have limited-heat-capacity tubes.

Another weakness, relatively speaking, results from the increasing demands upon the time of faculty radiologists in our ultrasound division. For example, the rapid growth in interventional US has put significant strain on our staffing in that division. Some of these procedures require a trip to the OR for our faculty, who must then waste precious time waiting around until they are needed. Another example is the prolonged tying up of our US procedure rooms for drainage of patients with massive ascites. We have continued to provide these services because they are in demand by our referring physicians, but the time may come in the near future when we have to limit their availability. Another example of a very labor-intensive procedure is CT angiography. Here again is a useful procedure for patient care but it requires a large amount of faculty time to reconstruct the images, and the reimbursement received doesn't come anywhere near covering the work required.

Staffing limitations have left voids in several areas. With the retirement of Dr. Simon Vinitski, we now have no physics support for advanced applications of MRI. A replacement is being recruited. In pediatric radiology, we are only able to provide half time coverage by our pediatric radiology colleagues from the duPont Hospital for Children. We are currently facing a faculty shortage in breast imaging.

While our PACS continues to improve, we still do not have a fully developed method of distributing images to referring physicians in their offices. Drs. Maidment and Albert and Yee Ting Young are working to develop a satisfactory web-based solution. A related problem, which we hope to resolve soon, is the need for a technologist to work on Main 10 loading and formatting cases on the PACS.

RESEARCH ACCOMPLISHMENTS

A year ago, I reported a banner year in research, and I am very pleased that this past year has once again been very productive. During the course of the year, department investigators had 18 funded
active grants or subcontracts from NIH, DOD or other federal sources. In addition, we had funding under 14 foundation grants and 43 industry grants. Over the total lifetime of these 75 grants and subcontracts, their total dollar value will be $7.2 million in direct costs and $2.4 million in indirect costs. During the 7/1/98-6/30/99 academic year itself, the active grant funding totaled $3,167,661 in direct costs, $837,411 of indirect costs, for a total of slightly over $4 million. The actual number of funded grants or subcontracts was up this past year (75 vs. 68 the year before) although the dollar figures are approximately the same. The NIH funding rankings for radiology currently show Jefferson in 19th place – quite a good record considering that many of the other academic radiology departments with which we compete have large endowments, extensive research laboratories that have been funded by their universities, and/or the resources of large engineering schools on their campus. We have none of these. In terms of publications, radiology researchers produced 302 scientific papers, abstracts, chapters or books in the medical literature – this represents a drop of 21 from the previous year but is still a very substantial achievement.

As always, the annual meeting of the RSNA is another revealing barometer of research productivity in radiology. This past year, our department members made 60 presentations at this major meeting, of which 41 were scientific papers, 11 were exhibits/posters, and 8 were refresher courses. The RSNA has become a very competitive international meeting, with almost half the scientific papers coming from abroad. This makes our record even more impressive and ranks us within the top tier of North American academic radiology departments in representation at this meeting. Also of note at the RSNA, Dr. Barry Goldberg received its Outstanding Research Award for 1998 — a great honor and one he richly deserved. Aside from the RSNA, faculty members made numerous presentations at subspecialty society meetings. Some of the many pieces of interesting work by our researchers include the following:

In **diagnostic ultrasound**, the faculty team continued its reputation as the top-ranked academic ultrasound group in the world. Dr. Kurtz completed his NIH-funded RDOG study comparing Doppler US, CT and MRI in diagnosis and staging of ovarian cancer. The results of this large multicenter trial are about to be published. Dr. Liu continued work on his NIH-funded study evaluating tumors by endoluminal 2-D and 3-D US. He is also working on another project evaluating the feasibility of 3-D intravascular US. Dr. Goldberg continued his NIH-funded study of breast cancer detection using US contrast agents. Dr. Forsberg had considerable outside funding from both federal and industrial sources. He and Dr. Shi studied ways to detect prostate tumors using US contrast agents (Dr. Halpern also worked in this area). They studied harmonic and subharmonic imaging of contrast material, the effects of US on bone healing, and the value of contrast-enhanced US in detecting breast and liver tumors. We are the leading center of contrast agent research in US with multiple industry-supported clinical trials — Dr. Needleman heads the liver project, Dr. Halpern the kidney and prostate projects, Dr. Goldberg the breast project, while Drs. Forsberg and Liu are using animal models for related studies. Dr. Nazarian began working with a high frequency US transducer in evaluating superficial spread of melanoma and other skin lesions. Dr. Goldberg continued an interesting study aimed at detecting bleeding sites in animals using US contrast agents. Dr. Feld assessed the utility of an end-firing US probe in guiding renal mass cryoablation. Dr. Lev-Toaff compared 3-D sonohysterography with conventional 2-D studies of the same type. She also evaluated the safety and efficacy of a new oral US contrast agent.

In **body MRI** our investigators were also very active. Dr. Mitchell published a paper on the use of mangafodipir trisodium in MR cholangiography. He mentored fellows as second author on seven other papers dealing with the MR aspects of biliary tract disease, Budd-Chiari disease, hepatocellular carcinoma, cirrhosis, and the value and limitations of contrast-enhanced 3-D MRA. Dr. Outwater was also very productive, with 23 papers published or in press. These focused on MRI in the diagnosis of diseases of the abdomen and female pelvis. He also participated in studies involving the use of MR contrast agents for imaging the GI tract and mediastinal nodes. Like Dr. Mitchell, he was an excellent mentor of several visiting foreign research fellows. Dr. Johnson
compared the use of dynamic MRI in differentiating pancreatic carcinoma from chronic pancreatitis. Dr. Halpern continued his work comparing CT angiography with MR angiography in visualizing the renal arteries in potential renal donors. Dr. Schweitzer made numerous research contributions in musculoskeletal MRI, as will be detailed later.

In body CT, Dr. Johnson investigated the use of CT angiography of renal artery stenosis, comparing real time volume rendering with maximum intensity projection algorithms. She also reviewed the parenchymal abnormalities seen in patients with pulmonary emboli, using spiral CT. She worked with Dr. Tobey (one of our residents) on the CT findings in patients with unstable abdominal aortic aneurysms. Dr. Halpern also conducted research on renal artery stenosis. He compared 3-D spiral CT with Doppler US in detecting this lesion. He also compared US, CT angiography and MR angiography in detecting the presence of accessory renal arteries and proximal renal artery bifurcations. Dr. Wechsler published a study describing CT guidance for placing lumbar sympathetic catheters for pain relief. Dr. Nazarian analyzed the role of contrast material in correct sizing of metastatic liver lesions on CT scans.

Nuclear Medicine was quite active in research. Dr. Thakur had federal funding for two projects and industry funding for three others. He published papers dealing with functional studies of Tc-99m labeled vasoactive intestinal peptide (VIP) receptor agonists, the targeting of tumors with I-123 labeled deoxyuridine, imaging of infections, and two different approaches to imaging vascular thromboembolism. Drs. Intenzo and Kim were active in corporate-funded studies on melanoma, infectious lesions, tissue factor clotting time assay, and other studies that were carried out jointly with the departments of surgery, endocrinology, and pediatric psychology. They also completed a study of stress myocardial perfusion imaging in patients coming to an acute chest pain center in the emergency department. Other areas of their investigation included the use of Tc-99m-MIBI in parathyroid imaging, brain perfusion SPECT in evaluating patients with sensorineural hearing loss, and the use of somatostatin receptor imaging in monitoring tumor response in patients with meningioma.

In the neuroradiology/head and neck radiology division, Dr. Rao completed studies and made presentations on the MR characteristics of low flow vascular malformations of the neck, as well as a comparison of dynamic contrast-enhanced gradient echo MRI with contrast-enhanced spin echo imaging in detecting carcinoma of the oral cavity. Dr. Friedman completed his work correlating the MRI findings with the clinical course of the patient following stereotactic radiosurgical pallidotomy and thalamotomy. Dr. Enochs completed some interesting basic research he began during his fellowship. He and other division members were involved in some health services research, as will be described below.

In cardiovascular/interventional radiology, Dr. Consigny continued his funded research in several important areas. One was the process of re-endothelialization of arteries after angioplasty; another was the development and characterization of an animal model of atherosclerotic plaque fracture. Dr. Bonn served as the principal investigator of a Phase II clinical trial of the Boston Scientific Symphony iliac stent and as the principal core lab investigator of a Phase II clinical trial of the Boston Scientific/Meadox Vanguard endovascular stent graft for treatment of abdominal aortic aneurysm. He also worked on the use of intravascular US as an alternative to contrast inferior vena cavaography prior to placement of filters. Drs. Needleman and Eschelman published a paper on transperineal US-guided drainage of deep pelvic abscesses. Dr. Gardiner continued his work compiling and verifying data from the STAR registry.

In breast imaging, Drs. Maidment and Feig both worked on NIH-funded projects evaluating digital mammography. Dr. Maidment continued his DOD-funded projects on 3-D digital analysis of breast calcifications. He also worked along with Drs. Piccoli and Albert on another DOD-funded project on
3-D imaging of the breast. Dr. Feig participated in a multi-institutional evaluation of a computer-aided detection system in screening mammography.

In the general diagnostic division, Dr. Schweitzer once again evinced extraordinary productivity in many aspects of MRI of musculoskeletal disease. He published 13 papers in the medical literature on this subject with 6 more in press, as well as being a co-author of 14 abstracts at the RSNA and other national meetings. As in past years, it is notable that many of his publications are first-authored by medical students, residents, or fellows with Dr. Schweitzer serving as mentor and second author. I can't recall ever seeing anyone so effective at stimulating young people in the field to become involved in research. I was also pleased to see that Dr. Shah, despite the fact that she is only working part time, submitted three papers for publication and two more as RSNA abstracts. Most of these deal with CT aspects of pulmonary infections.

A number of us continued our interest in health services/outcomes research. Dr. Flanders published a very important paper on the relationship between functional status following spinal cord injury and the severity of cord damage as noted on MRI. Dr. Intenzo analyzed utilization of lung scintigraphy by emergency medicine physicians. He also studied practice patterns in cardiac gated blood pool imaging and therapeutic radioactive iodine procedures. Dr. Feld analyzed referral trends to our interventional US service. Dr. Rao discovered some intriguing geographic variations in utilization rates of neuroimaging, a phenomenon that has been noted in other areas of medical practice but has not been previously reported in diagnostic radiology. Dr. Enochs reported the results of a survey on the use of C1-2 puncture for cervical myelography in academic medical centers. Dr. Farria worked with former colleagues at UCLA and the ACR to determine reasons why facilities failed inspection of their clinical images in the ACR mammography accreditation program. Drs. Rao, Parker and I collaborated on a number of different projects. One publication reported on the financial impact of MRI on nationwide costs of diagnostic imaging, and compared these costs with those of cardiovascular imaging. We also reported on nationwide practice patterns in radiographic and US imaging, comparing the hospital and private office settings. I published an analysis of procedural work performed on Medicare patients by both vascular surgeons and interventional radiologists to see whether the latter posed a threat to the practice of the former (we concluded that they did not). The three of us were gratified that we submitted seven health-services-related abstracts for the upcoming 1999 RSNA meeting and all of them have been accepted.

In radiologic physics Drs. Maidment and Albert are doing interesting work pertaining to physical factors in radiographic imaging. Among other things, they are studying linear response theory for detectors, lossy compression in digital radiography, and a new way to calculate modulation transfer function.

RESEARCH WEAKNESSES

Our principal research weakness was the same this past year as it has been for the previous two years – an increasing clinical workload has cut sharply into the time our faculty has available to conduct research. We have essentially the same size group of faculty radiologists now as we did three years ago. However, let's look at what has happened to the clinical workload over the past three years: (1) Our clinical case load on the campus rose 6% during each of the last two years. (2) When we first began covering neuroradiology procedures at Wills Eye Hospital some years ago, we split the coverage with the department of radiology of Pennsylvania Hospital. Two years ago, we assumed sole coverage responsibility there, thus doubling the workload of that very busy service for our physicians. (3) Beginning exactly three years ago, we took on the Academy Imaging contract. This requires the commitment of one faculty member to that facility each day. That of course was a brand new coverage responsibility which hadn't previously existed. (4) Over the past three years, there has been steady growth in MRI volume at the CMI (formerly TME) MRI units in Langhorne and Bala Cynwyd. (5) This past year, our open MRI unit in the COB commenced operation. As
noted earlier, this has been very successful and it has contributed significantly to our MRI workload.

Finally, we are about to assume coverage of another off-campus MRI unit in Marlton, NJ.

It's a tribute to our faculty that despite this sharp increase in clinical coverage responsibilities, they have still been able to maintain the impressive research productivity that characterizes our department. However, something's got to give at some point, and I am concerned about our ability to continue our research program at the same level at which it has been in the past. We are currently in the process of recruiting replacements for several faculty members, and it may become necessary to add new positions to give people enough time for scholarly activity.

In this report a year ago, I alluded to the fact that I was not satisfied with the funding efforts made by our basic science faculty members in MRI physics and nuclear medicine physics. The two individuals involved have now departed. In nuclear medicine physics, we made the decision not to replace that position. This will obviously reduce our ability to conduct research in that area. However, Drs. Thakur, Intenzo, and Kim are a good team and I'm hopeful that together they will be able to continue valuable research in the area of nuclear medicine. In MRI physics, we intend to recruit a replacement and we will focus on trying to get an individual with strong potential to obtain NIH and other outside grant funding.

Research productivity has dropped in both CVIR and neuroradiology divisions. Not just coincidentally, the faculty members in those divisions are at the top of the chart in RVUs of clinical service performed.

**OPPORTUNITIES FOR EXTRAMURAL FUNDING**

As shown in Table 2 of the appendix, department investigators currently have 31 pending grants or subcontracts (compared with 20 at this time last year). Of these, 22 are NIH or other federally-funded proposals, 4 are proposals to foundations, and 5 are to participate in industry-supported clinical trials.

Among the proposals for NIH or other federal funding, two have already been funded. One is an NIH subcontract for Dr. Christopher Merritt to participate in a study of a very interesting new technique called ultrasound elastography. Another is for Dr. Mathew Thakur under the NIH STTR program with Palatin Technologies. This project will assess the potential for Auger electron cancer therapy. Among the pending proposals, Dr. Forsberg has several relating to subharmonic ultrasound imaging, while Dr. Goldberg has proposed to study new US contrast agents as well as new high frequency technologies. Dr. Kurtz has submitted a proposal to study US imaging of ovarian masses and Dr. Halpern has submitted one to image prostate cancer, both using contrast enhancement. Dr. Liu has submitted an SBIR proposal on development of a high speed scanning acoustic microscope. Dr. Maitment has submitted proposals to DOD on analysis of breast calcifications and digital galactography. Dr. Mitchell proposes to use MRI to study autosomal dominant polycystic kidney disease. Dr. Thakur has several applications pending in the area of new radiopharmaceuticals.

Of the five industrial proposals, four of them have already been funded and will start this year. These are projects of Drs. Forsberg, Liu, Merritt and Mitchell. All of them relate to contrast agent research.

A very large and comprehensive grant has been received by the American College of Radiology to set up a multi-institutional research program in imaging of cancer. The project is known as the American College of Radiology Imaging Network (ACRIN) and is headed by Dr. Bruce Hillman of the University of Virginia. Several areas have been identified for possible participation by our department. Dr. Barry Goldberg chairs the ultrasound committee of ACRIN and we will most likely
be involved in one or several projects in that area. Dr. Mitchell is planning to participate in a trial of MRI in the detection and staging of cervical cancer. We may also participate in a multicenter screening trial of digital mammography, through Drs. Maidment and Feig.

**AFFILIATIONS AND INTERDEPARTMENTAL ACTIVITIES**

This was the second year in which we provided full neuroradiology coverage at Wills Eye Hospital. Dr. Lisa Tartaglino has done a fine job at coordinating our activities there, working closely with Ms. Carrie Agnew of the Wills administration. In general, things have gone well there and I believe some of the administrative concerns expressed in earlier years by Dr. William Tasman and his colleagues have been largely alleviated. Radiology reports at Wills have been integrated into our radiology information system and this has certainly helped things. Dr. Friedman and others in neuroradiology continue to collaborate in research with the neurosurgeons and ophthalmologists at Wills. Joint studies are underway involving the imaging aspects of the treatment of movement disorders and trigeminal neuralgia.

This past year saw the commencement of our relationship with the radiologists at the Methodist Division of Thomas Jefferson University Hospital. I have had a number of discussions with Dr. Larry Caputo and met once with their entire group. Another such meeting will take place shortly. We will explore ways to work together jointly, to the benefit of both groups. The best example this past year was the sharing of one neuroradiologist position. Dr. Fitzpatrick, who filled this position, has elected to relocate elsewhere and both we and Methodist have decided to bring new full time neuroradiologists on board to replace him.

Another area of joint planning is our discussions with the division of vascular surgery on the formation of a Jefferson Vascular Center. The vascular surgeons, our CVIR group, the hospital administration and I all agree that this is desirable, although the exact form and financial arrangements have yet to be worked out. Dr. Goldberg is holding discussions with the department of obstetrics and gynecology on possible joint development of an ultrasound and women's imaging program.

A number of our faculty radiologists are working closely with other departments to create new or expanded clinical services. For example, Drs. Nazarian and Schweitzer are working with orthopedic surgeons from the Rothman Institute to develop a musculoskeletal ultrasound service. Joint agreements are going forward with the department of urology on prostate US and biopsy, and with the division of gastroenterology on endoscopic US. Dr. Liu works closely with urologists in endoluminal US of various urinary tract conditions.

There are also a number of research collaborations between our faculty and outside groups. Several of our basic scientists and physician faculty members are involved in joint research with scientists at Drexel University. On campus, there are joint relationships in research with neurology, pediatric psychiatry, surgery, endocrinology, cardiology, rheumatology and others.

**DEPARTMENT ADMINISTRATION**

Victor Sarro has continued to provide excellent administrative leadership for the department. He and his managerial team had a number of major challenges to confront this past year. Perhaps the biggest was the transition of our professional billing from Medaphis to the IDX system under the auspices of the Central Billing Office. The transition has gone smoothly, and that fact is a credit to Mr. Sarro and a group of our managers, as well as to Tom Kupp and others from the CBO. All of them met on a regular basis throughout the year to make sure the wrinkles were ironed out. I know of a number of other academic radiology departments around the country that have undergone similar transitions to centralized practice plan billing with disastrous results. I'm greatly
appreciative of all the hard work that went into making this switchover more successful here at Jefferson.

Mr. Sarro and his group accomplished a number of other major tasks as well, including: (1) Completion of installation of CVIR Room 3 and further planning for the replacement of the angio equipment in Rooms 1 and 2. (2) Negotiation of significantly discounted pricing for the LX upgrade to one of our MRI units in the COB. (3) Opening a radiology satellite at 841 Chestnut Street. (4) Completion of planning and installation of equipment in Jefferson's new Voorhees satellite facility. (5) Commencement of operations of our open MRI unit in the COB. This was a joint venture between TJUH and MMR, Inc. There were some extremely complex financial and administrative issues that had to be resolved and Mr. Sarro played an important role in getting this accomplished. (6) At Wills Eye Hospital, reports have been incorporated into our radiology information system. This has made results available more rapidly to referring clinicians at Wills. (7) Expanded CT scheduling at the COB to include evenings and weekends. This resulted in increased revenue for the hospital and department, as well as a reduction in our backlogs. Despite this, backlogs continue in both CT and MRI and we are working on ways to alleviate this. (8) Because of the need for the hospital to reduce its operating expenses even further, Mr. Sarro oversaw another round of cost cutting in our department's operating budget. He had to make some painful choices, but managed to do it nevertheless. (9) Implementation of the hospital's Last Word system for patient registration. (10) Trained our registrars in use of the Last Word and IDX systems. (11) Increased the number of independent contractors for transcription of reports. (12) Implemented an ongoing patient satisfaction survey.

Several other people deserve special mention. Administrative Assistants Dara Killion and Toni Salvatore work in my office and continue to do a tremendous job for the department. They have innumerable responsibilities, yet they always managed to fulfill them well and stay on top of the myriad problems that have to be attended to. Judy Dubbs, our grants administrator, is as diligent and dedicated to our research program as any faculty member. I greatly appreciate her fine work in overseeing and administering our numerous funded grants. The rest of Mr. Sarro's administrative team here on 3 Gibbon and throughout the department are highly competent, dedicated and hard-working. My thanks to all of them for jobs very well done this past year.

DEPARTMENT GOALS

Balance the demands of an increased clinical workload with our research and teaching missions — This was our highest priority goal last year and continues to be this year. As we expand our clinical practice here on the campus and also through assumption of more and more outside contracts, clinical workload is increasing rapidly. It will be a major challenge for us to continue producing quality clinical work, while at the same time maintaining research productivity and excellence in teaching. Morale in several of our divisions has sagged at times because of their frustration in trying to fulfill all three missions with limited faculty manpower. It is likely that faculty expansion will be necessary, in very selected areas.

Increase our capacity in MRI, CT, mammography, and vascular ultrasound — We have major backlogs in all four of these areas. The impending affiliation with the Marlton MRI will hopefully help our backlogs in that modality by allowing us to divert some New Jersey patients there. Even with that, I still foresee major backlogs continuing in MRI, and we have already begun planning for possible installation of another high field unit on the campus. We may need another CT scanner as well. Hopefully a new Kimmel Cancer Center building will be constructed in the near future; this should allow us to move into an expanded Breast Imaging Center.

Expand our research program — It is vitally important that we continue to be one of the leading centers of research within the academic radiology community. Most importantly, this means
increasing our externally funded research. We depend largely upon our basic scientists to accomplish this. Drs. Forsberg, Maidment, Consigny, Liu, Shi, and Thakur have been successful in obtaining external funding in the past and I hope to see them become even more successful this year. I also hope to see Dr. Parker obtain outside funding this year. We will be recruiting a replacement for Dr. Vinitski and we will look to that individual to help build up good MR basic research capability. It is also important that we continually upgrade our clinical research, which can lead to even greater visibility at major national radiology meetings and the publication of high quality work in leading radiology journals. As noted above, this goal conflicts to some degree with the demands created by our increasing clinical load. One of the side benefits of a strong clinical research program is that it improves the reputation of the department and faculty, which in turn improves our ability to build a strong clinical practice and compete for more outside contracts.

**Reduce costs** – We recognize the need to help the hospital reduce its operating costs and are working on various ways to do so. We are shortening some of our MRI and CT protocols. Dr. Kurtz, Mr. Sarro and I have met with the hospital administration to explore ways to reduce radiology utilization on the inpatient side. We continue our attempts to limit the use of low osmolar contrast agents. Through use of our PACS we are reducing the use of laser camera film and our dependence on a large film library staff.

**Improvement of our physical plant and equipment** – The waiting rooms and other patient areas in several parts of the department are beginning to look a bit shabby. We need to improve the ambiance. Some of our equipment is becoming outdated. One major equipment problem existed in our CVIR division, and I'm greatly appreciative of the hospital's support in allowing us to replace all of it this year. However, our neuro angio room on Main 10 is so worn out as to be almost nonfunctional. We are investigating ways to solve this problem with various low cost options. Rapid advances in CT and ultrasound technology are continuing to occur, which means that we have to be diligent about keeping our equipment up to date in these two important areas.

**Imaging of physiological processes** – This is clearly one of the waves of the future in radiology. Nuclear medicine has been doing this for years, and their capability in this area will be vastly improved by the addition of a molecular coincidence detection unit with PET capability during the coming year. Another example is functional MRI, a field we are just beginning to get into. We hope to develop other types of functional imaging programs in the future.

**Develop a Jefferson Vascular Center** – We have held a number of discussions with representatives of the hospital administration and the division of vascular surgery to try and develop a joint Jefferson Vascular Center. There are some difficult financial and space issues that need to be addressed. A number of other academic centers are developing such centers, and I feel it would boost Jefferson's ability to attract patients with peripheral vascular disease, as well as research dollars.

**Continue to attract the best residency and fellowship candidates** – We were extraordinarily successful in attracting excellent resident candidates this past year. This was due largely to the diligent efforts of Dr. Nazarian and his colleagues on our residency selection committee. More and more medical students are becoming interested in radiology, after a brief dip in interest several years ago. I'm therefore confident that our efforts this past year can be repeated in the future. We have excellent fellowship programs as well, and we need to do everything possible to make these attractive.

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

**Operating budget support from the hospital** – The department of radiology returns considerable profit to the hospital on the outpatient side. Unquestionably it is important to cut costs, but hopefully the hospital will not ask us to cut further, to the point where we are forced to
make major compromises in the quality of our patient care. We are already getting complaints from referring physicians about our policy of no longer printing laser camera film for MRI and CT studies unless specifically requested, or printing reduced-size formats of these images. We've reduced our number of film librarians, which also impacts our service to referring clinicians. Lack of transport personnel is another problem. If further budget cuts are necessary, they should be directed toward non-revenue-producing departments of the hospital.

**Capital budget support from the hospital for increasing our clinical capacity** — We are short of space and equipment for MRI, CT, mammography, and vascular ultrasound — all areas in which we have substantial backlogs. Back in 1990 when the COB opened, it gave us a vital opportunity to expand our practice. Fortunately or unfortunately, our practice has continued to grow to the point where we now need even more space and equipment in order to meet clinical demand. I am grateful that the administration has consented to our forming alliances with private corporations, as this has clearly helped provide us with the opportunity for clinical growth and better service to referring physicians. Hopefully we can also develop necessary additional facilities on campus.

**Challenges posed by the major health care insurance carriers and ways the Jefferson Health System can respond** — Two of the major carriers in the Philadelphia area have been allowed to concentrate their economic resources to the point where they essentially have monopoly power. The antitrust laws are stacked against physicians and hospitals. It is very important that the Jefferson Health System hospitals and physicians work together to stand up to the predatory practices of these payors. Some positive results occurred this past year when two of the Jefferson Health System components (Albert Einstein and the Main Line Health System) renegotiated their contracts with Aetna U.S. Healthcare. New negotiations are looming ahead with Independence Blue Cross.

**Assessing faculty productivity** — There has been some discussion within Jefferson University Physicians (formerly the Jefferson Faculty Foundation) about ways to assess faculty productivity. I feel it is very important that we do so. Faculty members who are not producing either clinically or in research should have their support withdrawn by the institution. I feel our department would come out very well in any assessment of faculty productivity, but everyone needs to submit to the process. Developing the necessary review instrument will be tricky and potentially divisive. Nevertheless, I feel it is important to do so. Our department has seen its faculty salary support from the institution decline sharply over the last three years. This will make it more difficult for us to recruit and retain good faculty members and maintain a research program. I hope the university will develop a policy of better support for those departments that are productive, and less for those that are not.

**Road blocks to research** — The Clinical Cancer Research Review Committee has become an impediment to research proposals put forth by the department of radiology. Some individuals on that committee have been very inflexible and have delayed or even blocked the submission of grant proposals from our department. We appreciate any advice and constructive criticism the committee can give us, but they should not be allowed to impede the submission of proposals by experienced investigators in our own and other departments.

**Better marketing** — This past year, as part of our cost cutting campaign, we had to let our marketing representative go. Since then, there has been virtually no marketing on behalf of our clinical practice. We need help from the TJUH marketing department in developing brochures, distributing marketing letters, and improving our web page.
TEACHING PROGRAMS

Vijay M. Rao, M.D.
Associate Chairperson (Education)

INTRODUCTION

In spite of continued tumultuous times in the health care environment, I have some good news to report. The job market in radiology is booming, and radiology as a career is once again on the upswing. I am pleased to report that all of our fellows in all of the subspecialties including vascular/interventional radiology, neuroradiology/ENT, cross-sectional imaging, body MRI, musculoskeletal radiology, and breast imaging successfully obtained desirable positions of their choice. Our department continues to enjoy national recognition for the quality of our teaching programs for residents, fellows, and medical students. Our faculty should be commended for making the education of our trainees a priority in spite of continually mounting pressures to increase clinical workload and maintain research productivity.

RESIDENCY TRAINING PROGRAM

We were gratified that all of our senior residents passed the written and oral examinations given by the American Board of Radiology. Our program performance average in the written part of the examination was ranked in the 89th percentile in Diagnostic Radiology and 86th percentile for Physics nationwide. We are extremely proud of the track record of our program’s performance in the American Board of Radiology Examination. It is also gratifying to note that three of our six graduating residents chose to stay with us to pursue fellowships in cross-sectional imaging. Two residents will do fellowships in MRI at the Hospital of the University of Pennsylvania. Another resident will pursue a fellowship in musculoskeletal radiology at the Hospital for Special Surgery in New York.

Resident Selection: Our residency is recognized nationally as one of the best training programs. We continue to compete successfully with other top programs in the country for the best applicants. This year we received 280 applications and interviewed 75 applicants for six positions, and we were once again very pleased with the results of the residency match program (NRMP). We filled all five of our positions offered through the NRMP from the top ten candidates on our match list. Our sixth position was filled outside the match through an early acceptance program offered only to top JMC students. Steve Wagner, who graduated number one in his class from JMC, accepted our early offer. I would like to thank Levon Nazarian, M.D. for the outstanding job that he has done each year as the Chairman of the Residency Selection Committee.

Resident Research: It is gratifying to note that our residents are active in research and have presented several scientific papers at national radiology meetings. The Radiological Society of North America again sponsored the resident/fellow Roentgen Research Award program and invited academic departments to nominate a candidate who had demonstrated accomplishments in radiological investigation. Lawrence Lo, M.D. was the recipient of the 1999 Roentgen Research Award for our department.

Clinical Training: Our clinical practice continues to grow, and this provide a wealth of interesting case material for our resident/fellow education. The biggest change in our practice over the past two years has been the phasing in of teleradiology/PACS for image interpretation. This technology is the wave of the future, and we are fortunate to be at the forefront of such advances; however, the teaching program has been adversely affected by these changes. Many interesting teaching cases
have been lost due to the lack of hard copy films. The PACS committee is now leading an initiative to organize electronic teaching files for each division under the direction of Adam Flanders, M.D.

Rotations at the Academy Imaging Center have been received favorably by the third and fourth year residents. They have gained exposure to the world of private practice while participating in conventional radiography, mammography, and ultrasound at this center. The computed tomography and MRI studies are read at Jefferson itself via teleradiology.

Excellence in Teaching Award: The teaching efforts of our faculty and are recognized and rewarded each year. The A. Edward O'Hara Award is given each year by the residents to a faculty teacher of the year, and this year Ethan Halpern, M.D. was the recipient.

TRAINING PROGRAM FOR FELLOWS

Our fellowship programs continue to thrive in all areas, although demand is often driven by market forces. We saw a slump in the number of applicants for neuroradiology fellowships this year. On the other hand, there was an increased demand for imaging fellowships in the combined body MRI and Neuro MRI program. To accommodate this, we used some of the unfilled traditional neuroradiology fellowship slots to recruit the better fellowship applicants into our combined program. We are also looking to redesign the breast imaging fellowship to incorporate ultrasound and MRI of the pelvis and breast, since there is an increasing interest in women’s imaging.

Our cross-sectional imaging fellowship continues to be in great demand. Our neuroradiology/ENT radiology and CVIR fellowship programs are accredited by the ACGME. Our role in providing radiology coverage at the Neurosensory Institute at the Wills Eye Hospital has broadened the education of the neuroradiology fellows in neuro-ophthalmologic imaging and neurointerventional procedures.

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 is now included in the core curriculum for sophomore students, although it took me several years to convince the Jefferson Medical College Curriculum Committee. I wish to thank the core group of enthusiastic faculty members who willingly contribute their time to this important teaching exercise for Jefferson medical students. This group consists of Diane Deely, M.D., David Eschelman, M.D., Cathy Piccoli, M.D., Paul Spirn, M.D., and Lisa Tartaglino, M.D. I have now handed over the directorship of this course to Paul Spirn, M.D., and I have full confidence that Paul will do a great job in keeping it running smoothly.

The junior and senior students can choose to attend one or more of the five separate electives offered by our department which include general radiology, pediatric radiology, neuroradiology/ENT radiology, CVIR, and Ultrasound/CT/MRI. The radiology electives remain very popular and were completed by 134 members (75%) of the senior class, either here or at an affiliated institution.

The evaluations of the general radiology elective continue to be quite positive, which is a tribute to Paul Spirn, M.D. The neuroradiology elective was completed by 3 senior medical students, and pediatric radiology was completed by 7 senior students. Electives in US/CT/MRI and CVIR were completed by 3 and 4 students respectively. All of these courses received rave reviews from the students.

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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. Under the leadership of Mark Schweitzer, M.D., another new CME program was developed on spine imaging. The Jefferson Spine Imaging Symposium, directed by Mark Schweitzer, M.D., David Karasick, M.D. and David Friedman, M.D. was given in March, 1999 and was very successful. It was attended by approximately 109 physicians.

Twelfth Annual Philip J. Hodes Lecture. In honor of Philip J. Hodes, M.D., the Twelfth Annual Philip J. Hodes lecture was very successful. The guest speaker was Richard L. Baron, M.D., Professor and Chairman, Department of Radiology, University of Pittsburgh Medical Center and President and Chief Executive Officer, University of Pittsburgh Physicians. He gave an outstanding presentation entitled "Running an Academic Medical Practice as a Business: Should We, Could We?"

Radiology Grand Rounds. Grand Rounds in Radiology were held bi-weekly and included 15 topics of interest covering all radiology subspecialties.

Radiology Research Conferences. The bi-weekly Radiology Research Conferences were continued this year under the direction of Barry B. Goldberg, M.D. This conference allows the faculty, residents, and fellows in the department the opportunity to present the results of their research activities.

Nineteenth Annual Leading Edge in Diagnostic Ultrasound Conference. The ultrasound division's Nineteenth Annual Leading Edge in Diagnostic Ultrasound, held in Atlantic City, was a major success again this year, attracting over 1,500 attendees. In addition, the Division of Ultrasound offered about 40 one to five-day continuing medical education courses in ultrasound applications for abdomen, obstetrics and gynecology, sonomammography, Doppler ultrasound, contrast agents in ultrasound, and others.

The Jefferson Ultrasound Research and Education Institute (JUREI). The Jefferson Ultrasound Research and Education Institute, under the leadership of Barry B. Goldberg, M.D., continues to expand its educational efforts here at Jefferson by offering additional courses in such areas such as 3-D ultrasound, musculoskeletal ultrasound, and ultrasound contrast agents. In addition, there has been further expansion of our affiliate ultrasound programs in many countries around the world. There are now some 24 affiliated programs throughout Europe, South America, Asia, and Africa. The Leading Edge program continues to grow with ongoing support from ultrasound manufacturers and pharmaceutical companies. We also continue to receive support from foundations and companies. The Soros Foundations (Open Society Institute) has supported our program during the past year with funding for international training and the production of educational materials for our affiliated centers. We provide training not only to individuals who purchase equipment but also to sales, marketing and engineering personnel. We also produce videotapes for companies for educational purposes for the training of physicians and sonographers, as well as sales and marketing personnel.

Plans are being made to increase the number of affiliate sites to more than 30 during the coming year. A basic and advanced teaching protocol for our worldwide centers should be completed during the coming year. This consists of the development of educational materials and teaching guides for the teachers that are in our centers. It is hoped that this effort will lead to a better method of teaching physicians and sonographers on a worldwide basis. This concept is being supported by the World Health Organization which has renewed approval of our center as an official ultrasound training center for general ultrasound for the next four years. We will continue to provide
educational programs and materials for commercial companies. There will be more emphasis on educational training in ultrasound contrast agents as these become commercially available. A course is being planned and will be implemented relative to the training of physicians in the use of therapeutic directed ultrasound for destroying tumors in the liver. This program will be lead by Laurence Needleman, M.D. in conjunction with the Department of Surgery. The Leading Edge Program in the year 2000 will feature musculoskeletal ultrasound as well as ultrasound mammography along with our standard areas of Doppler and obstetrics and gynecology. We will also continue our successful symposium in ultrasound contrast agents.

**FUTURE GOALS**

Our future goals of preserving a high quality of educational programs for medical students, residents and fellows can be met only if the morale of faculty stays upbeat. It is important that we maintain a critical mass of faculty to continue to excel in patient care, teaching and research. Additionally, we need to have access to resources to purchase or update equipment and other teaching materials as needed in order to stay on the cutting edge. Such measures will allow us to continue to attract the best candidates for residency and fellowship programs in the future.
Journal Articles:


Books and Book Chapters:


**CD ROMs:**


**Abstracts:**


FORMAL SCIENTIFIC PRESENTATIONS

JOSEPH BONN, M.D.

August 14-16, 1998 8th Annual Symposium on Peripheral Vascular Disease, Brown University School of Medicine, Newport, RI
- "Interventional treatment of failed or failing arterial bypass grafts"
- "Stent-grafts: Materials and construction"

September 27-30, 1998 Annual Meeting of the Cardiovascular and Interventional Radiological Society of Europe, Venice, Italy
- "Carbon dioxide for venography and guidance in placement of central venous access devices"
- "High-risk placental abnormalities: Balloon occlusion of internal iliac arteries to reduce intraoperative hemorrhage"

January 21-22, 1999 High Tech Peripherique 5 Conference, Societe Francaise d'Imagerie Cardio-Vasculaire, and College Francais de Pathologie Vasculaire, Paris, France
- "Stent-grafts: Materials and construction"

May 13, 1999 Department of Radiology Grand Rounds, New York Methodist Hospital, Brooklyn, NY
- "New roles for embolization in uterine disorders"

P. MACKE CONSIGNY, PH.D.

November 9, 1998 71st Scientific Session, American Heart Association, Dallas, TX
- "Pathophysiology of renovascular hypertension"

November 14, 1998 Vascular Disease and Intervention Update '98, Medical Educational Council of Pensacola, Pensacola, FL
- "Atherogenesis - etiology, risk factors, prevention"
- "Angioplasty, grafts and stenting - biologic responses and their consequences"

February 22, 1999 Departments of Bioengineering and Material Sciences, Drexel University, Philadelphia, PA
- "Pathophysiology of restenosis after angioplasty: A bioengineering perspective"

W. SCOTT ENOCHS, M.D., PH.D.

March 27-28, 1999 First Annual Jefferson Spine Imaging Symposium, Philadelphia, PA
- "MRI (and CT) appearance of disc herniations and the post-operative spine"
• “MR/CT imaging of insufficiency versus pathologic fractures of the spine”

DAVID J. ESCHELMAN, M.D.

March 20-25, 1999
24th Annual Scientific Meeting of the Society of Cardiovascular and Interventional Radiology, Orlando, FL
• “Alternatives to iodinated contrast” (workshop coordinator)
• “Introduction to venous access” (workshop)
• “Vena cava filters” (workshop)

DIONE FARRIA, M.D.

November 29-
December 4, 1998
84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
• “Women’s communication preferences and experiences in mammography”
• “MQSA: Fitting the pieces of the puzzle together”

May 26-29, 1999
Society of Breast Imaging: 4th Postgraduate Course, Boston, MA
• “Women’s communication preferences and experiences in mammography”

STEPHEN A. FEIG, M.D.

July 23, 1998
Delaware Valley Chapter of the American Association of Physicists in Medicine (AAPM) Mammography Symposium, Philadelphia, PA
• “Clinical mammography, breast anatomy/physiology and clinically good and bad mammograms”

August 6-9, 1998
18th Annual Pittsburgh Breast Imaging Seminar, Sponsored by Pittsburgh Mercy Health System and Pittsburgh Breast Imaging Seminar Associates, Pittsburgh, PA
• “Mammographic evaluation of breast calcifications”
• “Problem solving mammography”
• “Digital mammography”

October 14, 1998
New York Hospital-Cornell Medical Center, Department of Radiology, New York, NY
• “Digital mammography”

October 15-17, 1998
New York University School of Medicine, Breast Cancer Diagnosis: State-of-the-Art 1998, New York, NY
• “Screening mammography: Is the controversy over?”
• “Assessment of mammography quality from the viewbox”
• “Interesting case workshop”
October 16, 1998
Columbia University College of Physicians and Surgeons, Columbia Presbyterian Medical Center, Department of Radiology, New York, NY
• “Digital mammography”

November 29-December 4, 1998
84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
• “Risk, benefit, and controversies in mammographic screening” (course)
• “Screening: Risk, benefit, and cost analysis in the United States” (course)

December 13-18, 1998
A Practical Approach to Breast Imaging, University of California School of Medicine at San Francisco, Department of Radiology, Kona, HI
• “Mammographic follow-up as an alternative to biopsy: Strengths, limitations, pitfalls”
• “Problem-solving breast imaging: Challenging cases”
• “Mammography practice management: Scheduling, throughput, previous films, double reading”
• “Assessing mammographic image quality at the viewbox”
• “Current status and future applications for digital mammography”

March 19-21, 1999
Breast Imaging Update, University of California School of Medicine at San Francisco, Department of Radiology, San Francisco, CA
• “Assessing mammographic image quality at the viewbox”
• “Diagnostic mammography: How, when, and why to do extra views”
• “How to recognize subtle mammographic signs of malignancy”
• “The mammographic report: How to overcome problems in communication”
• “Current status of and future applications for digital mammography”
• “Problem solving breast imaging: Challenging cases”

March 22-26, 1999
42nd Annual Diagnostic Radiology Postgraduate Course, University of California School of Medicine at San Francisco, San Francisco, CA
• “Diagnostic mammography: When and why to do extra views”
• “The mammography report: How to overcome problems in communication”

April 15-18, 1999
Second Annual Symposium-Society for the Advancement of Women’s Imaging, McLean, VA
• “The dense breast: Problems and solutions”
• “Digital mammography”

April 22-25, 1999
Consensus Conference of the Treatment of DCIS, sponsored by the Breast Health Institute, Philadelphia, PA
• “The emerging role of digital mammography”

April 28-May 1, 1999
New York Roentgen Ray Society Spring Conference, New York, NY
May 26-29, 1999
4th Postgraduate Course, Society of Breast Imaging, Boston, MA
• “The changing paradigm of DCIS: Implications for screening”
• “Screening mammography costs and adverse consequences”
• “Analyzing calcifications”

May 28, 1999
American College of Radiology, Mammography Accreditation Program, Boston, MA
• “Clinical image case review” (refresher course)

RICK I. FELD, M.D.

December 15, 1998
Overlook Hospital, Resident Case Conference, Summit, NJ
• “Sonography of adnexal abnormalities”

March 1, 1999
Monmouth Medical Center, Monmouth, NJ
• “Sonography of adnexal abnormalities”

March 14-17, 1999
43rd Annual Convention of the American Institute of Ultrasound in Medicine, San Antonio, TX
• “A computerized system for ultrasound-guided interventional procedures”

May 11-14, 1999
The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
• “Ultrasound guided biopsy: Interesting and difficult cases”
• “Gastrointestinal sonography”

May 19, 1999
Paoli Memorial Hospital, Medical Grand Rounds, Paoli, PA
• “Update on laparoscopic and endoscopic ultrasound”

MAURICE FITZPATRICK, M.D.

November 29-December 4, 1998
84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
• “Gene therapy of cerebral astrocytomas: Dynamic imaging manifestations on serial MRI/MRS” (exhibit)

March 27-28, 1999
First Annual Jefferson Spine Imaging Symposium, Philadelphia, PA
• “Nomenclature of disc abnormalities”

May 21-28, 1999
37th Annual Meeting of the American Society of Neuroradiology, San Diego, CA
• “Gene therapy of cerebral astrocytomas: Dynamic imaging manifestations on serial MRI/MRS” (exhibit)
ADAM E. FLANDERS, M.D.

December 3-5, 1998  
26th Annual Meeting of the Cervical Spine Research Society, Atlanta, GA  
• “Imaging workup of thoracolumbar trauma”

February 2-8, 1999  
66th Annual Meeting of the American Academy of Orthopedic Surgery, Anaheim, CA  
• “Imaging workup of thoracolumbar trauma”

March 27-28, 1999  
First Annual Jefferson Spine Imaging Symposium, Philadelphia, PA  
• “MR of cervical trauma”  
• “MR of thoracic and lumbar trauma”

FLEMMING FORSBERG, PH.D.

September 23-25, 1998  
24th International Symposium on Acoustical Imaging, Santa Barbara, CA  
• “Ultrasound contrast imaging of prostate tumors”

November 29-December 4, 1998  
84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL  
• “Comparison of nonlinear US imaging modes using contrast agents”  
• “US contrast imaging of hepatomas in fundamental and wideband harmonic modes”  
• “Flow estimation using harmonic flash echo imaging”  
• “Comparison of time-frequency distributions in Doppler US”

January 22, 1999  
University of Toledo, Department of Bioengineering, Toledo, OH  
• “Advances in ultrasound contrast imaging techniques”

February 5-7, 1999  
4th Ultrasound Contrast Research Symposium in Radiology, San Diego, CA  
• “Effect of filling gasses on the backscatter from contrast microbubbles: Theory and in vivo measurements”

February 19, 1999  
Advanced Logiq 700 Technology Course, GE Medical Systems, Milwaukee, WI  
• “Current concepts in ultrasound contrast agents and harmonic imaging”

March 12, 1999  
Advanced Logiq 700 Technology Course, GE Medical Systems, Milwaukee, WI  
• “Current concepts in ultrasound contrast agents and harmonic imaging”

March 14-17, 1999  
43rd Annual Convention of the American Institute of Ultrasound in Medicine, San Antonio, TX  
• “Ultrasound contrast imaging of canine prostate tumors”
May 11-14, 1999

The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ

- "Contrast imaging of CTVS prostate tumors"
- "Technical advances in instrumentation"
- "Physics of multiplanar 3D ultrasound"

June 11, 1999

Advanced Logiq 700 Technology Course, GE Medical Systems, Milwaukee, WI

- "Current concepts in ultrasound contrast agents and harmonic imaging"

June 28, 1999

B-K Medical, Copenhagen, Denmark

- "New contrast imaging techniques for the prostate and beyond"

June 29, 1999

Ultrasonics International '99, Copenhagen, Denmark

- "Subharmonic imaging of contrast agents"
- "Breast tumor vascularity identified by contrast enhanced ultrasound and pathology: Initial results"
- "Comparison of fundamental and wideband harmonic contrast imaging of liver tumors" (poster)

DAVID P. FRIEDMAN, M.D.

November 29 - December 4, 1998

84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "MR imaging of stereotactic neurosurgical and radiosurgical treatment of movement disorders: A primer for the radiologist" (exhibit)

March 24, 1999

Columbia-Presbyterian Medical Center, Department of Radiology, New York, NY

- "Vascular lesions of the spinal cord"
- "The cerebral venous system - anatomy and pathology"

March 27-28, 1999

First Annual Jefferson Spine Imaging Symposium, Philadelphia, PA

- "Role of myelography in 1999 - a radiologist's perspective"
- "Imaging of arachnoiditis"
- "Vascular lesions of the spinal cord"

May 21-28, 1999

37th Annual Meeting of the American Society of Neuroradiology, San Diego, CA

- "Post-procedure enhanced MR imaging findings in patients undergoing stereotactic radiosurgical thalamotomy using the gamma knife"
“Radiation necrosis after stereotactic radiosurgical thalamotomy using the gamma knife: MR imaging findings with clinical correlation”

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

**October 16-18, 1998**
8th Annual Meeting and Postgraduate Educational Course of the Society of Radiologists in Ultrasound, San Diego, CA
- “Advances in ultrasound contrast agents”

**October 22-28, 1998**
5th Congress of the Asian Federation of Societies for Ultrasound in Medicine and Biology, Taipei, Taiwan
- “Advances in ultrasound contrast agents”

**November 10, 1998**
University of Pennsylvania Health System, Department of Radiology, Philadelphia, PA
- “Advances in urologic ultrasound”

**November 29-December 4, 1998**
84th Scientific Assembly and Annual Meeting of the Radiological Society of North American, Chicago, IL
- “NC100100 enhanced ultrasound imaging of the liver: A Phase II, double-blind, placebo-controlled, dose-finding trial in adults with focal liver disease”

**February 3, 1999**
Albert Einstein Medical Center, Department of Radiology, Philadelphia, PA
- “New horizons in diagnostic ultrasound”

**February 18, 1999**
Massachusetts General Hospital, Department of Radiology, Boston, MA
- “New horizons in ultrasound”

**March 14-17, 1999**
43rd Annual Convention of the American Institute of Ultrasound in Medicine, San Antonio, Texas
- “Governmental and other influences on ultrasound”
- “Contrast agents”
- “Contrast enhanced ultrasound imaging of liver lesions: A phase II study with NC100100”

**May 11-14, 1999**
The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “3-D color Doppler imaging”

**May 27-29, 1999**
The Leading Edge in Diagnostic Ultrasound Latinoamerica, Buenos Aires, Argentina
- “Advances in contrast agents in ultrasound”
- “New horizons in ultrasound including endoluminal, 3-D, and laparoscopic ultrasound”
ETHAN J. HALPERN, M.D.

March 14-17, 1999 43rd Annual Convention of the American Institute of Ultrasound in Medicine, San Antonio, Texas
- "Gray scale and color Doppler localization of prostate cancer for biopsy"
- "Ultrasound detection of prostate cancer: Prospective comparison of studies performed by radiologists and urologists"
- "Gray scale and Doppler evaluation of the prostate following administration of imagent"

May 11-14, 1999 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- "Prostate ultrasound with contrast"
- "Resistance and compliance"

June 4, 1999 First Annual Conference on Innovative Solutions for Prostate Cancer, Washington, DC
- "Advanced ultrasound for prostate cancer detection and characterization. First annual conference on innovative solutions for prostate cancer care: Image-guided minimally invasive diagnosis and treatment"

MICHAEL HOLLANDER, M.D.

November 29-December 4, 1998 84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "A survey of carotid stenosis with CT angiography"
- "Primary CNS lymphoma" (poster)
- "Common and uncommon masses in the carotid space" (poster)

March 27-28, 1999 First Annual Jefferson Spine Imaging Symposium, Philadelphia, PA
- "Intradural extramedullary spine lesions"

May 21-28, 1999 37th Annual Meeting of the American Society of Neuroradiology, San Diego, CA
- "The many faces of neurosarcoidosis" (poster)
- "Primary CNS lymphoma" (poster)
- "Common and uncommon masses in the carotid space" (poster)

CHARLES M. INTENZO, M.D.

October 28, 1998 Lankenau Hospital, Endocrine Grand Rounds, Wynnewood, PA
- "Radioiodine therapy in hyperthyroidism"

November 29-December 4, 1998 84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Unexpectedly high incidence of differentiated thyroid cancer in nontoxic multinodular goiter"
PAMELA T. JOHNSON, M.D.

May 11-14, 1999  The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “Liver metastases: Diagnosis to intervention”
- “Obstetrical ultrasound self assessment”

June 24-25, 1999  Abdominal Imaging and Radiofrequency Ablation Workshop, sponsored by Thomas Jefferson University, Philadelphia, PA
- “Patient follow-up/CT imaging”

DAVID KARASICK, M.D.

September 8-11, 1998  International Skeletal Society, Dublin, Ireland
- “Nodular fascitis” (closed session case)
- “Complications of cervical spine fusion” (refresher course)

February 18, 1999  Mercy Catholic Hospital, Philadelphia, PA
- “Bone tumors”

March 22-24, 1999  Allegheny General Hospital, Society of Skeletal Radiology 1999, Phoenix, AZ
- “Common adult foot disorders”
- “Images of cervical spine fusion”
- “The traumatized rigid cervical spine”
- “Imaging of vertebral tumors”

March 27-28, 1999  First Annual Jefferson Spine Symposium, Philadelphia, PA (Course Co-Director)
- “Imaging of cervical spine fusion”
- “The traumatized rigid cervical spine”
- “Imaging of the rheumatoid cervical spine”
- “Imaging of spine tumors”

April 8, 1999  Yale University, Grand Rounds, New Haven, CT
- “The traumatized rigid cervical spine”
- “MR of ankle tendons”

April 13, 1999  Bryn Mawr Hospital, Bryn Mawr, PA
- “Approach to bone lesions”

May 10-11, 1999  99th Annual Meeting of the American Roentgen Ray Society, Louisville, KY
- “Imaging of silicone synovitis at the first metatarsophalangeal joint”
- “Symptomatic calcaneal infarcts in sickle cell disease: MR patterns”
- “MR imaging of the painful hallux sesamoid complex”
- “The “hump of kump”: Anatomic considerations in helical CT of triplane fractures”
STEPHEN KARASICK, M.D.

July 1, 1998  
Society of Uroradiology, Hamilton, Bermuda  
- "Imaging of the female pelvic floor and incontinence"  
  (postgraduate course)

March 24, 1999  
23rd Annual Meeting and Postgraduate Course, Society of Gastrointestinal Radiology, Palm Beach, FL  
- "Hysterosalpingography and hysterosonography" (workshop)

March 3, 1999  
Mercy Catholic Hospital, Philadelphia, PA  
- "Essentials of GU radiology"

March 11, 1999  
Bryn Mawr Hospital, Bryn Mawr, PA  
- "Essentials of GU radiology"

SUNG M. KIM, M.D.

March 10-14, 1999  
47th Annual Meeting of the Association of University Radiologists, San Diego, CA  
- "Somatostatin receptor imaging: Monitoring tumor response in patients with meningioma"  
- "Brain perfusion SPECT evaluation of patients with sensorineural hearing loss"  
- "Scintigraphic determinant for Tc-99m-MIBI parathyroid imaging" (poster)

ALFRED B. KURTZ, M.D.

October 16, 1998  
8th Annual Meeting and Postgraduate Educational Course of the Society of Radiologists in Ultrasound, San Diego, California  
- "Ovarian cancer: Diagnosing and staging"

September 11, 1998  
20th Annual Seminar in Diagnostic Ultrasound, Ann Arbor, Michigan  
- "Ultrasound use in the first trimester: Transabdominal and transvaginal analysis"  
- "Obstetrical measurement parameters as outlined by the ACR standards"  
- "The analysis of twin gestations"  
- "Detection of ovarian cancer: Duplex Doppler evaluation"

February 5-6, 1999  
22nd Annual Advanced Ultrasound Seminar: OB/GYN, Orlando, Florida  
- "The analysis of twin gestations"  
- "The fetal GI system"  
- "Detection of ovarian cancer – US, CT, MRI"

February 8, 1999  
New York Roentgen Society  
- "Hysterosonography" (panelist)
February 9, 1999
Mount Sinai Hospital and The Mount Sinai School of Medicine, New York, New York
• "Screening for ovarian cancer: Role of ultrasound and other imaging modalities"

February 24, 1999
University of Massachusetts Medical Center, Worcester, Massachusetts
• "Imaging in ovarian cancer – diagnosis and staging"

March 25, 1999
Bryn Mawr Hospital, Department of Radiology, Bryn Mawr, Pennsylvania
• Case Presentation (visiting professor)

April 16, 1999
Second Annual Symposium Society for the Advancement of Women's Imaging, McLean, Virginia
• "Ovarian cancer diagnosis and staging"

May 11-14, 1999
The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
• "Echogenicity: Analysis and significance"
• "Normal first trimester ultrasound"
• "Gastrointestinal tract"
• "Ultrasound of the placenta"
• "Multi-modality approach to ovarian cancer"

June 4-5, 1999
23rd Annual Sonography Symposium, Nashville, Tennessee
• "Fetal US: Biometry"
• "Sonography of twin pregnancies"
• "US detection of ovarian cancer-correlation to CT and MR"

DAVID C. LEVIN, M.D.

September 11, 1998
Society of Chairmen of Academic Radiology Departments, Pittsburgh, PA
• "Credentials, privileging and turf issues"

October 8-9, 1998
London Health Sciences Center of the University of Western Ontario, London, Ontario
• "Is MRI really a high cost technology? Comparative data with other imaging modalities"
• "How to understand transposition of the great vessels"
• "Anomalies of the aortic arch"
• "Management challenges facing academic radiology departments and how to meet them"

October 22-25, 1998
Economics of Diagnostic Imaging 1998: National Symposium, Washington, DC
November 29-December 4, 1998
84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
- "Turf battles in radiology: How to fight them and win!"
- Categorical course in diagnostic radiology physics: Cardiac catheterization imaging – adult diagnostic procedures
- "Utilization of radiology services among a pediatric outpatient population under managed care"
- "Utilization of nuclear cardiac imaging and stress echocardiography in evaluating suspected myocardial ischemia: Relative roles of radiologists and nonradiologists"
- "Do interventional radiologists pose a significant threat to the practice of vascular surgery?"

March 2, 1999
24th Annual Scientific Meeting of the Society of Cardiovascular and Interventional Radiology, Orlando, FL
- "Performance of noncardiac angioplasty and other percutaneous vascular interventions by radiologists, surgeons, and cardiologists. Where does the turf battle stand?"
- "Do interventional radiologists pose a significant threat to the practice of vascular surgery?"

May 21, 1999
23rd Annual John Evans Lecture, New York Hospital-Cornell University Medical Center, New York City, NY
- "Can radiology survive attempted encroachment by other medical specialties?"

ANNA S. LEV-TOAFF, M.D.

July 29, 1998
Brown University, Grand Rounds, Department of Obstetrics and Gynecology, Providence, RI
- "Sonohysterography: Clinical applications"

September 24, 1998
Yale University School of Medicine, Grand Rounds, Department of Radiology, New Haven, CT
- "Sonohysterography and three-dimensional ultrasound in gynecology"

October 8-9, 1998
Joint working group on computer aided diagnosis and 3-D image analysis and display for the U.S. Public Health Service’s Office on Women’s Health and the National Cancer Institute, Cambridge, MA
- "Three-dimensional ultrasound in obstetrics and gynecology"

October 16, 1998
Society of Radiologists in Ultrasound, San Diego, CA
• “Sonohysterography: Evaluation of myometrium and endometrium”

November 18-19, 1998
Israel Radiological Society Conference, Herzliya, Israel
• “Three-dimensional transvaginal ultrasound and 3-D sonohysterography: A problem-solving tool in complex gynecologic cases”

January 6, 1999
Albert Einstein Medical Center, Grand Rounds, Department of Radiology, Philadelphia, PA
• “Sonohysterography: Clinical applications”

March 14-17, 1999
43rd Annual Convention of the American Institute of Ultrasound in Medicine, San Antonio, TX
• “Three-dimensional ultrasound of the pelvis”

April 24-25, 1999
24th Annual Spring Diagnostic Ultrasound Conference, Los Angeles Radiological Society, Los Angeles, CA
• “3-D ultrasound of the pelvis”
• “Sonohysterography”
• “Ultrasound evaluation of uterine malformations”

May 11-14, 1999
The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
• “Overview of 3-D gynecologic ultrasound”

JI-BIN LIU, M.D.

August 26-28, 1998
Second International Conference on Ultrasound in Medicine and Engineering, Beijing, China
• “New developments and prospect of ultrasound in medicine” (special lecture)

October 24, 1998
5th Congress of the Asian Federation of Societies for Ultrasound in Medicine and Biology, Taipei, Taiwan
• “Two-dimensional and three-dimensional endoluminal ultrasound”

November 29-December 4, 1998
84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
• “3-D endoluminal US of the genitourinary tract” (exhibit)

March 3, 1999
Drexel University, Department of Biomedical Engineering, Philadelphia, PA
• “2D and 3D endoluminal ultrasound” (educational course)

March 14-17, 1999
43rd Annual Convention of the American Institute of Ultrasound in Medicine, San Antonio, TX.
April 15, 1999
West China University of Medicine Sciences, Chendu, Sichuan
• "Endoluminal ultrasound: Clinical applications"
• "Ultrasound contrast agents: A review"
• "Sonohysterography"
• "Laparoscopic ultrasound"

May 11-14, 1999
The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
• "3D endoluminal ultrasound"

ANDREW D.A. MAIDMENT, PH.D.

July 23, 1998
Mammography Symposium of the Delaware Valley Chapter of the American Association of Physicists in Medicine, Philadelphia, PA
• "Stereotactic breast biopsy"

August 13, 1998
40th Annual Meeting of the American Association of Physicists in Medicine, San Antonio, TX
• "Quality assurance in teleradiology/PACS: Implications of system design and maintenance"

September 3-6, 1998
16th World Congress on Endourology, New York, NY
• "Lead table shielding: Effect on the amount of patterns of scattered radiation in simulated lithotomy position"

October 17, 1998
Eastern Regional Firearm and Toolmark Examiner's Conference, Philadelphia, PA
• "Determination of bullet caliber from x-ray imaging"

November 4, 1998
Pennsylvania Department of Environmental Protection QC Symposium, Norristown, PA
• "Stereotactic breast biopsy quality control"

November 29-December 4, 1998
84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
• "Comparison of the acceptability and performance of image processing algorithms in visualizing known lesions in digital mammography"
• "Development of a quality control program for full-field digital mammography"

DONALD G. MITCHELL, M.D.

March 15-19, 1999
33rd Rigler Lecture, Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel
• "MRI of the abdomen"
April 12-16, 1999  22nd Annual Course of the Society of Computed Body Tomography and Magnetic Resonance, New Orleans, LA
  • “MRI of cirrhosis and its complications”
  • “MRI of pancreatitis”

May 22-28, 1999  7th Scientific Meeting and Exhibition of the International Society of Magnetic Resonance in Medicine, Philadelphia, PA
  • “Detecting and characterizing cancer in the abdomen”
  • “Hot topics for clinical practice”
  • “Body MRI: Advanced concepts and controversies – hepatobiliary techniques”
  • “Abdominal techniques”

LEVON N. NAZARIAN, M.D.

December 15, 1998  Greater Delaware Valley Ultrasound Society, Philadelphia, PA
  • “Ultrasound of the foot and ankle”

March 15-17, 1999  43rd Annual Convention of the American Institute of Ultrasound in Medicine, San Antonio, TX
  • “Safety and efficacy of ultrasound-guided core biopsy in diffuse liver disease”
  • “Ultrasound-guided percutaneous biopsy of focal renal masses: Indications and results”

May 11-14, 1999  The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
  • “Essential features of musculoskeletal ultrasound”
  • “Venous US: Diagnoses other than DVT”

June 15-18, 1999  Wake Forest Medical Center, Department of Radiology, Winston-Salem, NC
  • “Essential features of musculoskeletal ultrasound”
  • Case presentation

June 29, 1999  Bryn Mawr Hospital, Department of Radiology, Bryn Mawr, PA
  • Case presentation

LAURENCE NEEDLEMAN, M.D.

September 11-13, 1998  Pacific Northwest Diagnostic Ultrasound Symposium, Seattle, WA
  • “Lower and upper extremity venous ultrasound”
  • “Cerebrovascular Doppler”
  • “Ultrasound contrast agents”

October 17, 1998  Society of Radiologists in Ultrasound Annual Meeting, San Diego, CA
  • “Renal artery stenosis: Technique and controversies”

October 23-27, 1998  5th Congress of the Asian Federation of Societies for Ultrasound in Medicine and Biology, Taipei, Taiwan
November 19-20, 1998  
Ninth Annual Symposium on Advances in Vascular Diagnosis and Vascular Laboratory Management, Albert Einstein College of Medicine and Montefiore Medical Center, New York, NY  
- "Use of ultrasound in oncology"  
- "Interpreting spectral and color Doppler"

November 29 - December 4, 1998  
84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL  
- "NC100100: A new US contrast agent for fundamental and harmonic imaging of hepatic lesions"  
- "US contrast does not change canine renal Doppler pulsatility indices"  
- "Evaluation of hepatic metastatic disease: US"  
- "Practical tips in US: Abdomen: Doppler"

January 4, 1999  
Rhode Island Hospital, Providence, RI  
- "Interpretation of cerebrovascular ultrasound" (grand rounds)  
- Case presentations  
- "Interpretation of spectral and color Doppler"

January 21, 1999  
Chicago Radiological Society, Chicago, IL  
- "Ultrasound in oncology and contrast agents"

January 21, 1999  
Rush-Presbyterian-St. Luke's Medical Center, Chicago, IL  
- "Interpretation of Doppler ultrasound"  
- Case presentations

February 1, 1999  
Vanderbilt University, Department of Radiology, Nashville, TN  
- "Practical tips in abdominal sonography" (grand rounds)  
- Case presentations

February 1, 1999  
Mid Tennessee Radiological Society, Nashville, TN  
- "Interpretation of lower extremity venous ultrasound"  
- "Interpretation of carotid ultrasound"

April 23-25, 1999  
24th Annual Spring Diagnostic Ultrasound Conference, Los Angeles Radiological Society, Los Angeles, CA  
- "Vertebral, subclavian and upper extremity duplex Doppler evaluation"  
- "Lower and upper extremity venous ultrasound"  
- "Use of ultrasound in oncology"

May 11-14, 1999  
The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ  
- "Contrast induced artifacts in spectral Doppler"  
- "Renal arteries"  
- "Vertebral and aortic branch vessels"
May 27-29, 1999

The Leading Edge in Diagnostic Ultrasound Latinoamerica, Jefferson Ultrasound Research and Education Institute, Buenos Aires, Argentina

- "Fetal biometry and obstetrical ultrasound protocols"
- Panel discussion and case presentations
- "Interpretation of carotid Doppler"
- "Errors in the interpretation of carotid Doppler"
- "Ultrasound of the upper extremity veins"
- "Vascular case studies"
- "Doppler of the aorta and abdominal arteries"

ERIC K. OUTWATER, M.D.

July 15-16, 1998

Armed Forces Institute of Pathology, Washington, DC

- "Tissue characterization in MRI of adnexal masses"
- "Adrenal MR imaging"
- "Renal MRI/MRA"

October 20, 1998

University of Arizona, Department of Radiology, Tucson, AZ

- "Tissue characterization in MRI of adnexal masses"

November 7, 1998

Radiological Society of New Jersey, MRI Symposium, Princeton, NJ

- "Liver MR imaging"
- "Tissue characterization in MRI of adnexal masses"
- "Renal and adrenal MR imaging"
- "Pancreatic and biliary MR imaging"

November 29 - December 4, 1998

84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "Aggressive angiomyxoma: Findings on CT and MRI"
- "Imaging evaluation of gynecologic malignancies: Adnexa"
- "From the archives of the AFIP: Sex cord-stromal and steroid cell tumors of the ovary" (poster)
- "Pathology, MR imaging and differential diagnosis of uterine leiomyoma" (poster)

January 29, 1999

The International Symposium on Ultrafast Magnetic Resonance Imaging, Kyoto, Japan

- "Clinical applications of ultrafast MR imaging in the pelvis"

April 14-15, 1999

22nd Annual Course of the Society of Computed Body Tomography and Magnetic Resonance, New Orleans, LA

- "MRI: Applications in the female pelvis"
- "Ultrafast MR imaging"

May 22-28, 1999

Sixth Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Philadelphia, PA

- "Mucinous versus nonmucinous rectal carcinomas: Differentiation with MR imaging" (poster)
CATHERINE W. PICCOLI, M.D.

October 12, 1998  
Bryn Mawr Hospital, Bryn Mawr, PA  
• “MR imaging of the breast”

March 20, 1999  
The Physics and Technology of Mammography, sponsored by Medical College of Wisconsin and Medical Technology Management Institute, Philadelphia, PA  
• “Clinical breast imaging”

April 22, 1999  
Consensus Conference on the Treatment of DCIS, sponsored by the Breast Health Institute, Philadelphia, PA  
• “Mapping DCIS with MRI”

May 23, 1999  
Introductory MRI Course, International Society for Magnetic Resonance in Medicine, Philadelphia, PA  
• “Breast MRI”

May 27-29, 1999  
4th Biennial Postgraduate Course, Society of Breast Imaging, Boston, MA  
• “Stereotactic breast biopsy” (refresher course)  
• “Ultrasound guided breast biopsy” (refresher course)

VIJAY M. RAO, M.D.

November 29-December 4, 1998  
84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL  
• “MR characteristics of low flow vascular malformations in suprathyroid neck: Added value of color Doppler imaging”  
• “Are there geographic differences in the practice patterns of neuroimaging?”  
• “Increased utilization of neuroimaging studies: Comparison from 1993 and 1996 nationwide Medicare data”  
• “The sinonasal cavities and the osteomeatal complex: The osteomeatal complex” (refresher course)

January 27, 1999  
Mercy Catholic Medical Center, Fitzgerald Mercy Division, Department of Radiology, Darby, PA  
• “Head and neck imaging”

February 25, 1999  
Bryn Mawr Hospital, Department of Radiology, Bryn Mawr, PA  
• Interesting cases

March 12, 1999  
47th Annual Meeting of the Association of University Radiologists, San Diego, CA  
• “Evaluation and utilization of the template on goals, objectives and curricula”

May 24-25, 1999  
37th Joint Annual Meetings of the ASNR/ASHNR/ASPNR/ASITNR/ASSR, San Diego, CA
• “Increased utilization of neuroimaging studies: Comparison from 1993 and 1996 nationwide Medicare data”
• “Are there geographic differences in the practice patterns of neuroimaging”
• “Anatomy and pathology of the central skull base” (focus session)

MARK E. SCHWEITZER, M.D.

July 23, 1998
Armed Forces Institute of Pathology, Washington, DC
• “MRI of the foot and ankle”

September 9-12, 1998
25th Annual Refresher Course of the International Skeletal Society, Dublin, Ireland
• “Cost-effectiveness evaluation in musculoskeletal imaging”
• “Indirect and direct MR arthrography of small joints: Ankle, wrist, and elbow”

September 24, 1998
Armed Forces Institute of Pathology, Washington, DC
• “MRI of the foot and ankle”

October 4, 1998
8th Annual Radiologic Pathologic Correlation Course, Armed Forces Institute of Pathology, Washington, DC
• “MR imaging of the wrist”
• “MR imaging of the foot and ankle tendons”

October 14-15, 1998
1998 Annual Convention of the American Osteopathic College of Radiology, Tucson, AZ
• “Direct and indirect MRI arthrography”
• “MRI of the foot and ankle”
• “MRI of the wrist”

October 26, 1998
North Atlantic Treaty Organization Specialists Meeting, Wright-Patterson Air Force Base, OH
• “Comparison of vertebral strength properties of anthropometrically similar males and females using quantitative computed tomography”

November 3, 1998
Armed Forces Institute of Pathology, Washington, DC
• “MRI of the foot and ankle”

November 29-December 4, 1998
84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL
• “MRI evaluation of subscapularis tears”

January 5, 1999
Armed Forces Institute of Pathology, Washington, DC
• “MRI of the foot and ankle”

January 25-26, 1999
Brook Army Medical Center, San Antonio, TX
• “MRI of the wrist”
• “MRI of meniscal tears”
January 25-26, 1999  
Wilford Hall Air Force Medical Center, San Antonio, TX  
• “Cervical spine trauma”  
• “MRI of the wrist”

January 26, 1999  
University of Texas, San Antonio, TX  
• “MRI of meniscal tears”

March 3, 1999  
Armed Forces Institute of Pathology, Washington, DC  
• “MRI of the foot and ankle”

March 12-13, 1999  
Alexandria University School of Medicine, Alexandria, Egypt  
• “MRI of the menisci”  
• “MRI of ligament injuries”  
• “MRI of ankle tendons”  
• “Cervical spine trauma”

March 15-19, 1999  
33rd Rigler Lecture, Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel  
• “MRI of the knee”  
• “MRI of impingement”

March 27-28, 1999  
First Annual Jefferson Spine Imaging Symposium, Philadelphia, PA  
(Course Co-Director)  
• “MR of spinal marrow”  
• “Cervical spine trauma”

April 15, 1999  
Hospital of the University of Pennsylvania, School of Medicine, sponsored by the Arthritis Foundation, Philadelphia, PA  
• “The role of MRI in the evaluation of muscle disease”

April 23, 1999  
Armed Forces Institute of Pathology, Washington, DC  
• “MRI of the foot and ankle”

May 10, 1999  
99th Annual Scientific Meeting of the American Roentgen Ray Society, New Orleans, LA  
• “MRI of the foot and ankle”

May 23-28, 1999  
7th Scientific Meeting and Exhibition of the International Society for Magnetic Resonance in Medicine, Philadelphia, PA  
• “Sports injuries of the foot and ankle”

SHARON R. SEGAL, D.O.

May 11-14, 1999  
The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ  
• Stump the stars
**ROSITA M. SHAH, M.D.**

October 6, 1998  
Sixth Annual Course on Radiologic Pathologic Correlation, Armed Forces Institute of Pathology, Washington, D.C.  
- “Pulmonary infections in the immunocompetent patient”  
- “Pulmonary manifestations of HIV-related infections”

January 29, 1999  
Thoracic Radiology Categorical Course, Armed Forces Institute of Pathology, Washington, D.C.  
- “Usual and unusual pulmonary infections”

February 4, 1999  
Philadelphia Roentgen Ray Society, Blue Ribbon Lecture, Philadelphia, PA  
- “Imaging of large and small airway diseases”

March 21, 1999  
16th Annual Meeting of the Society of Thoracic Radiology, Amelia Island, FL  
- “Imaging of airway disease: Emphasis on expiratory CT”

**WILLIAM T. SHI, PH.D.**

October 12, 1998  
Institute of Acoustics, Nanjing University, Nanjing, China  
- “Nonlinear behaviors of microbubble contrast agents”

October 23-27, 1998  
5th Congress of the Asian Federation of Societies for Ultrasound in Medicine and Biology, Taipei, Taiwan  
- “Nonlinear ultrasound imaging with microbubble contrast agents”

October 28, 1998  
Taichung Veterans General Hospital, Taichung, Taiwan  
- “Imaging enhancement with ultrasound contrast agents”

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

September 26, 1998  
Update in Hepatology and Liver Transplant, Philadelphia, PA  
- “Percutaneous management of hepatocellular carcinoma”

March 20-25, 1999  
24th Annual Scientific Meeting of the Society of Cardiovascular and Interventional Radiology, Orlando, FL  
- “Alternatives to iodinated contrast” (workshop)  
- “Arterial thrombolysis” (workshop)

May 5, 1999  
Massachusetts General Hospital, Boston, MA  
- “Role of interventional radiologist in managing hemodialysis access” (vascular mini-course)

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

March 27-28, 1999  
First Annual Jefferson Spine Imaging Symposium, Philadelphia, PA  
- “Spinal stenosis”
• “Intramedullary causes of myelopathy”

MATHEW L. THAKUR, PH.D.

August 28 – September 3, 1998
7th World Congress in Nuclear Medicine and Biology, Berlin, Germany
• “Interferon-α-2b immunoconjugate enhances tumor targeting of 99m-Tc labeled monoclonal antibodies (MAbs)”
• “Tc-99m labeled fibrin α-chain analog for imaging vascular thrombosis”

September 4-9, 1998
Post-Congress Meeting of the Seventh World Congress in Nuclear Medicine and Biology, Strzekecin, Poland
• “Tc-99m labeled anti-SSEA antibodies in patients with infection”

September 11-15, 1998
LeuTech: Investigators Training Course, Princeton, NJ
• “Radiolabeling PMNs in vivo: Receptor specific agents”

October 9, 1998
Palatin Technologies, Inc., Princeton, NJ
• “Intracellular tumor therapy”

November 20, 1998
Bracco Pharmaceuticals, Princeton, NJ
• “Recent radiopharmaceutical developments at TJU”

December 5-11, 1998
International Symposium on Radiolabeled Pharmaceuticals and Radiolabeled Compounds (International Atomic Energy Agency), Vienna, Austria
• “Imaging thromboembolism with receptor specific peptides”

January 5, 1999
Nycomed, Princeton, NJ
• “New approaches to tumor therapy”

February 14-22, 1999
25th Annual Meeting of American College of Nuclear Physicians, Kona, Hawaii
• “A directly injectable Tc-99m MAb binds specifically to neutrophils in vivo and permits imaging infection rapidly”

March 3, 1999
Mallinckrodt Pharmaceuticals, St. Louis, MO
• “Development of receptor specific biomolecules in diagnostic imaging”

March 11, 1999
New York Methodist Hospital, New York, NY
• “Tc-99m vasoactive intestinal peptide for imaging tumors”

March 12-14, 1999
NIH/DOE Joint Symposium on Accomplishments with Medical Isotopes, Washington, D.C.
• “Receptor specific peptide imaging”

March 16, 1999
University of Pennsylvania, Philadelphia, PA
• “Radiopharmaceuticals: Pharmacokinetics and underlying mechanisms”
May 5, 1999

Clinical Isotopes Service, Paris, France
- “Recent developments in radiopharmaceuticals at TJU”

June 5-11, 1999

47th Annual Meeting of the Society of Nuclear Medicine, Los Angeles, CA
- “Imaging vascular thrombosis with Tc-99m labeled fibrin binding peptide”
- “Tc-99m labeled vasoactive intestinal peptide (VIP) analog for imaging tumors in humans”
- “Tc-99m labeled peptide for imaging infection”

June 15, 1999

Diagnostic Medical Imaging, Inc., Denver, CO
- “New radiopharmaceuticals for diagnostic and therapeutic applications”

June 27 – July 1, 1999

13th International Symposium on Radiopharmaceutical Chemistry, St. Louis, MO
- “Vasoactive intestinal peptide (VIP) receptor imaging for breast tumors: Comparison of I-125 VIP, In-111-Octreotide, and Tc-99m-SestaMIBI”

TERRI TUCKMAN, M.D.

May 11-14, 1999
The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
- “CNS evaluation of the fetus”

RICHARD J. WECHSLER, M.D.

August 15, 1998
Basic Concepts in Urology Lecture Series, Philadelphia, PA
- “Urological spiral CT”

November 11, 1998
University of Connecticut, Farmington, CT
- “The indeterminate renal mass: CT evaluation”
- “CT of renal inflammatory disease”

November 18, 1998
University of Medicine and Dentistry of New Jersey University Hospital, Newark, NJ
- “CT of the gluteal region”
- “CT of the indeterminate renal mass”

March 25, 1999
16th Annual Meeting of the Society of Thoracic Radiology, Amelia Island, FL
- “Update on mesothelioma”

April 22, 1999
Bryn Mawr Hospital, Bryn Mawr, PA
- “CT of abdominal pain”
March 20, 1999

Women in Medicine, sponsored by Jefferson Medical College, Philadelphia, PA
• “Managing career and family”

May 11-14, 1999

The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ
• “Advances in Ob/Gyn ultrasound. Thoracic extracardiac evaluation”
• “Fetal echocardiography”
HONORS, EDITORIAL ACTIVITIES, SERVICE TO REGIONAL OR NATIONAL ORGANIZATIONS

JOSEPH BONN, M.D.

- Member-at-Large, Executive Committee, Council on Cardiovascular Radiology, American Heart Association
- Member, Committee on Transcatheter Therapy of Peripheral Vascular Disease, Council on Cardiovascular Radiology, American Heart Association
- Member, Executive Council Advisory Committee, Society of Cardiovascular and Interventional Radiology
- Grant proposal reviewer, Cardiovascular and Interventional Radiology Research and Education Fund, Society of Cardiovascular and Interventional Radiology
- Abstracts of Current Literature Editor, Journal of Vascular and Interventional Radiology
- Abstract Reviewer, 24th Annual Meeting of the Society of Cardiovascular and Interventional Radiology
- Consultant to the Editor, Interventional-Cardiovascular Section, Radiology
- Abstract Reviewer, 72nd American Heart Association Scientific Sessions

P. MACKE CONSIGNY, PH.D.

- Vice-Chairman, Board of Directors, Cardiovascular and Interventional Radiology Research and Education Foundation
- Chairman, Research Committee, Society of Cardiovascular and Interventional Radiology
- Associate Editor, Journal of Vascular and Interventional Radiology
- Reviewer, Cardiovascular and Interventional Radiology
- Reviewer, Research Initiatives Conference, Abstracts for Lifeline/CIRREF

W. SCOTT ENOCHS, M.D., PH.D.

- Reviewer, Radiology

DAVID J. ESCHELMAN, M.D.

- Member, Relative Value Update Advisory Committee, Society of Cardiovascular and Interventional Radiology
- Associate Editor, Journal of Vascular and Interventional Radiology
- Reviewer, Journal of Vascular and Interventional Radiology
- Reviewer, Radiology
- Editor's Recognition Award for Distinction in Reviewing, Journal of Vascular and Interventional Radiology
- Editor's Recognition Award for Special Distinction in Reviewing, Radiology
DIONE FARRIA, M.D.

- Clinical Image Reviewer, Mammography Accreditation Program, American College of Radiology
- Member, Committee on Accreditation for Continuing Medical Education, American College of Radiology
- Member, Practice Guidelines Committee, American College of Preventive Medicine
- Member, Communications Committee, Society for Health Services Research in Radiology
- Auditor, Continuing Medical Education, Society for Health Services Research in Radiology

STEPHEN A. FEIG, M.D.

- President, Society of Breast Imaging
- Chairman, Mammography Practice Accreditation Committee, American College of Radiology
- Chairman, Ad Hoc Committee on Mammography Screening Guidelines, American College of Radiology
- Chairman, Scientific Committee 91-3, Medical Radiation Exposure of the Female Breast, National Council on Radiation Protection and Measurements
- Chairman, Ad Hoc Committee for Whole Breast Digital Mammography Standard, American College of Radiology
- Chair, Ad-Hoc Committee Breast Imaging Training Advisory, Society of Breast Imaging
- Chair, Program Committee, 4th Postgraduate Course, Society of Breast Imaging
- Chair, Bylaws Committee, Society of Breast Imaging
- Co-Chairman, Committee on Correlation of Phantom and Clinical Image Quality, American College of Radiology
- Category Co-Chair (Breast Imaging), Written Examination Committee, American Board of Radiology
- Member, Breast Task Force, American College of Radiology
- Member, Commission on Standards and Accreditation, American College of Radiology
- Member, Breast Imaging Committee, American College of Radiology Imaging Network (ACRIN)
- Member, Mammography Quality Assurance Subcommittee, American College of Radiology
- Member, Mammography Physics Subcommittee, American College of Radiology
- Member, Scientific Committee 72: Radiation Protection in Mammography, National Council on Radiation Protection and Measurements
- Member, Executive Committee, Society of Breast Imaging
- Member, Clinical Image Reviewer Training Committee, Mammography Accreditation Program, American College of Radiology
- Member, Executive Committee, International Digital Mammography Development Group
- Member, Clinical Image Reviewer Subcommittee, Mammography Accreditation Program, American College of Radiology
- Member, Breast Imaging Reporting and Data Base System (BI-RADS), American College of Radiology
- Member, Committee on Stereotactic Breast Biopsy Accreditation, American College of Radiology
- Member, Committee on Ultrasound-Guided Breast Biopsy Accreditation, American College of Radiology
- Member, Program Committee, Philadelphia Roentgen Ray Society
- Guest Examiner, American Board of Radiology
- Editor, Breast Diseases, A Year Book Quarterly, Mosby - Year Book Medical Publishers
- Editor, Seminars in Breast Disease (W.B. Saunders Company)
- Associate Editor, Radiology
- Editorial Board, Advance for Administrators in Radiology and Radiation Oncology
- Editorial Board, Journal of Women’s Imaging
• Reviewer, *American Journal of Roentgenology*
• Reviewer, *Cancer*
• Reviewer, *RadioGraphics*

**RICK I. FELD, M.D.**

• Chairman, Education Program Committee, Philadelphia Roentgen Ray Society
• Abstract Reviewer, Abdomen-General, 43rd Annual Convention of the American Institute of Ultrasound in Medicine
• Reviewer, *American Journal of Roentgenology*
• Reviewer, *Clinical Imaging*
• Reviewer, *International Medical Image Registry*
• Reviewer, *Journal of Clinical Ultrasound*
• Reviewer, *Journal of the American Medical Association*
• Reviewer, *Journal of Vascular and Interventional Radiology*

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

• Consultant, Squibb Diagnostics, Contrast Division
• Consultant Neuroradiologist, Neotherapeutics
• Medical Review Consultant, Independence Blue Cross
• Medical Policy Consultant, Independence Blue Cross
• Guest Speaker, Squibb Diagnostics Speakers’ Bureau
• Member, Task Force on Electronic Information, American Society of Neuroradiology
• Reviewer, *American Journal of Neuroradiology*
• Reviewer, *Neuroradiology*
• Reviewer, *RSNA-EJ* (Radiological Society of North America Electronic Journal)
• Reviewer, *The New England Journal of Medicine*

**FLEMMING FORSBERG, PH.D.**

• Chairperson, Doppler Subcommittee, Technical Standards Committee, American Institute of Ultrasound in Medicine
• Vice-Chair, Technical Standards Committee, American Institute of Ultrasound in Medicine
• Member, Advisory Council, Society of Diagnostic Medical Sonographers Educational Foundation
• Member, Technical Standards Committee, American Institute of Ultrasound in Medicine
• Member, Advisory Editorial Board, *Ultrasound in Medicine and Biology*
• Reviewer, *IEEE Transactions on Ultrasonics, Ferroelectrics & Frequency Control*
• Reviewer, *Radiology*
• Reviewer, *Ultrasonic Imaging*
• Reviewer, *Ultrasound in Medicine and Biology*

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

• Member, 1999 Scientific Exhibits Committee, Radiological Society of North America
• Co-Director, Philadelphia Neuroradiology Club
• Reviewer, *American Journal of Roentgenology*
• Reviewer, *Neurology*
GEOFFREY A. GARDINER, JR., M.D.

- Board Examiner, American Board of Radiology, Added Qualifications in Vascular and Interventional Radiology
- Reviewer, *Cardiovascular and Interventional Radiology*
- Reviewer, *Journal of Vascular and Interventional Radiology*
- Reviewer, *Radiology*
- Distinguished Scientific Advisor, Radiological Society of North America Research and Education Foundation

BARRY B. GOLDBERG, M.D.

- Outstanding Researcher Award, The Radiological Society of North America, 1998
- Distinguished Committee Service Award, American College of Radiology, 1998
- Outstanding Service Award, Department of Diagnostic Imaging, College of Health Professions, Thomas Jefferson University, 1998
- Honorary Member, Ultrasonic Section of the Croatian Society of Radiology, 1998
- Editorial Board, *Ultrasound International*

ETHAN J. HALPERN, M.D.

- 1998 Giovanni DiChiro Award for Outstanding Scientific Research, *Journal of Computed Assisted Tomography*
- Reviewer, *Academic Radiology*
- Reviewer, *American Journal of Roentgenology*
- Reviewer, *Annals of Internal Medicine* - award for high quality reviews in top 10%
- Reviewer, *Radiology*
- Reviewer, *Ultrasound in Medicine & Biology*

CHARLES M. INTENZO, M.D.

- Member, Committee on Standards and Accreditation, Subcommittee for the Revision of the Standard for Hepatobiliary Scintigraphy, American College of Radiology
- Member, The Academic Council, Society of Nuclear Medicine
- Reviewer, *Journal of Nuclear Medicine*
- Reviewer, *Radiology*

PAMELA T. JOHNSON, M.D.

- Reviewer, *Radiology*
- Editor's Recognition Award for Special Distinction in Reviewing, *Radiology*

DAVID KARASICK, M.D.

- Member, Liaison Future Planning Committee, International Skeletal Society
- Member, Musculoskeletal Review Committee, American Board of Radiology
- Member, Scientific Exhibits Award Committee, American Roentgen Ray Society
• Editor-in-Chief, Seminars in Musculoskeletal Radiology (Thieme Publishing Co.)
• Consulting Editor, Skeletal Radiology
• Book Reviewer, American Journal of Roentgenology
• Reviewer, Musculoskeletal Manuscripts, American Journal of Roentgenology
• Reviewer, Musculoskeletal Manuscripts, Radiology
• Reviewer, Musculoskeletal Manuscripts, RadioGraphics

STEPHEN KARASICK, M.D.
• Reviewer, Radiology

SUNG M. KIM, M.D.
• Member, Brain Council, Society of Nuclear Medicine
• Member, Computer and Instrument Council, Society of Nuclear Medicine
• Member, Nuclear Medicine Science Committee, American College of Nuclear Physicians
• Member, Radiopharmaceutical Affairs Committee, American College of Nuclear Physicians
• Reviewer, Journal of Nuclear Medicine

ALFRED B. KURTZ, M.D.
• President-elect, American Institute of Ultrasound in Medicine
• Member, Finance Committee, American Institute of Ultrasound in Medicine
• Board Examiner, Oral, American Board of Radiology
• Medical Advisor, Blue Shield of Pennsylvania on Ultrasonic Procedures
• Recipient of Editor's Recognition Award for Special Distinction 1998, Ultrasound Manuscript
• Reviewer, Radiology
• Senior Film Reviewer, Ultrasound Accreditation, Commission on Standards and Accreditation, American College of Radiology

DAVID C. LEVIN, M.D.
• Chairman, Expert Panel on Cardiovascular Imaging of the ACR Task Force on Appropriateness Criteria/Diagnostic Patient Care Guidelines, American College of Radiology
• Chairman, Committee on Health Policy and Practice, Radiological Society of North America
• Vice Chairman, Commission on Medical Insurance, Pennsylvania Radiological Society
• Vice Chairman, Committee on Radiology Practice and Management, Pennsylvania Radiological Society
• Scientific Advisor, RSNA Research and Education Fund, Radiological Society of North America
• Member, Ad Hoc Appropriateness/Coding Committee, American College of Radiology
• Member, Public Information Advisory Board, Radiological Society of North America
• Member, Commission on Research and Technology Assessment, American College of Radiology
• Member, Radiology Advisory Committee, Keystone Health Plan East
• Member, Committee on Transcatheter Therapy of Peripheral Vascular Disease, Council on Cardiovascular Radiology, American Heart Association
• Member, Committee on Managed Care, American College of Radiology
• Member, Task Force on Value-Added Radiology, American College of Radiology
• Member, Committee on Radiology Practice Management, Pennsylvania Radiological Society
• Member, Publications Committee, Pennsylvania Radiological Society
• Member, Refresher Course Committee, Radiological Society of North America
• Member, RSNA Research and Education Foundation Program Committee, Radiological Society of North America
• Member, Public Relations Committee, Pennsylvania Radiological Society
• Member, Committee on Diagnostic Radiology, Pennsylvania Radiological Society
• Consultant, Independence Blue Cross
• Editorial Advisory Panel, American Journal of Roentgenology
• Reviewer, American Journal of Roentgenology
• Reviewer, Radiology

ANNA S. LEV-TOAFF, M.D.

• President, Greater Delaware Valley Ultrasound Society
• Book Reviewer, American Journal of Roentgenology
• Reviewer, American Journal of Roentgenology
• Reviewer, Obstetrics and Gynecology
• Reviewer, Radiology
• Reviewer, Ultrasound in Obstetrics and Gynecology

JI-BIN LIU, M.D.

• Contribution Award, 2nd International Conference of Chinese Association of Ultrasound in Medicine and Engineering, Beijing, China, August, 1998

ANDREW D.A. MAIDMENT, PH.D.

• Phantom Reviewer, Stereotactic Breast Biopsy Accreditation Program, American College of Radiology
• Member, Committee on Correlation of Phantom and Clinical Image Quality, American College of Radiology
• Chairman, Task Group 16: Noise Power Spectrum Analysis, American Association of Physicists in Medicine
• Member, DICOM Working Group 15: Digital Mammography, American College of Radiology
• Member, Diagnostic X-ray Imaging Committee, American Association of Physicists in Medicine
• Member, Task Group 14: Digital Mammography for Stereotactic Localization, American Association of Physicists in Medicine
• Grant Reviewer, study session SSS-7, NCI/NIH STTR/SBIR
• Grant Reviewer, Breast Cancer Research Program, Study Session, R5-2, Department of Defense
• Moderator, Digital Radiography, Instrumentation and PACS, 40th Annual Meeting of the American Association of Physicists in Medicine, San Antonio, TX
• Reviewer of proffered presentations, 41st Annual Meeting of the American Association of Medical Physicists
• Editorial Advisory Committee, American Journal of Roentgenology
• Associate Editor, Medical Physics
• Reviewer, American Journal of Roentgenology
• Reviewer, Breast Cancer Research and Treatment
• Reviewer, IEEE Transactions of Biomedical Engineering
• Reviewer, IEEE Transactions of Medical Imaging
• Reviewer, Journal of the Optical Society of America
• Reviewer, *Medical Physics*
• Reviewer, *Physics of Medicine and Biology*

DONALD G. MITCHELL, M.D.

• Chair, Clinical Categorical Course (Hepatobiliary), International Society for Magnetic Resonance in Medicine
• Course Director, Body MR Educational Program, International Society for Magnetic Resonance in Medicine
• Member, Scientific Program Committee, International Society for Magnetic Resonance in Medicine
• Member, Magnetic Resonance Imaging Committee, American College of Radiology Imaging Network (ACRIN)
• Associate Editor, *Journal of Magnetic Resonance Imaging*
• Consultant to Editor, *Radiology*
• Member, Editorial Board, *Journal of Computed Assisted Tomography*
• Member, Editorial Board, *Journal of Magnetic Resonance Imaging*
• Abstract Reviewer, 7th Scientific Meeting and Exhibition of the International Society for Magnetic Resonance in Medicine
• Reviewer, *Academic Radiology*
• Reviewer, *American Journal of Roentgenology*
• Reviewer, *Radiology*
• Editor's Certificate of Recognition, *Radiology*
• Magna Cum Laude, The 84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL, November-December 1998

LEVON N. NAZARIAN, M.D.

• Melvin M. Figley Fellowship in Radiology Journalism, American Roentgen Ray Society, 1999
• Giovanni Di Chiro Award for Outstanding Scientific Research, *Journal of Computer Assisted Tomography*
• Editorial Board, *Seminars in Musculoskeletal Radiology*
• Guest Editor, *Seminars in Musculoskeletal Radiology*
• Reviewer, *American Journal of Roentgenology*
• Reviewer, *Radiology*

LAURENCE NEEDLEMAN, M.D.

• Member, Committee on Standards and Accreditation - Commission on Ultrasound, American College of Radiology
• Member, Task Force on Appropriateness Criteria Expert Panel on Cardiovascular Imaging, American College of Radiology
• Member, Pennsylvania Radiological Society Committee on Ultrasound
• Consultant, Centers for Disease Control and Prevention, Radiation Studies Branch, for Ultrasound Review of Hanford Thyroid Disease Study Final Report
• Honorary Membership, Chicago Radiological Society, January, 1999
• Award of Appreciation, International Congress on Ultrasonography and the Ultrasound Society of Pakistan, December, 1998
• Reviewer, American Heart Association Annual Meeting

ERIC K. OUTWATER, M.D.

• Editorial Board, Radiology
• Reviewer, Journal of Computer Assisted Tomography (JCAT)
• Reviewer, Journal of Magnetic Resonance Imaging (JMRI)
• Reviewer, Magnetic Resonance in Medicine
• Reviewer, Obstetrics and Gynecology
• Reviewer, RadioGraphics
• Reviewer, Radiology

CATHERINE W. PICCOLI, M.D.

• Member, ACR Expert Working Group on Novel Breast Ultrasound Technology, Department of Health and Human Services; Co-Chair of Task Group, Ultrasound in Breast Biopsy and Intervention; Liaison to the Expert Working Group for Breast MRI
• Clinical Reviewer, Mammography Accreditation program, American College of Radiology
• Reviewer, American Journal of Roentgenology
• Reviewer, Breast Cancer Research and Treatment
• Reviewer, Journal of Ultrasound in Medicine

VIJAY M. RAO, M.D.

• Board Examiner, American Board of Radiology
• Secretary, American Society of Head and Neck Radiology
• Chairperson, Ad-Hoc Committee on Curriculum, Association of Program Directors in Radiology
• Chairperson, Awards Committee, Association of Program Directors in Radiology
• Editorial Executive Committee, Academic Radiology
• Consultant, National Institutes of Health
• Member, Executive Committee, American Society of Head and Neck Radiology
• Member, Committee on Government Issues, Association of Program Directors in Radiology
• Member, Program Committee, Association of Program Directors in Radiology
• Member, Scientific Program Committee, American Society of Head and Neck Radiology
• Member, Scientific Program Committee, Association of University Radiologists
• Reviewer, American Journal of Neuroradiology
• Reviewer, Neuroradiology
• Reviewer, RadioGraphics
• Reviewer, Radiology

MARK E. SCHWEITZER, M.D.

• Distinguished Scientific Advisor, Radiological Society of North America Research and Education Fund
• Editor, Seminars in Musculoskeletal Imaging
• Expert Panel Member, Orthopedic Radiology, Pathology Society
• Reviewer, Academic Radiology
• Reviewer, American Journal of Roentgenology
• Reviewer, Annals of Internal Medicine
• Reviewer, Journal of Clinical Rheumatology
• Reviewer, Journal of Clinical Ultrasound
• Reviewer, Journal of Computed Assisted Tomography
• Reviewer, Journal of Magnetic Resonance Imaging
• Reviewer, RadioGraphics
• Reviewer, Radiology
• Reviewer, Skeletal Radiology
• Editor's Recognition Award for Distinction, Radiology

ROSITA M. SHAH, M.D.
• Section Editor, Pulmonary Infections, American College of Radiology Chest Teaching File
• Reviewer, American Journal of Roentgenology
• Reviewer, RadioGraphics

WILLIAM T. SHI, PH.D.
• Reviewer, Ultrasound in Medicine and Biology

PAUL W. SPIRN, M.D.
• Reviewer, American Journal of Roentgenology

KEVIN L. SULLIVAN, M.D.
• Member, Research Committee, Society of Cardiovascular and Interventional Radiology
• Consultant to the Editor, Journal of Vascular and Interventional Radiology
• Reviewer, Journal of Vascular and Interventional Radiology
• Reviewer, Radiology

LISA M. TARTAGLINO, M.D.
• Reviewer, Radiology

MATHEW L. THAKUR, PH.D.
• Delegate-at-large, The Society of Nuclear Medicine
• Member, Board of Governors, Greater New York Chapter, The Society of Nuclear Medicine
• Chairman, National Institutes of Health, Special Diagnostic Radiology Grant Review Committee
• Sub-Chairman, Scientific Program Committee, European Association of Nuclear Medicine Annual Meeting
• Member Advisory Committee, US Pharmacopea
• Member Advisory Committee, Kuwait Medical Research Council
• Member Advisory Committee, International Atomic Energy Agency
• Member Advisory Committee, Laurence Berkely National Laboratory
• Ad hoc member, Grant Review Service, National Institutes of Health
• Ad hoc member, Grant Review Service, American Cancer Society
• Member, Grant Review Service, Canadian Medical Research Council
• Member, Grant Review Service, Department of Energy
• Associate Editor, Cancer Research
• Member, Editorial Board, European Journal of Nuclear Medicine
• Member, Editorial Board, Journal of the Indian Association of Clinical Medicine
• Member, Editorial Board, Journal of Labelled 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
• Guest Editor, Special Issue of the Quarterly Journal of Nuclear Medicine
• Reviewer, Cancer Research
• Reviewer, Digestive Diseases and Sciences
• Reviewer, European Journal of Nuclear Medicine
• Reviewer, Journal of Chromatography
• Reviewer, Journal of Labelled Compounds and Radiopharmaceuticals
• Reviewer, Journal of Nuclear Medicine
• Reviewer, Journal of Nuclear Medicine and Biology
• Reviewer, Nuclear Medicine Communications
• Reviewer, Scientific Exhibits, 47th Annual Meeting of the Society of Nuclear Medicine, Los Angeles, CA, 1999

**TERRI TUCKMAN, M.D.**

• Vice Speaker of the House of Delegates, Board of Directors of the American Medical Women's Association
• Co-Chair, Women Physicians' Forum
• Chair, Personal Development Committee, American Medical Women's Association
• Chair, Committee on Dependent Care, American Medical Women's Association
• Member, Strategic Planning Committee, American Medical Women's Association
• Member, Committee on Maternity and Medicine, American Medical Women's Association
• Member, Committee on Gender Equity, American Medical Women's Association

**RICHARD J. WECHSLER, M.D.**

• President, Philadelphia Roentgen Ray Society
• Member, Executive Board Committee, Philadelphia Roentgen Ray Society
• Member, Budget Committee, Philadelphia Roentgen Ray Society
• Member, Chest Radiology Accreditation Committee of Commission on Standards and Accreditation, American College of Radiology
• Alternate Councilor, American College of Radiology
• Reviewer, Radiology
• 1998 Giovanni DiChiro Award for Outstanding Scientific Research, *J Computer Assisted Tomography*
ANNINA N. WILKES, M.D.

- State Director, Pennsylvania American Medical Women's Association

ELAINE WOLK, M.D.

- Member, Reviewer Subcommittee on Clinical Images, Mammography Accreditation Program, American College of Radiology
APPENDIX

Table 1  ACTIVE GRANTS
Table 2  PENDING GRANTS
### NIH/OTHER FEDERAL GRANTS

<table>
<thead>
<tr>
<th>Principal Investigator</th>
<th>Title of Project</th>
<th>Funding Source</th>
<th>Funding Dates</th>
<th>Direct Costs</th>
<th>Indirect Costs</th>
<th>Total Costs Funded</th>
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<td>Consigny, P.M. 080-03687 R36503</td>
<td>Re-Endothelialization of Arteries after Angioplasty</td>
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<td>NIH 5 UO1 CA62476 04 year</td>
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<td>Developing of Tissue Characterization Methods</td>
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<td>Image-Guided Diagnosis and Treatment of Prostate Cancer</td>
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<td>Tumor Evaluation by 2D and 3D Endoluminal Ultrasound</td>
<td>Liu, Ji-Bin</td>
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<td>3-D Digital Imaging of Breast Calcifications: Improvements in Image Quality and Development</td>
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## Foundation/Non-Profit Organization Grants

### Active Grants
07/01/98 - 06/30/99

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

### Funded Costs

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<tr>
<th>Principal Investigator</th>
<th>Title of Project</th>
<th>Funding Source</th>
<th>Funding Dates</th>
<th>Direct Costs</th>
<th>Indirect Costs</th>
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<td>Consigny, P. A38301</td>
<td>The Design and Construction of a Novel Intravascular Stent and Deployment Device</td>
<td>Drexel-Jefferson Seed Grant</td>
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<td>Clinical Evaluation of Digital Mammography</td>
<td>Breast Health Institute</td>
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<td>Communication Coordination with the Ultrasound Affiliate Training Center and the Maintenance of TJU-JUREI's Web Site</td>
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<td>Affiliate US Training Sites in Bulgaria, Estonia, George, Slovakia and Slovenia</td>
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<td>Review of Volume Sonographic Studies Across Networks: A Feasibility Study</td>
<td>Society of Radiologists in Ultrasound (SRU)</td>
<td>03/01/97 - 08/31/99</td>
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<td>Subharmonic Imaging and Subharmonic-Aided Pressure Estimation with Microbubble-Based Ultrasound Contrast Agents</td>
<td>Whitaker Foundation</td>
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<td>Do Ultrasound Contrast Agents Induce Bioeffects in Vivo?</td>
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## INDUSTRIAL GRANTS

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<th>TITLE OF PROJECT</th>
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<tr>
<td>Bonn, J. D83701</td>
<td>A Prospective Evaluation of the Meadox VANGUARD and PASSAGER Endoprosthesis for Elective Treatment of InfraRenal Abdominal Aortic Aneurysm and Aorto-Iliac Aneurysms in Humans</td>
<td>Meadox Medicals (Core Lab)</td>
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<td>Symphony Nitinol Stent for Treatment of Iliac Artery Stenoses</td>
<td>Boston Scientific Corporation</td>
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<td>Characterization of an Animal Model of Plaque Fractures</td>
<td>Rhone-Poulenc Rorer</td>
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<td>Consigny, P.M. A35801</td>
<td>Hemodynamic Effects of EVP1001</td>
<td>Eagle Vision Pharmaceutical Corp.</td>
<td>11/01/98 - 10/31/99</td>
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<td>D53901</td>
<td>The Prevention of Deep Vein Thrombosis in Acute Spinal Cord Injury Comparing Enoxaparin Versus Low Dose Heparin Plus External Pneumatic Compression During the First Two Weeks Followed by Enoxaparin Versus Low Dose Heparin in the Remaining Six Weeks</td>
<td>Lovenox Spinal Cord Injury Study-611</td>
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<td>Effect of Ultrasound Bone Healing on Fractured Bone in Dogs</td>
<td>Exogen Inc.</td>
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<td>$25,460</td>
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<td>Ultrasound Contrast Imaging of Normal and Abnormal Prostates</td>
<td>Nycomed, Inc.</td>
<td>05/01/97 - 07/31/99</td>
<td>$61,307</td>
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<td>Nycomed, Inc.</td>
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<td>Alliance Pharmaceutical Corporation</td>
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<td>DuPont Merck Pharmaceutical Company</td>
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<td>$7,358</td>
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<td>Flow Estimation Using Flash Echo Imaging</td>
<td>Toshiba America Medical Systems, Inc.</td>
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<td>Study of the Safety, Patient Acceptance &amp; Efficacy of Levostin Injection in Female Patients Undergoing Doppler Sonography, Including Harmonic Imaging, for Evaluation of Breast Mass or Abnormality</td>
<td>Berlex Laboratories NIH supplement #204-13 #204-14</td>
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<td>Nycomed, Inc.</td>
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<td>Nycomed, Inc.</td>
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<td>The Effects of Low Intensity, Pulsed US on Bone Fracture Healing and Cartilage Healing in Rabbits</td>
<td>Exogen, Inc.</td>
<td>01/01/97 - 12/31/99</td>
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<td>Halpern, E. D71001</td>
<td>A Safety, Dosing, and Efficacy Study of AF0150 for Contrast-Ultrasound Assessment of Focal Lesions of the Liver or Kidney in Patients with CT-or MRI-Confirmed Abnormalities</td>
<td>Alliance Pharmaceutical Corporation</td>
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<td>Halpern, E. D90301</td>
<td>A Single-Center, Open-Label, Randomized Study to Access the Feasibility of AFO150-enhanced Ultrasound to Aid in the Visualization of Prostatic Lesions in Males with Elevated Prostate Specific Antigen (PSA) and/or Abnormal Digital Rectal Exam (DRE) Who are Scheduled for Transrectal Ultrasound</td>
<td>Alliance Pharmaceutical Corp.</td>
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<td>Halpern, E. D91101</td>
<td>Safety and Efficacy of Sonovue (Sulfur Hexafluoride Microbubbles for Injection) for B-mode and Doppler Examination of the Extra-Cranial Carotid Arteries</td>
<td>Bracco Diagnostics</td>
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<td>Sonus Pharmaceuticals</td>
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<td>New High Resolution Ultrasound System for Evaluating the Skin and Soft</td>
<td>Longport, Inc.</td>
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<td>Randomized, Open Label Trial of Twice Daily Lovenox (Enoxaparin) Versus Low-</td>
<td>Rhone-Poule Inc.</td>
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<td>Cooper Hospital</td>
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<td>A Multi-Center Clinical Study to Establish the Prognostic Value of the Tissue Factor Clotting Time Assay (TiFaCT) in Predicting Venous Thromboembolism (VTE) Following General Abdominal or Orthopedic Surgery</td>
<td>Coagulation Diagnostics, Inc.</td>
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<td>An Open-Label Phase 2 Study to Determine the Efficacy and Safety of OPTISON Injectable Suspension in Ultrasonography in Patients with Confirmed Renal Disease</td>
<td>Mallinckrodt, Inc.</td>
<td>06/25/98 - 06/24/99</td>
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<td>Advanced Magnetics, Inc.</td>
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Table 2

Pending Grants  
(Report reflects entire award period and first year of award)  
06/30/99

**NIH/FEDERAL GRANTS**

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<th>INVESTIGATOR</th>
<th>TITLE OF PROJECT</th>
<th>FUNDING SOURCE</th>
<th>FUNDING DATES</th>
<th>DIRECT COSTS</th>
<th>INDIRECT COSTS</th>
<th>TOTAL COSTS FUNDED</th>
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<td>Re-endothelization of Arteries after Angioplasty</td>
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<td>99mTc Peptides: Molecular Basis in Imaging Breast Tumors</td>
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## Pending Grants

### FOUNDATION/NON-PROFIT ORGANIZATION GRANTS

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<th>FUNDING DATES</th>
<th>DIRECT COSTS</th>
<th>INDIRECT COSTS</th>
<th>TOTAL COSTS FUNDED</th>
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<td>Consigny, P.M.</td>
<td>Effects of Chlamydia Pneumoniae Infection on Susceptibility of Atheromatous Lesions to Fracture in the Rabbit</td>
<td>American Heart Association</td>
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<td>Medison-Kretz 3D Research Foundation</td>
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## Pending Grants

### INDUSTRIAL GRANTS

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<th>Indirect Costs</th>
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<td>Ultrasound Contrast Imaging of Canine CTVS Prostate Tumors</td>
<td>Nycomed, Inc.</td>
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<td>An Open-Label, Randomized, Phase 2, Dose-Finding Study to Evaluate the Efficacy and Safety of OPTISON Enhanced US Examinations in Patients with Known Focal Liver Lesions</td>
<td>Mallinckrodt, Inc.</td>
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<td>Tc-99m labeled monoclonal antibody specific for human neutrophils</td>
<td>Palatin Technologies</td>
<td>To be determined</td>
<td>$10,110</td>
<td>$2,528</td>
<td>$12,638</td>
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<td>$10,110</td>
<td>$2,528</td>
<td>$12,638</td>
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<td>(-01 year)</td>
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<tr>
<td>TOTAL INDUSTRIAL FUNDING</td>
<td>$164,374</td>
<td>$46,508</td>
<td>$210,882</td>
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<td>TOTAL FIRST YEAR INDUSTRIAL FUNDING</td>
<td>$106,522</td>
<td>$31,036</td>
<td>$137,558</td>
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<td>TOTAL FUNDING PENDING</td>
<td>$11,606,247</td>
<td>$5,538,923</td>
<td>$17,145,170</td>
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<td>TOTAL FUNDING PENDING -First Year</td>
<td>$3,175,451</td>
<td>$1,343,101</td>
<td>$4,518,552</td>
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<td>(-01 year)</td>
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