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Dr. David C. Levin Department of Radiology 3 Gibbon



Thomas Jefferson University Jefferson Medical College

DEPARTMENT OF RADIOLOGY

ANNUAL REPORT

JULY 1, 1997 - JUNE 30, 1998

DAVID C. LEVIN, M.D. PROFESSOR AND CHAIRMAN

TABLE OF CONTENTS

Department of Radiology									
Chairman, Vice Chairman .	8 - G								1
Divisions and Directors	à a								1
Committees and Chairmen.									1
Department Full Time Faculty.									2
Faculty with Secondary Appoint	tme	nts							3
Clinical Divisions									4
Radiology Residents and Fellow	s								5
Department Organization Char	t .					w.		2	6
Department Administration Ch.	art					x .			7
State of the Department									8
Teaching Programs			•	•					21
Publications									
Journal Articles.		ł		•					25
Books and Book Chapters							,	•	32
CD Roms									35
Abstracts	2 - a								35
Formal Scientific Presentations.									47
Honors, Editorial Activities, Service	e to	Reg	iona	al					
or National Organizations									72

Appendix:

Table 1	Active Grants
Table 2	Pending Grants

DEPARTMENT OF RADIOLOGY

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

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

1997/98

DEPARTMENT 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	Gary S. Shaber, M.D.
Magnetic Resonance Imaging	Donald G. Mitchell, M.D.
Neuroradiology/ENT Radiology	Carlos F. Gonzalez, M.D. Vijay M. Rao, M.D.
Nuclear Medicine	Charles M. Intenzo, M.D.
Pediatric Radiology	George Gross, M.D.
Ultrasound	Barry B. Goldberg, M.D.
Academy Imaging Center	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. Spirn, M.D.
Computer Committee	Gary S. Shaber, M.D.
Contrast Committee	Richard J. Wechsler, M.D.

1

16

DEPARTMENT FULL TIME FACULTY - 1997-1998

Professors

Stephen A. Feig, M.D. Barry B. Goldberg, M.D. Carlos F. Gonzalez, M.D. George W. Gross, 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. Robert M. Steiner, M.D. Mathew Thakur, Ph.D. Richard J. Wechsler, M.D. Simon Vinitski, Ph.D.

Research Professor

Gary S. Shaber, M.D.

<u>Clinical Professor</u> 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. Mark E. Schweitzer, M.D. Kevin L. Sullivan, M.D. Lisa M. Tartaglino, M.D.

<u>Clinical Associate Professor</u> Paul W. Spirn, M.D.

Research Associate Professor P. Macke Consigny, Ph.D.

Assistant Professors

Joseph Bonn, M.D. Diane M. Deely, M.D. W. Scott Enochs, M.D. David Eschelman, M.D. Pamela T. Johnson, M.D. Sung M. Kim, M.D. Andrew A. Maidment, Ph.D. Steven A. Nussbaum, M.D. Catherine W. Piccoli, M.D. Ana Salazar, M.D. Sharon R. Segal, D.O. James J. Zhang, Ph.D.

Research Assistant Professors

Ji-Bin Liu, M.D. Hector V. Ortega, M.D. Laurence Parker, Ph.D. William T. Shi, Ph.D.

Clinical Assistant Professors

Terri Tuckman, M.D. Elaine Wolk, M.D.

Instructors

Jane S. Hughes, M.D. Cindy Isaacson, M.D. Annina Wilkes, M.D.

Professors Emeriti

Jack Edeiken, M.D. Benjamin M. Galkin, M.S. Robert O. Gorson, M.S. Philip J. Hodes, M.D.

Honorary Professor

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 Neurosurgery [primary] Instructor in Radiology [secondary]
- Joel S. Raichlen, M.D., Clinical Associate Professor of Medicine [primary] Clinical Associate Professor of Radiology [secondary]
- Stanton N. Smullens, M.D., Professor of Surgery [primary] Associate Professor of Radiology [secondary]
- Paul Walinsky, M.D., Professor of Medicine [primary] Assistant Professor of Radiology [secondary]
- 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 1997-98

GENERAL DIAGNOSTIC RADIOLOGY (incorporating pulmonary, skeletal, gastrointestinal, and genitourinary radiology)	Directed by Gary Shaber, M.D. Drs. Diane Deely, George Gross, Cindy Isaacson, David Karasick, Stephen Karasick, Anna Lev-Toaff, Ana Salazar, Mark Schweitzer, Paul Spirn, Robert Steiner, Richard Wechsler
BREAST IMAGING/AMBULATORY RADIOLOGY	Directed by Stephen Feig, M.D. Drs. Jane Hughes, Cindy Isaacson, Scott Nussbaum, 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 Carlos Gonzalez, M.D. and Vijay Rao, M.D . Drs. Scott Enochs, Adam Flanders, David Friedman, Lisa Tartaglino
PEDIATRIC RADIOLOGY	Directed by George Gross, M.D.
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, Pamela Johnson, Alfred Kurtz, Anna Lev-Toaff, Levon Nazarian, Laurence Needleman, Ana Salazar, Paul Spirn, Robert Steiner
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
ACADEMY IMAGING CENTER	Directed by Catherine Piccoli, M.D. Drs. Anna Lev-Toaff, Annina Wilkes, Steven Nussbaum plus other faculty

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DEPARTMENT OF RADIOLOGY

RESIDENTS/FELLOWS 1997-1998

RESIDENTS

Philip S. Lim, M.D., Chief Resident Anne L. Moch, M.D., Chief Resident

FIRST YEAR RESIDENTS

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

THIRD 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.

US/CT/MRI

Joseph Bucich, M.D. Stephen D. Go, M.D. Susan Gottlieb, M.D. Howard T. Heller, M.D. Patrick L. O'Kane, M.D. Vivian I. Miller, M.D. Laurie L. Sebastiano, M.D.

NEURO/MRI

Kenneth E. Brumberger, M.D.

MAMMO

Charlene H. Whitfill, M.D.

MUSCULOSKELETAL

Joseph Bifano, M.D.

SECOND YEAR RESIDENTS

Glenn Articolo, M.D. Steven Epstein, M.D. Angela J. Gessner, M.D. Antje Greenfield, M.D. Jeffrey Mondschein, M.D. Jennifer Park, M.D.

FOURTH YEAR RESIDENTS

Susan T. DeWyngaert, M.D. Carin F. Gonsalves, M.D. Steven G. Moss, M.D. David C. Sperling, M.D. Janio Szklaruk, M.D. Elizabeth L. Tan, M.D.

NUCLEAR MEDICINE

Rufo Chua, M.D. Krishna Rao Kylasa, M.D.

FELLOWS

NEURO/ENT

Maurice Fitzpatrick, M.D. Steven Gilbert, M.D. Michael Hollander, M.D. Asha Kovalovich, M.D. Philip Kousoubris, M.D. Neela Jain-Lakhani, M.D. Judith Wolfstein, M.D.

CARDIOVASCULAR/INTERVENTIONAL

Nilesh Doshi, M.D. Kristin Gerndt, M.D. Gary Kramer, M.D. Daniel Radack, M.D.

MRI

Peerapod Chiowanich, M.D.



9

Revised 1/97



Department of Radiology Administration

5

STATE OF THE DEPARTMENT, 1997-98 David C. Levin, M.D.

There has been considerable turmoil within the Philadelphia medical community during the past several years. Many of us on the faculty had become concerned that some of our principal referring physicians had been recruited away by the Allegheny University of the Health Sciences. Both Allegheny and Penn were very aggressively acquiring physician practices, while Jefferson kept a much lower profile in this activity. We weren't seeing any growth in clinical volume and the future seemed somewhat uncertain. What an amazing turnaround the last year has produced! Allegheny has just declared bankruptcy and sold all their hospitals, while Penn has been reported by the Philadelphia Inquirer to have lost \$100 million this past year. The problems at both institutions seem traceable to financially overextending themselves. The more conservative Jefferson strategy appears to have been the correct one and our leadership deserves credit for this. The decision by Pennsylvania Hospital to affiliate with Penn has turned out to be a boon for our department. A number of the senior physicians there are now in the Jefferson fold, and other new clinicians have joined our faculty as well. All of this has had salutary effects on our department, as will be described below.

This report will focus upon the following aspects of our department's endeavors: (1) Clinical activities during 1997-98, (2) Planned new clinical programs, (3) Clinical weaknesses, (4) Research accomplishments during 1997-98, (5) Research weaknesses, (6) Opportunities for extramural funding, (7) Affiliations and interdepartmental activities, (8) Department administration, (9) Department goals, and (10) Issues for the college, university and hospital. Immediately following this report, Dr. Vijay Rao will present her report on our educational programs.

Judy Dubbs, Dara Killion, Toni Salvatore, and MaryAnn Rago provided much assistance in compiling this report, and I greatly appreciate their help.

CLINICAL ACTIVITIES

The department had a very busy year clinically. Overall case volume on our campus was up almost 6%. Mammography volume increased 11.7% to over 30,500 studies. Body CT volume rose 13.2%. In our neuroradiology division, CT of the brain and spine increased 16.1% and CT of head and neck structures increased 31.1%. MRI of the brain and spine rose 8.7%, while MRI of head and neck structures rose 11.1%. The general diagnostic division experienced increases of greater than 8% in GU, abdomen, bone, and chest examinations. CVIR procedures rose by 7%. Nuclear medicine volume rose by 4%. The only two divisions in the department in which volume was relatively flat were ultrasound and body MRI. Off-campus growth also occurred, as will be described below.

In MRI, we secured two new outside contracts. One was to read the orthopedic MRI studies performed at the Rothman Institute. The other was a contract with MMR, Inc., which will be installing a badly needed open MRI in the Clinical Office Building. This unit should be in operation later this summer. We installed the echo planar imaging upgrade on the 10 Main MRI, although there have been some problems getting this upgrade to function optimally and we still need the software to be able to make full utilization of it. The TME MRI unit at Bala has experienced a steady increase in volume, after getting off to a slow start several years ago. They are currently averaging between 9-10 cases per day. The Langhorne MRI continues to thrive, with an average caseload of 22 per day. Faster gradients were installed in one of the units in the COB, allowing breath-hold T2-weighted images and faster 3-D gadolinium-enhanced sequences. These are particularly useful for obstetrical, placental and vascular MR imaging. Under Dr. Piccoli's leadership, we began using MRI guidance for percutaneous breast biopsies. Increasing referrals were noted for characterization of adnexal masses and preoperative mapping of uterine fibroids. Growth was also noted in MR arthography.

The **neuroradiology/head and neck radiology division** took on a major new clinical assignment by beginning to cover full time at Wills Eye Hospital. Under the previous arrangement, this had been a shared responsibility with the Pennsylvania Hospital radiologists. CT angiography (CTA) also began at Wills, and we continued to see increasing use of CTA at TJUH for the evaluation of carotid arteries, intracranial aneurysms and AVMs. The division increased its use of our teleradiology system, although this was not without some pain and strain. With the introduction of faster workstations, it is hoped that some of the problems will be alleviated. There was increase in use of dynamic MRI in imaging head and neck tumors. Dr. Rao and her colleagues also began doing sinus CT with the VTI system, which allows image-guided operative treatment.

In our **ultrasound division**, although there was no increase in overall procedure volume, some service improvements occurred. By reallocation of the technical staff, we were able to reduce waiting time in the vascular laboratory to less than five working days. A joint venture was developed with the department of urology in a new center for prostate imaging and biopsy. Under the leadership of Dr. Nazarian, there was increasing use of high frequency ultrasound in the evaluation of musculoskeletal abnormalities. Under Dr. Lev-Toaff's leadership, 3-D ultrasound was increasingly used in our clinical practice, especially in obstetrics, gynecology, and sonohysterography. In my rounds through the department, I was constantly amazed to see the large number of ultrasound-guided interventions being performed daily, often as many as 10-12 per day and sometimes even more. These include biopsies, drainages, operative cases, thoracenteses, paracenteses, and others. Increased use was made also of endorectal and transesophageal ultrasound to evaluate tumors.

In the **Breast Imaging Center**, a new ABBI unit was installed. Predictably, this device was not heavily used for the purpose for which it was designed (only about once per 3 weeks), but we began using it for Mammotome biopsies, utilizing 14 gauge needles for better specimen retrieval. We converted what was formerly a conference room to accommodate the ABBI unit, so in essence we gained an additional room. Midway through the year, we added additional slots to the BIC schedule, thereby reducing backlogs. However, we have run into some problems as a result of increased volume, as will be described later. A switch was made to a new mammographic film, providing improved image quality.

In **body CT**, a considerable increase in volume occurred. To help alleviate backlogs, we opened up additional evening scheduling hours for outpatients in the COB. The division has done a fine job of switching over to the use of teleradiology. The **nuclear medicine division** introduced several new services. These included some new protocols for brain imaging, cardiac imaging, determination of enterogastric bile reflux, imaging of abscesses and infections, and imaging of prostate cancer recurrence and metastases. The **CVIR division** assumed full responsibility for the evaluation and testing of patients scheduled for outpatient procedures through the SPU and the SDA unit. This has led to more appropriate lab tests being drawn, correct information being given to patients about their procedures, and better planning of the procedures themselves. The team began using uterine artery embolization for treatment of fibroids causing pelvic pain and dysfunctional bleeding. They also began placing occlusion balloons in the internal iliac arteries in patients at high risk for peripartum hemorrhage due to placental abnormalities. In the **general diagnostic division**, an increasing number of percutaneous bone, soft tissue, and lung biopsies were performed.

At **Academy Imaging Center**, there were both problems and opportunities. Overall, the contract has been successful so far. A great deal of credit for this goes to Dr. Cathy Piccoli, who has provided excellent leadership as medical director. Credit also goes to Drs. Anna Lev-Toaff and Nina Wilkes who work there on a regular basis. Case volume there is still not as high as we'd like it to be.

PLANNED NEW CLINICAL PROGRAMS

We will be adding on at least three new facilities during the coming year. (1) A new pediatric radiology section is under development at 841 Chestnut Street, where Jefferson's department of pediatrics now has a large outpatient clinic. We plan to transmit radiographic images from that clinic back to our department via teleradiology. (2) A large Jefferson satellite is now being built in Voorhees, NJ. Current plans call for it to include radiographic, fluoroscopic, mammography, and ultrasound capability. We are also holding discussions with Medical Resources (the company that owns Academy Imaging) about affiliating with one of their MRI units in that vicinity. (3) An open MRI unit is currently being installed in the COB. This is badly needed, since there is clearly a significant number of patients who require studies in an open unit. Also, this may facilitate certain interventional MRI procedures. The open magnet is a joint venture between TJUH and MMR, Inc.

We have been quite successful in pursuing relationships with corporations involved in the diagnostic imaging business. We now have contracts with TME, Medical Resources, Specialty Care Network, and MMR. These corporate relationships have not only been good for us in the business sense, but they have added significantly to our case volume, which of course translates to more and better teaching material. We currently have discussions underway with several other outside facilities or companies, and we will continue to pursue these kinds of opportunities. It is of interest to note that as a result of these kinds of relationships, we will soon staff a total of 9 MRI units - 3 at TJUH, 1 at Wills Eye Hospital, the new open MRI to be installed shortly in the COB, 2 TME units, 1 at Academy Imaging, and an extremity-only magnet at the Rothman Institute. This gives us one of the largest MRI caseloads among all academic institutions in the country.

In various divisions throughout the department, several new clinical programs are also being prepared. Under the leadership of Dr. Pamela Johnson, we are setting up a 3-D volume rendering workstation in body CT for vascular and endoluminal imaging. In neuroradiology, we plan to start CT-guided fine needle aspiration biopsies of head and neck masses. We are looking forward to beginning functional MRI/diffusion MRI after new software is installed in the relatively near future. There is a possibility that we will be adding a third mammography unit at the Mammography Screening Center to accommodate increased demand. In CVIR, we will be expanding certain areas of vascular intervention. These include the use of stent grafts for abdominal aortic aneurysms and percutaneous declotting of occluded dialysis access grafts. A third procedure room is being installed and should be open this fall.

CLINICAL WEAKNESSES

Over the last several years, the hospital has spent very little money on purchasing new equipment and replacing outdated older equipment in the department of radiology. As a result, some of our equipment and software is outdated. The problem is especially acute in CVIR. As noted above, a third procedure room is currently being installed and this is badly needed. However, our three other existing angiography rooms (two in CVIR and one in neuroradiology) are now about eleven years old and are in bad need of replacement. The units in CVIR have been so heavily used over the years that they are beginning to fall apart. Plans had been made four years ago to upgrade these rooms, but for various reasons this never occurred. We are now at the point where these rooms have to be replaced. Hardware and software upgrades are also needed on our MRI units.

We also need certain equipment which most other academic departments of radiology possess, but which are not found here at Jefferson. A DEXA scanner is a good example. With all the emphasis now being placed on detection, quantification, and treatment of osteoporosis, DEXA is a necessity. We have this in our current capital budget requests, but it is not yet approved. In nuclear medicine, we need a molecular coincidence detection unit, which will allow us to image positron-emitting radionuclides. This will give us PET-like capability without the huge costs of actually acquiring a PET scanner.

We have recently experienced numerous complaints from patients at the Breast Imaging Center. Most of these have surfaced since we added more slots to the daily clinical schedule, and result from delays in processing patients quickly through the BIC. This is sometimes unavoidable, since our policy is to work up a patient completely on a single visit, and we are not always able to predict how many studies are going to be needed on any given patient. There has also been a problem with reduced manpower (both technologists and physicians) at the BIC. Some of our staff radiologists have been reading more slowly than others, and this compounds the problem. Dr. Feig and I have had a number of discussions about ways to alleviate the situation and some steps have already been taken.

We also have backlogs in both MRI and body CT. Hopefully the opening up of additional CT slots in the evenings at the COB will alleviate the latter problem. In ultrasound, we are seeing increased demand for operative ultrasound. This ties up our staff radiologists for inordinate periods of time and has caused us some coverage problems. In pediatric radiology, we currently have only half-time coverage from our pediatric radiology colleagues at the duPont Hospital for Children. This creates somewhat of a void, although it is probably manageable at present. The growth of the pediatric clinic at 841 Chestnut Street will create increasing demands in pediatric radiology. However, at a time when reimbursements are declining, it will be difficult for us to increase the amount of coverage we obtain from the duPont radiologists.

We have continued to expand our use of the Canon teleradiology system, and are now using it to read virtually all our MRI and CT scans, as well as those from Academy Imaging and (soon to start) from the two TME centers. The Canon workstations have outstanding capabilities, but some of them have been too slow. We just recently acquired six new Ultrasparc workstations, which are much faster. Hopefully these will resolve the speed issues that have caused logistical problems for us in using the system. Another related problem is that we have continued to experience difficulty in weaning our referring clinicians away from the need for hard copy images. Because of our special working relationship with Canon, Jefferson has had to spend far less money on teleradiology installations than most other hospitals. However, this has resulted in very limited availability of reading stations for clinicians throughout the institution. We are working on ways to distribute images via the internet, and hopefully this will lessen the problem to some degree.

RESEARCH ACCOMPLISHMENTS

I am pleased to report that despite the increasing demands of clinical practice during 1997-98, our department still was able to achieve a banner year in research. Radiology researchers published a total of 323 scientific papers, abstracts, chapters or books in the medical literature. We had a total of 68 active grants or contracts in force during the year. 12 were grants from NIH or other federal government sources. 11 were from foundations or non-profit organizations. The remaining 45 were from industrial sources. These grants represent over \$7 million in direct funding and approximately \$2.2 million in indirect funding over the lifetime of the grants. For the academic year, they produced a total of \$3,086,000 in direct costs and \$881,000 in indirect costs. These numbers represent a considerable increase over the previous year. The principal investigators, grant sources, dates and amounts of funding can be found in the appendix, table 1. Table 2 of the appendix lists another 20 grants which are currently pending.

At the 1997 meeting of the RSNA, Jefferson investigators made 82 presentations. 56 of these were scientific papers. 13 more were refresher course lectures, and the remaining 13 were scientific exhibits. The RSNA continues to be the most competitive and largest of all meetings, with more than half the presentations now originating from teaching institutions in foreign countries. Given

the competitive nature of the program selection process, 82 presentations by our department is a striking achievement. Interestingly, out of thousands of presentations at the RSNA last year, 17 were chosen to be the subject of formal press conferences with the national news media. Four of the 17 were from Jefferson. In addition to the RSNA, our department faculty made numerous presentations at subspecialty society meetings. Some of the specifics of the research done in our department this past year are as follows:

In **body MRI**, Dr. Schweitzer continued his extraordinary productivity in musculoskeletal disease. He had no less than 39 articles either published or in press during the course of the year, and was either first or second author on 33 of them. On most of his second-authored papers, he served as the mentor of one of our residents, fellows or medical students. Getting young radiology trainees interested and involved in research is an extremely important endeavor, and Dr. Schweitzer is a master at it. He also published 6 chapters and 14 abstracts. For the upcoming RSNA in December 1998, he has submitted 15 abstracts. Dr. Outwater was also exceptionally productive, particularly in MRI of gynecologic abnormalities and other pelvic diseases. He published 29 papers or book chapters during the course of the year, as well as 9 abstracts. Dr. Mitchell worked with a visiting research fellow and completed a study of MRI as a predictor of clinical progression in compensated cirrhosis due to viral hepatitis, and another study analyzing heavily T2-weighted and gadoliniumenhanced MRI for distinguishing benign from malignant liver masses. Working with another foreign fellow, Dr. Outwater completed a study of the MRI features of Crohn's disease and its complications. Dr. Piccoli evaluated the safety and efficacy of Combidex as an MRI contrast agent for visualizing axillary lymph node disease in breast cancer patients.

In **neuroradiology/head and neck radiology**, Dr. Rao also used Combidex as an MRI contrast agent for evaluating lymph node disease in patients with head and neck lesions. Drs. Friedman and Tartaglino presented abstracts at the RSNA that were of sufficient interest to become the subject of press conferences with the national news media. Dr. Friedman's study correlated the MRI and clinical findings following stereotactic radiosurgical gamma knife pallidotomy and thalamotomy. Dr. Tartaglino's study was on CT angiography of carotid stenosis and whether the NASCET criteria should differ for males and females. Dr. Flanders completed a study of the relationship between the functional abilities of spinal cord injury patients and the severity of damage as revealed by MRI. Dr. Gonzalez worked with Dr. Knobler of the department of neurology in using MRI to evaluate the efficacy of Betaseron in treating multiple sclerosis. Dr. Vinitski continued his investigations of functional MRI of the spinal cord and of fast tissue segmentation.

In our division of diagnostic ultrasound, as usual, a large amount of valuable research was conducted during the year. A number of these were studies of ultrasound contrast agents that were supported by corporate funding. Dr. Needleman evaluated liver agents, while Dr. Halpern evaluated kidney and prostate agents. Drs. Forsberg and Liu carried out contrast studies in animals. Both Drs. Goldberg and Forsberg had federal grants to evaluate breast masses using various ultrasonic techniques. Dr. Liu published several abstracts and one paper pertaining to his NIH-funded study on tumor evaluation by endoluminal 2-D and 3-D ultrasound. Drs. Nazarian, Feld and others continued their innovative work on the use of ultrasound for detecting superficial melanoma metastases and for both localization and biopsy of other superficial soft tissue masses. Dr. Halpern published a paper on the effect of distal vascular resistance on Doppler flow patterns and abstracts on Doppler flow patterns in the renal and carotid arteries. Dr. Goldberg published papers on the use of tumor-specific ultrasound contrast agents in evaluating hepatic tumors and various renal abnormalities. Dr. Feld investigated the use of enoxaparin in preventing DVT in acute spinal cord injury. He also completed a study of ultrasound-guided biopsy of salivary gland and lymph node lesions in the head and neck area. Drs. Forsberg and Shi continued their work on the acoustic properties of ultrasound contrast agents and ultrasound equipment itself.

In **breast imaging**, Dr. Feig continued his highly recognized research on screening mammography. He published a paper which calculated that if all women age 40-49 in the Gothenburg trial had been screened annually, there might have been a reduction in breast cancer deaths of as much as 75% compared with a 45% reduction observed from screening at 18-month intervals. He presented a paper at the RNSA demonstrating that benefits from annual screening mammography for women in their 40's greatly exceed any possible radiation risk. He published a paper describing the rationale for the April 1997 decision of the ACR to increase the recommended frequency of screening mammography in women over age 40. His work provides some of the most important statistical support for the recommendations of both the ACS and ACR that women over age 40 have screening mammography annually rather than at less frequent intervals. Dr. Maidment was also very productive in research relating to breast imaging. He continued his work on a DOD-funded study of 3D digital analysis of breast calcifications. Dr. Piccoli completed a study with one of our former residents correlating single lumen silicone implant integrity with chemical shift artifact on T2-weighted MRI scans.

In **body CT**, Dr. Wechsler published a paper on percutaneous lumbar sympathetic catheter placement under CT guidance for pain relief. Dr. Halpern published a paper comparing Doppler ultrasound and CT angiography for the evaluation of renal artery stenosis. Dr. Kurtz completed his NIH-funded RDOG study comparing Doppler ultrasound, CT, and MRI in ovarian cancer diagnosis and staging. Dr. Pamela Johnson, in her first year on our faculty, compiled a very impressive record of research accomplishment. She presented four abstracts at the RSNA last year and has submitted a number of others for this year. One of her abstracts compared a real time volume rendering algorithm with a maximum intensity projection algorithm in CT angiography of renal artery stenosis. Another dealt with pulmonary parenchymal abnormalities as demonstrated at CT and their correlation with specific symptomatology in patients with pulmonary emboli.

In **nuclear medicine**, Dr. Thakur continued his development of radiolabeled agents for imaging thrombi, prostate tumors, and breast tumors. He was able to obtain industrial grants supporting his research on developing these kinds of imaging agents.

In the **general diagnostic division**, Dr. Shaber continued his work on digital radiography, in conjunction with scientists from Sterling Diagnostic Imaging. This is an exciting and complex technology which in all probability will eventually replace screen-film imaging. It is important that our department continue to be at the forefront of developments in this field. Dr. David Karasick published papers dealing with the radiographic findings in the rheumatoid foot and ankle. Dr. Stephen Karasick published a paper on the role of parity and previous hysterectomy in the development of pelvic floor abnormalities as seen on defecography.

Our **CVIR** faculty continued their outstanding work as a core laboratory for a number of industrially-sponsored clinical trials of interventional devices and drugs. These included the Meadox Passager aortic stent graft, the Boston Scientific Symphony iliac stent, the Impra Venaflow dialysis graft, and the use of the RPR drug enoxaparin in prophylactic treatment of DVT. Dr. Consigny continued work on his NIH grant to study re-endothelialization of arteries following angioplasty. He also developed an interesting animal model of atherosclerotic plaque fracture, a project funded by industry. He published an interesting paper on the effect of arterial shear stress on freshly adherent endothelial cells. Dr. Bonn mentored one of our former fellows in developing a method of percutaneous transluminal repair of pseudoaneurysms using a perfusion balloon angioplasty catheter. This paper won the annual Young Investigator Award of the SCVIR. Dr. Eschelman published a paper on the use of CO_2 as an intravascular contrast agent, and he mentored one of our residents in publishing a paper on transperineal sonographically-guided drainage of deep pelvic abscesses.

Last but not least, a number of us continued our work in health services research as it pertains to radiology. The most important of this was the work conducted by Dr. Feig, as described above. I published a paper (working with Drs. Rao and Spettell) on the impact of MRI on nationwide costs of health care and a comparison of these costs with those of other imaging procedures. We also used the Medicare Part B database to study the relative roles of radiologists and other physicians in performing chest and skeletal radiography, abdominal and pelvic ultrasound, neuroimaging, and interventional procedures (all of these were presented as abstracts at the 1997 RSNA). Dr. Rao's paper on who performs neuroimaging has already been published. Dr. Spettell left the department to take another position, but we have replaced her with Dr. Larry Parker who has been an excellent In addition to providing biostatistical support for other researchers in the addition so far. department, Dr. Parker is very facile with computers and I look to him to be able to delve more deeply into some of the computerized databases we use in health services research. Dr. Nazarian was also quite active in this type of work. He completed a study of the safety, efficacy and utility of ultrasound-guided core biopsy for diffuse liver disease, and another on the impact on clinical management of CT assessment of abdominal hemorrhage in coagulopathic patients. Another important project of his was a paper demonstrating the complete lack of utility of paraspinal ultrasound in evaluating patients with cervical or lumbar pain. This was a classic example of a valueless procedure that had been used in a few parts of the country by misinformed or unscrupulous practitioners (almost none of whom were radiologists) as a way of increasing revenues. His demonstration that this procedure is essentially useless should save considerable dollars for our health care system. Dr. Schweitzer published an abstract on a cost-effectiveness comparison of Doppler ultrasound versus bone scintigraphy and MRI in evaluating patients with suspected reflex sympathetic dystrophy. Dr. Intenzo submitted for publication an interesting paper on the costeffectiveness of stress myocardial perfusion imaging in patients presenting to the emergency department with acute chest pain.

RESEARCH WEAKNESSES

In this report last year, I commented on the difficulties in trying to expand our research program at a time when we were not able to increase the size of the faculty. That problem has been compounded this past year, during which we saw almost a 6% rise in our exam volume in the hospital, as well as the expansion of some outside contracts. We're getting to the point where our research program may have to contract because there simply isn't enough time for it any more.

Faculty members continue to experience frustration in participating in commercially-funded clinical trials. These are often not intellectually or scientifically rewarding and they require considerable time and paperwork. For a number of years, this sort of work has been carried out by research coordinators, who act as "physician extenders". These coordinators have been paid by our overage fund. Recently, it was announced that because of commitments made to the board of trustees, additional monies would be diverted from our overage fund to the Medical College. The loss of this revenue will make it difficult to maintain a staff of research coordinators and other individuals who assist faculty physicians. This threatens to significantly diminish our capacity to conduct research.

Among our basic science faculty, Drs. Andrew Maidment, Flemming Forsberg, Macke Consigny and Matthew Thakur have continued to be productive in obtaining outside grant support. I still am not satisfied with the funding efforts that have been made by our faculty members in MRI physics and nuclear medicine physics.

Another weakness pertained to Dr. Feig's work in digital mammography. His ability to conduct his NIH-funded work in this area was compromised because of the poor quality and unreliability of the Fischer Imaging device which had been installed in the BIC and upon which the work depended. We finally had to insist that the unit be removed by the company. Fortunately, with the help of some additional outside funding Dr. Feig was able to obtain, we installed a substitute digital

mammography unit, manufactured by Bennett. We expect this to be a much more efficient and effective device that will allow Dr. Feig to move ahead with digital mammography research.

OPPORTUNITIES FOR EXTRAMURAL FUNDING

Table 2 of the appendix lists our current pending grant proposals. There are 20 in all, of which ten have just recently received funding but have not yet commenced. The list of these pending grants shows an interesting spectrum of proposals, many of which are ultrasound-related. I commend Drs. Goldberg, Forsberg, Liu, and Shi on their efforts. I'm also pleased to see that proposals have recently been sent to NIH by Drs. Mitchell, Nazarian and Piccoli, three of our faculty members who have not previously had NIH funding.

There are other opportunities for NIH funding as well, which some of our faculty members will be exploring during the next year. Dr. Forsberg is planning another submission to NIH on ultrasound tissue characterization. He has been very productive in getting outside grants, having had a total of 16 during the past year alone. Also in ultrasound, Dr. Halpern is considering an NIH proposal on improved detection of prostate cancer using ultrasound contrast agents. Dr. Thakur has also been very effective in the past at getting grants, and he is considering additional NIH and DOE proposals on the development of new radiolabeled imaging agents for several different purposes. We are joining two different consortia that will be involved in multi-institutional grant proposals. One of these is the National Digital Mammography Development Group, on which Dr. Feig will be the Jefferson principal investigator. The other is a research imaging network that is being organized by the ACR in response to an RFA from the NIH.

We will continue our work on ultrasound contrast agents and harmonic imaging. Dr. Shi just received word that his Whitaker grant proposal has been approved, on subharmonic imaging and subharmonic-aided pressure estimation with microbubble-based ultrasound contrast agents. Dr. Forsberg is planning additional grant submissions in this area.

Industry still can provide a good source of support for radiology research. We have been very successful in obtaining industrial funding in the past and we will continue our efforts to do so in the future. For example, Drs. Forsberg and Goldberg are working on an interesting project using low intensity pulsed ultrasound to enhance fracture healing of both bone and cartilage. They hope to obtain industrial funding for this. Our CVIR division continues to be highly successful in obtaining corporate contracts to serve as the core laboratory on clinical trials of interventional devices. For example, Dr. Bonn was just notified that he will be the core lab principal investigator on the phase II clinical trial of the Boston Scientific/Meadox Vanguard endovascular stent graft which will be used for percutaneous treatment of abdominal aortic aneurysms. The group has also applied for additional funding from the Cardiovascular/Interventional Radiology Research and Education Fund (CIRREF) to continue operating the STAR registry. This is still the largest multi-center registry of interventional radiology procedures anywhere in the country.

As part of the new relationship between Jefferson and Drexel, Drs. Goldberg and Forsberg have been working to forge an alliance with basic scientists at Drexel in biomedical imaging. Drexel faculty have worked effectively with members of our ultrasound division in the past and it is hoped that this alliance will enhance our chances at getting grant funding in the future, particularly from NIH.

Last but not least, the Jefferson Ultrasound Research and Education Institute (JUREI), headed by Drs. Goldberg and Forsberg, has been effective in getting funding through the Open Society Institute (the successor to the Soros Foundation) to expand international education in ultrasound through the development of affiliated sites in foreign countries and training programs which are hosted here. They will also seek other outside funding sources to promote these activities. The aforementioned discussion shows that despite all of the demands of our increased clinical workload and the problem of reduced reimbursements, we are still very active in our efforts to obtain outside funding for radiology research. I'm proud of our faculty's achievements in this area. If Jefferson's fiscal policies allow us to keep our research infrastructure intact, I'm confident we can continue to be successful in securing grant funding.

AFFILIATIONS AND INTERDEPARTMENTAL ACTIVITIES

Our most important affiliation activity this past year has been the assumption of full clinical coverage at Wills Eye Hospital. The cases referred by our colleagues in the departments of ophthalmology and neurosurgery at Wills have become a major part of our neuroradiology clinical case load and teaching material. Earlier in the year, Dr. William Tasman brought to my attention some of his concerns about service issues. Our neuroradiologists have worked diligently to try and address these and I believe that things have now significantly improved. Dr. Lisa Tartaglino is our liaison faculty member there and she works closely with Ms. Carrie Agnew of the Wills administration to try and iron out any rough spots. We greatly value the interaction with all the physicians there. Some interesting collaborations with them have occurred in research, such as investigations of the imaging findings following stereotactic radiosurgery and gene therapy of brain tumors.

Our department is pleased to be a major component of the core grant application of the Kimmel Cancer Center. The clinical component of this application included three major organ systems – the GI and GU tracts and the breast. Dr. Feig headed the breast section and also has been named Associate Director of the Cancer Control and Prevention Division at the center.

We have worked with three other departments this past year in an attempt to develop joint centers that combine both imaging and clinical care. In collaboration with the department of urology, we opened a new Jefferson center for prostate imaging and biopsy. Dr. Halpern is our co-director in this center. Dr. Goldberg and his colleagues are also holding discussions now with members of the department of obstetrics and gynecology to develop an integrated ultrasound service, possibly as part of a larger Women's Health Center. Also, Dr. Gardiner is working with Dr. Carabasi from the division of vascular surgery to develop a joint vascular disease center. We are hopeful that these negotiations will come to fruition during the coming year and that they will lead to more effective patient care, increased referrals, and closer collaboration in both research and teaching.

We continue to hold discussions with the hospital administration on the integration of the Methodist Hospital radiology group into our department. These negotiations have been more protracted than I would like, and I am hopeful that they can be completed shortly to everyone's satisfaction.

In addition to the above, our list of publications shows numerous examples of collaboration in research with members of other Jefferson departments.

DEPARTMENT ADMINISTRATION

I want to extend my thanks and appreciation on behalf of the entire faculty to Victor Sarro for his dedication and hard work during this past year. He has proven to be an extremely valuable member of our department and I consider his work to be outstanding. I feel our administrative infrastructure in the department is currently understaffed, given our size, yet Mr. Sarro manages to keep on top of everything and to be a constant source of good ideas and support to our clinical, teaching and research missions. Under his leadership, a number of major administrative steps have been taken during the past year. The most important of these is our conversion to the IDX billing system. Mr. Sarro and other members of his administrative team have put in an extraordinary amount of effort

to make sure this conversion goes well. It has just occurred and I'm hopeful the results will be favorable.

We signed two important new contracts this year – one with MMR to install an open MRI unit in the COB, and the other with the Rothman Institute and its parent company, SCN, to read MRI scans performed on the unit they own. Mr. Sarro's leadership was very important in bringing these contracts to fruition.

Another important achievement of his was to lead the department through the JCAHO inspection with no adverse grades for radiology. He also was able to successfully implement agreements with several independent contractors for transcription of radiology reports. This has proven to be a strong plus for the department, in that it has produced significant shortening of our report turnaround times as well as saved on costs. Still another cost saving which he deserves credit for was the renegotiation of GE service contracts on our MRI and CT units with achievement of significantly more favorable rates.

Some of the other administrative achievements during the past year under Mr. Sarro's leadership: (1) Installation of the ABBI system for breast biopsies, (2) An upgrade of our MRI unit on 10 Main to accommodate the hardware needed for echo planar imaging, (3) Organizing a quality improvement committee to address problems in the BIC, (4) Reallocation of staffing in our COB scheduling office to reduce the number of unanswered calls, (5) Expansion of our CT schedule in the COB till 10:00 p.m., thereby reducing backlogs, (6) Developing a patient satisfaction survey which is now used in the BIC and will be expanded to the rest of the department, (7) Helping to organize weekly meetings of our teleradiology committee to address the many problems which confront us in that area, (8) Starting collaborative management rounds. This involves personal meetings by Mr. Sarro with technologists, secretaries, and other non-supervisory staff in their work sites. This gives him a better understanding of what's going on "in the trenches".

Finally, I'd like to pay special tribute to Toni Salvatore and Dara Killion, the two administrative assistants in my office. The bureaucratic demands upon them have grown exponentially, as have the frustrations they frequently face. For example, Ms. Killion has had to take on the large additional burden of handling the myriad of credentialing forms required on all physicians by all the many insurers with whom we deal. Despite these challenges, the two of them always manage to get the work done promptly, and still maintain their good humor, dedication and team spirit. My sincere thanks to both of them.

DEPARTMENT GOALS

Balance the demands of an increased clinical workload with our research and teaching missions – I listed this as one of our goals last year, and it will continue to be even more important during the coming year. With a 6% increase in clinical volume at TJUH itself, and growing clinical volumes at some of our outside related facilities (Wills, TME, Rothman Institute, etc.) everyone on our faculty is working harder and putting in longer hours trying to accommodate our clinical responsibilities. This is obviously preferable to seeing our volume decrease, but it does inevitably reduce the time available for research and teaching. Balancing the conflicting requirements of our three major academic missions remains one of our primary goals.

Expand our off-campus ventures – As noted earlier, we now have a considerable number of outside relationships. Some of these are more favorable for our practice than others, and we continue to investigate new possibilities whenever they arise. Perhaps our biggest outreach challenge will be the opening of a new Jefferson satellite in Voorhees, NJ. Radiology will have a presence there, but the exact nature of this presence has not yet been clearly defined. In all

likelihood, we will need a full modality center there, and this would require an expansion of the existing plans.

Upgrade our installed equipment base – As noted earlier, some of our equipment is in need of replacement or major upgrading. The clearest example of this is our angiographic equipment, which is almost 11 years old and has been very heavily used during that time. About 4 years ago, we developed a plan for upgrading that equipment, but capital budget restrictions forced us to postpone it. Now the equipment is so worn down that it needs to be replaced, rather than upgraded. We also need to update some of our MRI and CT software. Victor Sarro and I are working with the hospital administration to try and develop a plan for phased replacement of old equipment.

Solve our teleradiology problems – A number of major problems remain with our picture archiving and communication system (PACS) or teleradiology. One is that we do not have enough workstations scattered around the hospital or sufficient image distribution capability to accustom our referring physicians to doing without film. Another is that we do not have sufficient support personnel to call up the cases on the system and get them into the proper format, so the radiologists can devote their time to reading the studies. If radiologists have to restore and format cases on the system, it eats up valuable time and greatly reduces their efficiency. With restrictions that have recently been placed upon use of our overage fund, we are in the difficult position of not being able to hire needed film library personnel to do some of this work. Solving these problems will be difficult, unless we are allowed to use our resources to improve our operating efficiency.

Central billing – Our department just recently switched over to billing through the Foundation central billing office and the IDX system. It is obviously crucial that this transition be accomplished smoothly and that we work with the new billing office personnel to make sure that coding and billing are properly done. Victor Sarro and some of his senior associates have put large amounts of time into seeing that this is accomplished. This first year will obviously be the critical one.

Develop relationships with other departments- As noted earlier, we are quite interested in developing close relationships with other departments in certain areas. For example, we are trying to work out arrangements with the departments of obstetrics/gynecology in obstetrical ultrasound, and with the division of vascular surgery in the development of a vascular disease center. These relationships would spell out physician responsibilities of the participating departments and financial arrangements. We feel that developing these relationships in mutually agreeable ways is important to ensure good patient care and lessen the potential for debilitating turf battles.

Provide better service at the Breast Imaging Center – We pride ourselves on providing excellent quality service to patients and referring physicians. For the most part, we have been able to meet that responsibility. However, this past year has seen a dramatic increase in the number of complaints from patients about long delays in completing their studies after they arrive at the BIC. We have identified some major sources of the trouble and have taken steps to correct them. The problem relates to a shortage of technical staff, space, and radiologists. We are working very hard to alleviate the concerns of our patients and hope to resolve them during the coming year.

Open MRI – The lack of availability of an open MRI unit to service our patients who are either of large size or very claustrophobic has been a major drawback in our MRI program. Fortunately, we were able to arrange a joint venture between TJUH and MMR for the installation of such a unit, and it is scheduled to open early this fall. We plan to market this unit aggressively and try to recapture some of the referrals that have been lost to other radiology facilities that do have an open MRI. It will be a challenge to integrate the operation of the open unit into our already large MRI practice, which is based totally on closed bore, high field magnets. Protocols will have to be developed and we will have to work out ways to decide which patients are assigned to which magnets.

Develop a closer relationship with Drexel – Jefferson and Drexel have now solidified their relationship. The scientists at Drexel's Institute of Biomedical Engineering offer us an excellent source of collaboration. Developing closer relationships with this group will enhance our capabilities in basic science research.

Develop a web page and other marketing devices – Putting information on the Internet is becoming more and more of an imperative for almost any progressive organization these days. Although the department has had a web page for the last two years, it has been somewhat disorganized and not highly informative. We are currently putting a fair amount of time and resources into improving our web page, and I'm hopeful that within the near future we will have something we can all be proud of. It will be a source of information both to patients and referring physicians.

ISSUES FOR THE COLLEGE, UNIVERSITY AND HOSPITAL

Before discussing the issues, I'd like to give credit to the leadership of Thomas Jefferson University, in light of what is currently happening at one of our sister Philadelphia academic institutions, the Allegheny University of the Health Sciences. At this writing, that institution is facing bankruptcy and the sale of all its hospitals to a for-profit chain. It resulted from overambitious expansion and attempts to buy out just about every major physician practice in Philadelphia. Two years ago, many of us were worried that while Allegheny was purchasing practices aggressively, Jefferson was not doing so, and the result was loss of some of our key referring physicians. Despite serious concerns the Jefferson leadership stood fast and took a much more conservative approach. Various types of shared equity models were developed instead, which cost the university far less money. Time has shown that this was the correct course, and I want to acknowledge the leadership of Drs. Brucker and Gonnella, Mr. Tom Lewis, Mr. Doug Peters, and our Board of Trustees in following a more sensible and level-headed course. I feel badly for our physician colleagues at Allegheny and all of us here at Jefferson can be thankful we are not in the dire straits in which they find themselves. This, however, leads directly to one of the issues for the institution:

Redevelopment of relationships with physicians who had previously left Jefferson - Some of the physicians who left here for Allegheny have expressed an interest in returning. It will be a challenge to the leadership to decide whom to take back and how best to accommodate their needs. I am hopeful that this can be accomplished, as our department lost a considerable number of referrals (particularly in ultrasound) when some of the defections occurred two years ago.

Jefferson Faculty Foundation problems – One of the most important issues for the institution is to work out the relationship of the Foundation to the University and the Medical College. During this past year, the clinical practices have been required to reduce expenses against both their practice accounts and overage funds. In addition, Foundation overhead has increased and pension benefits have been eliminated. This has produced a considerable amount of dissatisfaction among faculty members in radiology and every other department, and it is very important that these problems be straightened out.

Jefferson Health System – The Jefferson Health System offers opportunities for joint contracting with insurance carriers. That is clearly a potential advantage of being part of a large network. However, it raises the issue of what the responsibilities of the partners are to each other. For example, Jefferson Medical College currently has an operating deficit. Many of us here on the campus feel that maintaining the College in good financial health is not only our responsibility, but that of our partners in the JHS as well. Other hospitals and physicians affiliated with the JHS use the Jefferson name to help in their marketing efforts, and we feel that they ought to make a contribution to the Medical College in return for their partnership status. A number of the physicians in the affiliated hospitals already are contributing teaching for medical students and residents, but the contributions should extend to the financial realm as well.

Dealings with insurance carriers- The carriers are clearly becoming more and more predatory in their reimbursement policies, as they look for ways to make more and more money. Recently, physicians in all specialties were notified by Independence Blue Cross that physician reimbursements on their managed care products would be reduced to only 82% of Medicare rates. This unilateral and arbitrary decision requires a unified and prompt response by all physicians who are members of the Jefferson Health System. If necessary, we have to be ready to drop the IBC contract. It will be a challenge for the JHS to develop and implement a negotiation mechanism on behalf of its physicians.

Radiology equipment replacement – As noted earlier, in a department as large as ours, equipment is constantly wearing out or becoming obsolete. We and the hospital need to develop a long term plan for gradual phased replacement of obsolete or deteriorated equipment. We have not been able to get the hospital to adopt such a plan in the past, but one is obviously badly needed. It is important that we accomplish this in a careful and responsible manner in order to be able to keep providing high quality diagnostic services to our patients and referring physicians.

TEACHING PROGRAMS

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

INTRODUCTION

In the current environment of managed care, decreased clinical revenues and faculty downsizing, it is becoming more challenging to maintain high quality teaching programs. Faculty are finding themselves in a time bind; increasing clinical responsibilities are eroding into the time that was previously available for teaching and research activities. Nonetheless, our faculty remained committed to the education of our medical students, residents and fellows. The fact that five of our graduating residents chose to stay with us to pursue fellowship training bears testimony to the excellence of our teaching programs. Each year our residents and fellows find themselves very competitive in the marketplace and are successful in obtaining jobs of their choice.

RESIDENCY TRAINING PROGRAM

The primary goal of our residency program is to produce radiologists who are well trained in all aspects of diagnostic imaging so that they will feel comfortable in either an academic setting or a private practice environment. It gives me great pleasure to report that each of our six senior residents passed the written and oral portions of the American Board of Radiology examination. Our residency program has set a record that is hard to beat. Program performance average in the written part of the examination was ranked nationally in the 98th percentile for diagnostic radiology and 90th percentile for radiologic physics. Five of the six graduating residents chose to stay with us for fellowships; two in vascular and interventional radiology, one in musculoskeletal radiology, one in cross-sectional imaging and one in ultrasound. The sixth resident joined a private practice group in Florida.

Resident Selection: This year we received 240 applications for six positions and interviewed 65 applicants. The results of the residency match program (NIRMP) once again proved that our residency program is recognized nationally as one of the best training programs. We filled all of our positions with choice candidates, including three out of the top ten candidates on our list. Much credit goes to Levon Nazarian, M.D., Chairman of the Residency Selection Committee, for this terrific performance.

Clinical Training: The biggest change in our practice this past year was the phasing in of teleradiology/PACS for image interpretation. Residents have expressed major concerns about the negative impact of teleradiology/PACS on the teaching program. Residents, fellows, and faculty find themselves often immersed in "busy work" required by the system, which leaves little time for teaching. Although this technology is the wave of the future, and we are fortunate to be at the forefront of such advances, we need an infrastructure consisting of nonphysician personnel to be able to utilize this powerful technology in an efficient manner.

Other than complaints about teleradiology, the year-end critiques completed by the residents were fairly upbeat. The radiological physics course given by Ted Villafana, Ph.D. was well received. Rotations at the Academy Imaging Center were completed without a frown by the third- and fourth-year residents because it exposed them to the world of private practice.

Resident Research: It is gratifying to note that our residents continued to be active in research and 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. Philip Lim, M.D. was the recipient of the 1998 Roentgen Research Award for our department.

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

TRAINING PROGRAMS FOR FELLOWS

This year, job opportunities improved for fellows, indicating a clear reversal of the shrinking job market that I alluded to in my report two years ago. The good news is 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, were successful in obtaining jobs of their choice. On the flip side, some of the incoming fellows also obtained desirable jobs after completing residency training and therefore reneged on their fellowship commitments they had made earlier. Nonetheless, we were able to recruit good candidates for fellowship openings, even at very short notice, because of the excellent reputation of our fellowship programs.

Our neuroradiology/ENT radiology and CVIR fellowship programs are accredited by the ACGME. Coverage of radiology at the Neurosensory Institute at the Wills Eye Hospital has broadened the education of the fellows in neuro-ophthalmologic imaging and neurointerventional procedures. The combined adult and pediatric neuroradiology fellowship program with the Children's Hospital of Philadelphia continues to be successful and in high demand.

Our visiting fellowships remain very popular in the various subspecialty areas; these programs allow practicing radiologists to learn new techniques and sharpen their old 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

The nine hours of lectures given by the radiology faculty during the ICM course for sophomores were again well received by the students. In addition to this early exposure to radiology, the junior and senior students can choose to take 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 general radiology elective was completed by 119 members (56%) 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 elective rotations in neuroradiology and pediatric radiology were completed by 2 students and 9 students respectively. The elective rotation in US/CT/MRI was completed by 5 students. One student took an elective in CVIR. All of these courses received rave reviews from the students.

CME PROGRAMS

Jefferson Shoulder, Wrist and Elbow Advanced Imaging Symposium. This course directed by Mark Schweitzer, M.D. and David Karasick, M.D. was given in April, 1998 and was very successful. It was attended by approximately 104 radiologists.

Fourth Annual Foot and Ankle Advanced Imaging Symposium. This course directed by David Karasick, M.D. and Mark Schweitzer, M.D. was given in May, 1998 by several members of our faculty and was a great success. It was designed for radiologists, orthopedists, and podiatrists who wish to update their skills in the diagnosis and management of foot and ankle disorders. It was attended by approximately 101 radiologists, orthopedists, and podiatrists.

<u>Weekend Cardiac Radiology Review.</u> A refresher course in state-of-the-art cardiac imaging incorporating both traditional and newer modalities, directed by Robert Steiner, M.D., was held over a weekend in March, 1998. It was attended by approximately 79 residents in Diagnostic Radiology from all around the eastern U.S. and was very well received.

Eleventh Annual Philip J. Hodes Lecture. In honor of Philip J. Hodes, M.D., the Eleventh Annual Philip J. Hodes Lecture was given and was very successful. The guest speaker was Elias Zerhouni, M.D., Professor and Chairman, Department of Radiology, Johns Hopkins University School of Medicine, who gave an outstanding presentation on "The Relationship Between Research and Entrepreneurship for Academic Physicians."

<u>Radiology Grand Rounds</u>. Grand Rounds in Radiology were held bi-weekly and included 18 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.

Eighteenth Annual Leading Edge in Diagnostic Ultrasound Conference. The ultrasound division's Eighteenth Annual Leading Edge in Diagnostic Ultrasound, held in Atlantic City, was a major success again this year, having 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). This program continues to make great strides in regional, national, and international education under the direction of Barry B. Goldberg, M.D. In addition to the numerous continuing medical education programs offered here at Jefferson, as described above, JUREI is dedicated to advancing research and education activities in the field of diagnostic ultrasound on an international level. A close affiliation exists between the World Health Organization (WHO) and the Institute, which is recognized as a WHO Collaborating Center for Continuing and General Education in Diagnostic Ultrasound. It is the goal of the WHO radiological imaging section to encourage utilization of ultrasound as a cost-effective and sustainable medical technology resource in less affluent nations. The Institute is cooperating in this effort by training individuals sponsored by their own government, the Soros Foundation and WHO. These visiting fellows come to the Institute for intensive training in ultrasound and then return to their home countries to train others in this technique. This past year, 24 physicians from countries throughout Central and Eastern Europe as well as the former Russian Republic enrolled in this program at the Institute. This program will continue into the coming year.

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 the financial resources of our overage fund to purchase or update equipment and other teaching materials as needed in order to stay on the cutting edge. We also need to maintain an infrastructure of nonphysician personnel to protect physician time and to effectively utilize the teleradiology/PACS for image interpretation. These are necessary if we are to continue to attract the best candidates for residency and fellowship programs in the future.

We take great pride in the quality and diversity of our teaching programs for students, residents, and fellows. Our graduates and trainees can be found in many parts of the world. We will continue to strive toward maintaining excellence in these teaching programs.

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FORMAL SCIENTIFIC PRESENTATIONS

JOSEPH BONN, M.D.

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August 17, 1997	 Society of Cardiovascular Interventional Radiology Morbidity & Mortality Conference, Asheville, NC "Embolization of a chronic peripheral arteriovenous malformation"
October 6-7, 1997	 Fifth Annual Interventional Radiology and Vascular Imaging Conference, University of Pennsylvania, Philadelphia, PA "PTA, stents, and stent-grafts for aortoiliac occlusive disease" "PICCs and peripheral ports"
November 30- December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Stenosis in pig iliac arteries after encapsulated stent placement: Influence of device diameter"
February 28- March 5, 1998	 23rd Annual Scientific Meeting of the Society of Cardiovascular and Interventional Radiology, San Francisco, CA "Materials in the construction of stent-grafts" "Stenosis in pig iliac arteries after encapsulated stent placement: Influence of device diameter" "Intravascular ultrasound: Is it clinically useful?"
March 1, 1998	8th Annual Meeting of the Association of Vascular and Interventional Radiographers, San Francisco, CA"Materials in the construction of stent-grafts"
April 1, 1998	Columbia-Presbyterian Medical Center, Department of Radiology, New York, NY"Materials in the construction of stent-grafts"
June 5-6, 1998	University of Pennsylvania Interventional Radiology Conference, Skytop, PA • "Endovascular stent-grafts" • "Endovascular brachytherapy"

P. MACKE CONSIGNY, PH.D.

January 27-30, 1998	Fourth International Congress and Comprehensive Course:
	Vascular and Nonvascular Intervention, Zermatt, Switzerland
	 "Restenosis - the biological and pharmacological approach"
	• "Stent restenosis in iliac arteries of pigs - encapsulated vs. bare stents"
	• "Pathophysiology of restenosis"

	• "Biological and pharmacological approaches to the prevention of restenosis"	
February 28- March 5, 1998	 23rd Annual Scientific Meeting of the Society of Cardiovascular and Interventional Radiology, San Francisco, CA "Pharmacological manipulation of restenosis" "Effect of tissue processing on correlation between angiographic and histologic diameters" 	
May 26, 1998	 Johns Hopkins School of Medicine, Department of Radiology, Baltimore, MD "Restenosis after angioplasty - causes and prevention" 	
June 5-6, 1998	 University of Pennsylvania Interventional Radiology Conference, Skytop, PA "New developments in the basic science of cardiovascular interventions" 	
DAVID J. ESCHELMAN, M.D.		
February 28- March 5, 1998	 23rd Annual Scientific Meeting of the Society of Cardiovascular and Interventional Radiology, San Francisco, CA "Alternatives to iodinated contrast workshop" (Coordinator) "Introduction to venous access" (workshop) "Vena cava filters" (workshop) 	
March 28-29, 1998	5th Annual Cardiovascular Radiology Review Weekend,Philadelphia, PACase review session	
April 19-23, 1998	 40th Anniversary Meeting of the Eastern Radiological Society, Southern Pines, NC "Carbon dioxide angiography: Guidance for vascular interventional procedures" 	
June 27, 1998	18th Annual Advances in Gastroenterology Course, Atlantic City, NJ"TIPS in the management of portal hypertension"	
STEDHEN & FEIC MD		

July 13-15, 1997

11th Annual Symposium on Breast Disease: Diagnostic Imaging and Current Management, The University of Michigan Medical School, Department of Radiology, Grand Traverse, MI

- "Screening mammography in women 40-49: What's new in all the hullabaloo?"
- "Breast calcifications"
- "Problem-solving mammography"
- "Assessment of clinical image quality from the viewbox"

October 17, 1997 Toward 2,000 The 13th Annual Symposium: The Clinical Spectrum of Breast Cancer, Fox Chase Cancer Center, Philadelphia, PA

	• "Update on mammography"
October 22, 1997	 Practice Challenges: The Experts Speak Out on Breast Cancer III, Monmouth Medical Center, Monmouth, NJ "Screening mammography for women age 40-49: Has the controversy been resolved?"
November 30- December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Implications of international breast cancer screening on North American policies: Screening risk, benefit, and cost analysis in the United States" (refresher course) "Update course on technical aspects of breast imaging: Risk, benefit and controversies in mammographic screening" (refresher course) "Advances in women's imaging: Digital mammography" (Friday Imaging Symposium) "Benefit/risk of annual vs. biennial mammographic screening of women aged 40-49 years" "Non-Hodgkin's lymphoma of the breast" (case of the day) "Fibroadenoma with microcalcifications" (case of the day) "Dermatopathic lymphadenopathy" (case of the day)
March 6-8, 1998	 American College of Radiology 20th Symposium on Mammography, Atlanta, GA "Mammography equipment" "Evaluation of calcifications" "Screening controversies"
April 17, 1998	American College of Radiology Mammography Accreditation Program, New Clinical Image Reviewer Training Session, Washington, DC • Clinical image case review
April 18-21, 1998	 28th American College of Radiology National Conference on Breast Cancer, Washington, DC "Update on screening guidelines" "Digital mammography and computer-aided diagnosis" "The mammography report and the medical audit"
May 6, 1998	 Columbia-Presbyterian Medical Center, Department of Radiology, New York, NY "Analysis of breast calcifications" "Assessment of non-calcified abnormalities of the breast" "Mammographic screening controversies and guidelines"
May 27-29, 1998	 Screening Mammography 1st International Course of the Spanish Society of Breast Imaging, Madrid, Spain "Controversies in breast cancer screening" "Clinical evaluation of mammographic image quality from the viewbox" "Evaluation of breast calcifications" "Digital mammography"

49

May 30-31, 1998	 Control of Mammographic Image Quality, Pre-Congress Course, 10th International Congress on Breast Diseases of the Senologic International Society, Oporto, Portugal "Ideal optical density and contrast in mammography" "Breast imaging intervention. Quality control methods and propositions for implementation" "Full field digital breast imaging" "Non-Hodgkin's lymphoma of the breast" (exhibit)
June 1-4, 1998	 10th International Congress on Breast Diseases of the Senologic International Society, Oporto, Portugal "Ductal carcinoma, in situ. A radiologic perspective" "Mammography in women aged 40-49" "New directions in breast imaging" (Jose Luis Raposo Memorial Lecture)
RICK I. FELD, M.D.	
November 7-8, 1997	 The Radiological Society of New Jersey, Ultrasound Symposium, Somerset, NJ "Practical abdominal ultrasound" "Abdominal Doppler ultrasound" "Ultrasound guided biopsies, aspirations and drainages" "Ultrasound of the scrotum" "Sonography of adnexal abnormalities"
November 30- December 5, 1997	83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL • "Testicular sonographic findings in infertility"
March 22-25, 1998	 42nd Annual Convention of the American Institute of Ultrasound in Medicine, Boston, MA "Sonographically-guided biopsy of salivary gland masses and lymph nodes"
March 30, 1998	Monmouth Medical Center, Monmouth, NJ "Sonographically-guided biopsies, aspirations and drainages"
April 7-8, 1998	 University of Texas Health Science Center at San Antonio, San Antonio, TX "Sonography of adnexal abnormalities" "Sonographically-guided biopsies, aspirations and drainages"
April 7, 1998	Wilford Hall Air Force Base Medical Center, San Antonio, TX"Sonography of adnexal abnormalities"
April 8, 1998	Brooke Army Medical Center, San Antonio, TX"Sonographically-guided biopsies, aspirations and drainages"
April 26- May 1, 1998	98th Annual Meeting of the American Roentgen Ray Society, San Francisco, CA"Sonographically-guided abscess drainage"

May 19-22, 1998	 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ "Scrotal and penile Doppler" "Interventional ultrasound: Gynecologic applications" "Vascular workshop: Case analysis"
ADAM E. FLANDERS, M.D.	
November 13, 1997	Central Ohio Radiological Society Meeting, Columbus, OH "Applications of MRI in spinal trauma"
November 14, 1997	Ohio State University Medical Center, Columbus, OH"Imaging of spinal tumors"
March 19-23, 1998	65th Annual Meeting of the American Academy of Orthopedic Surgery, New Orleans, LA"Imaging workup of thoracolumbar trauma"
April 20-22, 1998	24th Annual Meeting of the American Spinal Injury Association,

2

Cleveland, OH • "Management of thoracolumbar fractures"

FLEMMING FORSBERG, PH.D.

July 1-4, 1997	Ultrasonics International '97, Delft, Holland"Clinical applications of ultrasound contrast agents"
October 6-8, 1997	 Echo Philadelphia '97, Philadelphia, PA "Physics and instrumentation review for sonographers: General" "Physics and instrumentation review for sonographers: Doppler and color flow" "Physics and instrumentation review for physicians"
October 11, 1997	2nd Annual Current and Future Concepts in Ultrasonography,Birmingham, AL"Ultrasound contrast agents"
November 1, 1997	Current Techniques and a Peek at the Future: 6th AnnualUltrasound Update, Tampa, FL"Advances in ultrasound contrast agents"
November 13 - 16, 1997	 XXVI Brazilian Congress in Radiology, Sao Paulo, Brazil "Basic principles of ultrasound contrast agents" "Clinical applications of ultrasound contrast agents" "New contrast specific imaging techniques"
November 30- December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "On the detection of US contrast induced acoustic emission signals"

	 "Detection of hepatic VX-2 Tumors in rabbits with ultrasound contrast and induced acoustic emission" "In vitro and in vivo Doppler spectral estimation with the adaptive-Q distribution" "Subharmonic response of a new US contrast agent"
February 15, 1998	 Ultrasound Contrast Agent Seminar, CT Radiology Complex and MRI Institute, San Juan, Puerto Rico "Basic principles of ultrasound contrast agents" "Harmonic imaging and other contrast specific techniques"
March 22-25, 1998	 42nd Annual Convention of the American Institute of Ultrasound in Medicine, Boston, MA "Ultrasound contrast imaging of normal and abnormal canine prostates" "Contrast induced waveform changes in women with breast lesions"
March 28, 1998	Emerging Technologies in Diagnostic Medical Sonography, College of Health Professions, Thomas Jefferson University, Philadelphia, PA • "Ultrasound contrast agents"
May 27-29, 1998	Twenty-third International Symposium on Ultrasonic Imaging andTissue Characterization, Washington, DC"Contrast enhancement of breast masses"
May 28, 1998	Ultrasound 2000 Summit, Newport Beach, CA"Ultrasound contrast agents and flash echo imaging"

DAVID P. FRIEDMAN, M.D.

83rd Scientific Assembly and Annual Meeting of the Radiological
Society of North America, Chicago, IL
 "Stereotactic radiosurgical gamma knife pallidotomy and
thalamotomy for movement disorders: MR imaging findings
with clinical correlation"
• "High resolution fast spin-echo MR imaging of the cervical
spine in amyotrophic lateral sclerosis"

• "Neuroradiology case of the day" (exhibit)

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

February 28-	 23rd Annual Scientific Meeting of the Society of Cardiovascular
March 5, 1998	and Interventional Radiology, San Francisco, CA "STAR Registry: An interim report" "Peripheral angiography" (categorical course)
March 28-29, 1998	 5th Annual Cardiovascular Radiology Review Weekend, Philadelphia, PA "Coronary arteriography and left ventricular disease"

• "Acquired disease of the thoracic aorta"

BARRY B. GOLDBERG, M.D.

September 1-5, 1997	 World Federation for Ultrasound in Medicine and Biology, Buenos Aires, Argentina "History of ultrasound - 50th anniversary" "Ultrasound contrast agents - latest advances" "Detection and evaluation of tumors" "Oral ultrasound contrast agents"
October 3-5, 1997	ECO Italia - Italian Society of Medical Radiology, Naples, Italy • "Ecography: Works ahead"
October 23, 1997	 District of Columbia Metropolitan Radiological Society, Washington, DC "Ultrasound contrast agents: An update and a look into the future"
October 24, 1997	Society of Radiologists in Ultrasound, Washington, DC "Latest advances in ultrasound contrast agents"
October 26-30, 1997	 7th World Congress on Ultrasound in Obstetrics and Gynecology, Washington, DC "Advances in ultrasound contrast agents" "Update on ultrasound contrast media"
November 13, 1997	 Long Island Jewish Medical Center, Long Island, NY "New horizons in ultrasound, 3-D, endoluminal, and contrast"
November 30 - December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago IL "Conventional and delayed imaging using NC100100: A new contast agent" "Validation of three-dimensional endoluminal ultrasound" (exhibit) "Three-dimensional ultrasound: Applications for gynecological imaging" (exhibit) "Three-dimensional endoluminal sonography" (exhibit)
January 12, 1998	Bracco Diagnostics, SonoRX Investigators Meeting, Palm Beach,FL"Advances in ultrasound equipment"
January 18-20, 1998	 Philippine College of Radiology, Manila, Philippines "New horizons in ultrasound (including endoluminal and 3-D imaging)" "Advances in color Doppler imaging" "Ultrasound contrast agents"
January 21-23, 1998	Thailand Radiologic Society, Bangkok, Thailand

	 "New horizons in ultrasound (including endoluminal and 3-D imaging)" "Advances in color Doppler imaging" "Ultrasound contrast agents"
March 22-25, 1998	 42nd Annual Convention of the American Institute of Ultrasound in Medicine, Boston, MA "Governmental and other influences on ultrasound" "Three-dimensional endoluminal ultrasound of the upper urinary tract" (exhibit) "Power Doppler assessment of vascular changes during fracture treatment with low-intensity ultrasound" (exhibit) "Accuracy and reliability studies of three-dimensional endoluminal ultrasound in phantoms" (exhibit)
March 29, 1998	Euroson 98 - SFAUMB 98, Tours, France • "Medical education and ultrasound of the third millennium"
April 25-28, 1998	 VI International Congress of the Mediterranean and African Society of Ultrasound (MASU), Kusadasi, Turkey "The future perspectives of ultrasound: Contrast agents, 3-D, and other advances"
May 8, 1998	Seoul National University Hospital, Seoul, Korea"Color Doppler imaging: Past, present, and future"
May 9, 1998	Korean Society of Medical Ultrasound, Seoul, Korea"Recent advances in ultrasound"
June 1-5, 1998	6th World Congress of Endoscopic Surgery, Rome, Italy"Ultrasound contrast media: State of the art""Ultrasound miniprobes"
June 10-12, 1998	 US Section of Croatian Society of Radiology, Pula, Croatia "Ultrasound today and future developments" "Ultrasound contrast media 1998 and beyond"

CARLOS F. GONZALEZ, M.D.

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September 15-19, 1997	 XXIII Congress of the European Society of Neuroradiology, Oxford, England "Stereotactic biopsy of brain tumors based on MRI 3D segmentation analysis"
October 12-18, 1997	IX International Congress of the Ibero-American Society of Neuroradiology (SILAN), Quito, Ecuador"MRI imaging of white matter diseases of the brain"

ETHAN J. HALPERN, M.D.

November 30-	83th Scientific Assembly and Annual Meeting of the Radiological
December 5, 1997	Society of North America, Chicago, IL

	 "Prospective comparison of Doppler ultrasound, CT angiography and MR angiography for evaluation of the renal arteries" "Doppler evaluation of the main renal artery versus segmental branches for detection of stenosis"
March 22-25, 1998	 42nd Annual Convention of the American Institute of Ultrasound in Medicine, Boston, MA "An in-vitro model of flow in the renal and carotid arteries" "Quantification of renal and carotid artery Doppler flow patterns" "Detection of renal artery stenosis by pulsus tardus varies with study population"
April 28, 1998	 University of Tennessee, Memphis, TN "Doppler evaluation of renal artery stenosis" "Doppler evaluation of the liver"
May 19-22, 1998	The Leading Edge in Diagnostic Ultrasound, sponsored by ThomasJefferson University Hospital, Atlantic City, NJ"Liver Doppler: Update 98"

CHARLES M. INTENZO, M.D.

October 23, 1997	Lankenau Hospital, Endocrine Grand Round, Wynnewood, PA • "Parathyroid imaging with Technetium-99m Sestamibi"
November 30- December 5, 1997	 83th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Is stress myocardial perfusion imaging in patients from an acute chest pain center in the emergency room cost effective?" "The use of brain SPECT in childhood idiopathic language deterioration"
February 12, 1998	Lankenau Hospital, Endocrine Grand Round, Wynnewood, PA • "Radioiodine therapy in hyperthyroidism"

PAMELA T. JOHNSON, M.D.

November 30-	83rd Scientific Assembly and Annual Meeting of the Radiological
December 5, 1997	Society of North America, Chicago, IL
	• "CT angiography of renal artery stenosis: Comparison of a real-
	time volume rendering algorithm with a maximum intensity
	projection algorithm"
	• "Acute pulmonary embolism: CT pulmonary parenchymal
	abnormalities correlated with extent of emboli and specific
	symptomatology"
	• "Noninvasive vascular testing for radial artery dependence of
	the palmar circulation"
	• "Pancreatic carcinoma vs. chronic pancreatitis: Dynamic MR
	imaging"

DAVID KARASICK, M.D.

September 8-13, 1997	 24th Annual Refresher Course of the International Skeletal Society, Santa Fe, NM "Ki-1 lymphoma with bone involvement" "PTT and Achilles tendon disorders" (refresher course)
November 30- December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Defecography: Does parity play a role in development of rectal prolapse?" "Painful feet in rheumatoid arthritis: Frequency of articular abnormalities"
December 18, 1997	Bryn Mawr Hospital, Radiology Department, Bryn Mawr, PA • "Approach to bone tumors"
March 5-8, 1998	Society of Skeletal Radiology, Palm Springs, CA • "Imaging of complications following cervical spine fusion"
April 1, 1998	Mercy Catholic Hospital, Department of Radiology, Philadelphia, PA • "Approach to musculoskeletal lesions"
April 4-5, 1998	 Third Annual Jefferson Shoulder, Elbow & Wrist Imaging Symposium, Philadelphia, PA (Course Co-Director) "Radiology of shoulder trauma" "Radiology of shoulder impingement" "Shoulder arthropathies" "Calcific tendonitis" "Helical CT of the wrist" "Wrist arthrography"
April 7-9, 1998	 Pittsburgh Roentgen Society: Musculoskeletal Symposium, Pittsburgh, PA "Shoulder impingement, calcific tendinitis, and arthropathies" "Imaging of shoulder trauma" "Achilles and PTT disorders" "Arthritis of the foot and ankle" "Imaging of elbow trauma"
May 2-3, 1998	 Fourth Annual Jefferson Foot & Ankle Advanced Imaging Symposium, Philadelphia, PA (Course Co-Director) "Imaging of arthritis" "Advanced imaging of Achilles and PTT disorders" "MR of soft tissues and bone tumors of the foot and ankle"

STEPHEN KARASICK, M.D.

November 22, 1997

American Society of Radiologic Technologists Seminar, King of Prussia, PA

• "Defecography - Evaluation proctography"

January 19-23, 1998	 National Institute of Diabetes and Digestive and Kidney Disease Workshop (NIDDK): Issues and Opportunities in Urinary Incontinence, Bethesda, MD "Cystodefecography: An effective tool for delineating pelvic floor weakness" (poster)
February 5, 1998	Bryn Mawr Hospital, Department of Radiology, Bryn Mawr, PA • "Uroradiology in the 90's"
February 23-27, 1998	27th Annual Meeting Society of Gastrointestinal Radiologists,Postgraduate Course Workshop, Palm Springs, CA"Essentials of dynamic pelvic floor relaxation"
March 11, 1998	Mercy Catholic Hospital, Department of Radiology, Philadelphia, PA • "Uroradiology in the 90's"
June 30- July 2, 1998	Society of Uroradiology - Postgraduate Course, Hamilton, Bermuda • "Imaging of the female pelvic floor and incontinence"

ALFRED B. KURTZ, M.D.

November 25, 1997	Albert Einstein Medical Center, Department of Radiology, Philadelphia, PA"Second and third trimester obstetrical emergencies"
November 30 December 5, 1997	83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL • "Estimate gestational age"
February 4, 1998	Overlook Hospital, Summit, NJ • "Ovarian cancer and radiological imaging"
March 10, 1998	 Long Island Radiologic Society, Winthrop-University Hospital, Long Island, NY "A multimodality approach to ovarian carcinoma" "First trimester analysis including ectopic pregnancies"
March 22-25, 1998	 42nd Annual Convention of the American Institute of Ultrasound in Medicine, Boston, MA "Obstetrical emergencies in the second and third trimester: Sonographic detection" "The comparative values of Doppler/Ultrasound, Computed Tomography, and Magnetic Resonance in ovarian cancer diagnosis and staging: Correlation with surgery and pathology: A report of the radiology diagnostic oncology group" "Fetal growth analysis"
April 26- May 1, 1998	98th Annual Meeting of the American Roentgen Ray Society, San Francisco, CA

	• "The comparative values of Doppler/US, CT and MR in ovarian cancer diagnosis and staging: Correlation with surgery and pathology: A report of the radiology diagnostic oncology group"
May 19-22, 1998	 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ "Interval growth assessment: Overview and suggested approaches" "Diagnosis and staging in ovarian cancer: US, CT, MR"
DAVID C. LEVIN, M.D.	
July 23-26, 1997	 University of Washington/Sacred Heart Medical Center Summer Radiology Meeting, Coeur d'Alene, ID "Turf battles in radiology - Can they be fought successfully?" "Does high cost technology like MRI have a future in the current climate of cost restraint?"
August 8, 1997	Mercy Hospital, Pittsburgh, PA"Left-to-right congenital cardiac shunts"
August 23, 1997	 Second Oxford International Symposium on Costs and Benefits of Radiology, San Francisco, CA "Nationwide cost comparison of MR and self-referred cardiovascular procedures"
September 5, 1997	 Society of Chairmen of Academic Radiology Departments, Atlanta, GA "Turf issues in radiology - strategies for a positive outcome"
September 6, 1997	 American College of Radiology Symposium on Survival Strategies for the Practicing Radiologist under Managed Care, Atlanta, GA "Managed care contracting and other management issues confronting academic radiology departments"
September 25, 1997	Allegheny University for the Health Sciences - Hahnemann Division, Philadelphia, PA • "Turf battles in radiology"
October 24-26, 1997	 Economics of Diagnostic Imaging 1997: National Symposium, Washington, DC "How to plan and negotiate a capitated radiology contract" "How to assess your practice's financial performance under a capitated contract" "Turf battles in radiology: Can they be fought successfully?"
November 7, 1997	 Pennsylvania Radiological Society Socioeconomic Conference, Philadelphia, PA "Turf issues in radiology as we enter the next millennium" "An academic chairman's thoughts on how to prepare yourself for the job market"

November 30- December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Turf battles in radiology: How to fight them and win!" "Participation by radiologists and non-radiologists in non-cardiac percutaneous arterial revascularization procedures: Nationwide 1994 Medicare data" "Percutaneous venous interventional procedures and the role of radiologists" "How to survive under a capitated radiology contract: Part I - Assessing the financial feasibility of a proposed contract"
February 9, 1998	 Mallinckrodt Institute of Radiology of Washington University Medical Center, St. Louis, MO "The future of radiology" "Turf battles - What can organized radiology and we as individuals do about them?" (Fourth Annual Hyman Senturia Lecture)
March 1, 1998	American College of Radiology Managed Care Symposium,Orlando, FL"The academic department: Is it too late to reorganize?"
March 12, 1998	University of Medicine and Dentistry of New Jersey, Newark, NJ"Basic interpretation of coronary arteriograms""Turf battles in radiology"
March 26, 1998	Association of University Radiologists, New Orleans, LA • "Unfunded or clinical research: How do we find time to do it?"
April 23, 1998	University of Chicago Hospital, Chicago, IL"Aortic arch anomalies""Thoughts on the future of radiology"
May 9, 1998	New York State Radiological Society, New York, NY "Turf issues in radiology"

ANNA S. LEV-TOAFF, M.D.

October 26-30, 1997	 7th World Congress on Ultrasound in Obstetrics and Gynecology, Washington, DC "Three-dimensional ultrasound of the uterus using sonohysterography"
November 20, 1997	Hershey Medical Center, Department of OB/GYN, Hershey, PA"Sonohysterography: Clinical applications"
November 30- December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Three-dimensional ultrasound: Application for gynecologic imaging" (exhibit) "Value of three-dimensional transvaginal ultrasound in genital malformations"

February 11, 1998	Mercy Medical Center, Department of Radiology, Darby PA."Sonohysterography: Clinical applications"	
May 19-22, 1998	 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ "3-D ultrasound in obstetrics and gynecology" "Hysterosonography" 	
JJ-BIN LIU, M.D.		
September 1-5, 1997	VIII Congress of the World Federation for Ultrasound in Medicine and Biology, Buenos Aires, Argentina"Endoluminal ultrasound of the urethra"	
September 25-27, 1997	Fourth Congress of the Ultrasound Society of Chinese Medical Association, Beijing, China • "Laparoscopic ultrasound"	
October 10-11, 1997	 Twelfth Sopron Ultrasound Days, Sopron, Hungary "2D and 3D endoluminal ultrasound: Clinical applications" "Ultrasound contrast agents: A review" 	
November 30- December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Validation of three-dimensional endoluminal ultrasound in phantoms" (exhibit) "Three-dimensional endoluminal ultrasound of the upper urinary tract" (exhibit) 	
March 22-25, 1998	 42nd Annual Convention of the American Institute of Ultrasound in Medicine, Boston, MA "Accuracy and reliability studies of 3D endoluminal ultrasound in phantoms" (exhibit) "Three-dimensional endoluminal ultrasound of the upper urinary tract" (exhibit) 	
ANDREW D.A. MAIDMENT, PH.D.		
July 27-31, 1997	 39th Annual Meeting of the American Association of Physicists in Medicine, Milwaukee, WI "How much information can an x-ray carry? The role of information theory in image assessment" 	
September 14-19, 1997	 World Congress on Medical Physics and Biomedical Engineering, Nice, France "A method for three-dimensional imaging of breast calcifications" (Poster) 	
October 15-17, 1997.	26th AIPR Workshop: Exploiting New Image Sources and Sensors, Washington, DC"Three-dimensional imaging of breast calcifications"	

November 30 - December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Clinical evaluation of a new full-field digital projection radiography system" (Hot topics presentation) "The sensitivity and specificity of mammographic image quality tests: A comparison of the ACR method and the mammographic system test" "A quality control program for paper printers used with teleradiology/PACS" "A computer workstation for 3-D imaging of the breast" (InfoRAD) "Clinical evaluation of full-field digital mammography" (InfoRAD) 	
February 21-27, 1998	 SPIE Medical Imaging 1998, San Diego, CA "Clinical evaluation of a full field digital projection radiography detector" 	
May 30- June 3, 1998	 33rd Annual Meeting of the Association for the Advancement of Medical Instrumentation, Philadelphia, PA "Principles of mammography and system testing requirements" 	
June 7-10, 1998	 4th International Workshop on Digital Mammography, Nijmegen, The Netherlands "Three-dimensional visualization of breast cancer" "Acceptance testing and quality control of digital mammography equipment" (poster) 	
DONALD G. MITCHELL, M.D.		
November 30- December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Pancreatobiliary and abdominal vascular MR imaging: Totally tubular" 	
April 18-24, 1998	 6th Scientific Meeting and Exhibition of the International Society of Magnetic Resonance in Medicine, Sydney, Australia "MRI of hepatobiliary diseases common in the pacific rim" (clinical categorical course, chair) 	
May 30, 1998	Liver MRI Experts Meeting, Dallas, TX • "Clinical experience with various MRI contrast techniques"	
June 27, 1998	18th Annual Advances in Gastroenterology, Atlantic City, NJ"Role of MRI in the diagnosis and management of GI disease"	

LEVON N. NAZARIAN, M.D.

November 30 -	83rd Scientific Assembly and Annual Meeting of the Radiological
December 5, 1997	Society of North America, Chicago, IL

	 "Paraspinal ultrasonography is not accurate in evaluating patients with cervical and/or lumbar back pain"
April 4-5, 1998	Third Annual Jefferson Shoulder, Elbow & Wrist Imaging Symposium, Philadelphia, PA • "Shoulder sonography"
May 2-3, 1998	Fourth Annual Jefferson Foot & Ankle Advanced Imaging Symposium, Philadelphia, PA • "Sonography of the foot"
May 19-22, 1998	 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ "Musculoskeletal ultrasound" "Soft tissue masses"

LAURENCE NEEDLEMAN, M.D.

August 5, 1997	University of Maryland, Vascular Surgery/Interventional Radiology Grand Rounds, Baltimore, MD • "Carotid artery duplex scanning with a focus on interpretation"
September 5-7, 1997	 26th Annual Conference, Diagnostic Ultrasound in Obstetrics and Gynecology and Abdomen, Johns Hopkins University, Baltimore, MD "Unusual findings in cerebrovascular ultrasound" "Ultrasound contrast agents" "Arterial ultrasound"
September 11-12, 1997	 19th Annual Seminar in Diagnostic Ultrasound, University of Michigan, Ann Arbor, MI "Interpretation of spectral and color Doppler" "Venous ultrasound" "Cerebrovascular ultrasound"
September 19-21, 1997	 Current Practice of Vascular Ultrasound, Institute for Advanced Medical Education, Washington, DC "Cerebrovascular pathophysiology: Sonographic evaluation" "Pathology of venous disease" "Venous exam protocols"
November 15, 1997	 Fall Meeting North Carolina Chapter of the American College of Radiology, Pinehurst, NC "Upper and lower extremity veins" "Renal artery stenosis" "Power Doppler applications"
November 30- December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Phase II radiology clinical trial of DMP 115, a new ultrasound agent" "Evaluation of hepatic metastatic disease: CT, MR, and US"

• "Hypertension and bruit"

December 4, 1997	 Annual Conference of the American College of Veterinary Radiology and Veterinary Cancer Society, Chicago, IL "Advances in ultrasound imaging of cancer" (keynote address)
March 11, 1998	 University of Massachusetts Medical Center, Department of Radiology, Worcester, MA "Interpretation of spectral and color Doppler" Case presentations
March 22-25, 1998	 42nd Annual Convention of the American Institute of Ultrasound in Medicine, Boston, MA "Evaluation of the aorta and major abdominal blood vessels"
April 22-25, 1998	 New York Roentgen Society Spring Conference, New York, NY "Sonographic diagnosis of renal artery stenosis - can ultrasound compete with radionuclide scanning, CT and MR?" "Contrast scanning for ultrasonography"
May 19-22, 1998	 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ "Radial artery assessment for CABG" "Cardinal features of vascular disease" "How to interpret: Carotid duplex ultrasound" Interesting cerebrovascular cases Case analysis

HECTOR V. ORTEGA, M.D.

April 2-5, 1998

17th Reunion of Asociacion Mexicana de Ultrasonido en Medicina, Pachuca Hgo, Mexico

- "New methods to evaluate blood flow in dialysis graft"
- "Contrast in ultrasound"

ERIC K. OUTWATER, M.D.

August 18-19, 1997

Society of Computed Body Tomography and Magnetic Resonance, Seventh Summer Practicum, Napa, CA

- "MR characterization of adnexal masses"
- "MR techniques of pelvic imaging"
- "MRI of the pancreas"

September 13, 1997

The Trondheim Millennium MRI Symposium, Trondheim, Norway

- "Techniques in MR imaging of the pancreas and biliary tree"
- "MRI of pancreatic disorders"

October 8, 1997

Berlex New Developments in MRI Speakers Bureau Program, Milton Hershey Medical Center, Hershey, PA

• "Techniques in MR imaging of the abdomen and pelvis"

October 29, 1997	MR Imaging Special Interest Group of New Jersey, New Brunswick, NJ • "MR characterization of adnexal masses"	
November 30- December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Opposed-phase imaging at 1.5 T: Detection of lipid in abdominal tissues and clinical significance" "Adenomyosis: Current concepts and imaging aspects" "Renal clear cell adenocarcinomas: Opposed-phase gradient echo MR imaging" 	
February 8, 1998	Resident's Course in Radiologic Pathology, Armed ForcesInstitute of Pathology, Washington, D.C."Tissue characterization in MRI of adnexal masses"	
April 18-26, 1998	 Sixth Scientific Meeting and Exhibition of the International Society of Magnetic Resonance in Medicine, Sydney, Australia "Pelvic cancer/ fetal clinical issues" "Ovarian Brenner tumors: MR imaging characteristics" 	
May 11, 1998	Medical Center of South Carolina, Department of Radiology, Charlston, SC • "MR imaging techniques in the pelvis"	
May 12, 1998	 Roosevelt-St Lukes Hospital New York, NY "MR tisssue characterization in the pelvis" (resident's conference) Cases from the AFIP 	
LAWRENCE PARKER, PH.D.		
April 22-25, 1998	National Association of Nursing Diagnosis, St. Louis, MO."Moving beyond content validation in nursing diagnosis"	
CATHERINE W. PICCOLI,	<u>M.D.</u>	
September 12, 1997	Seventh Annual Seminar Eccentials in Memory and Preset	

September 12, 1337	 Seventh Annual Seminar, Essentials in Mammography, Breast Cancer Foundation, Dayton, OH "Analyzing benign and malignant breast masses" "Breast MRI update"
November 30- December 5, 1997	83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL • "Enlarging focal asymmetric densities"
April 16, 1998	New Jersey Institute of Ultrasound in Medicine, St. Barnabas Medical Center, Livingston, NJ • "Ultrasound guided interventional procedures of the breast"
May 6, 1998	Mercy Catholic Medical Center, Lansdowne, PA • "MR imaging of the breast"

May 19-22, 1998 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ "Ultrasound evaluation of breast implants" VIJAY M. RAO, M.D. September 11, 1997 Bryn Mawr Hospital, Department of Radiology, Bryn Mawr, PA • Interesting cases November 30-83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL December 5, 1997 • "Turf battles in radiology: How to fight them and win!" (Refresher course) • "Imaging the temporomandibular joint" • "Percutaneous transcatheter endovascular interventions for vascular malformations, aneurysms, and tumors of the central nervous system or head and neck (CNS/H&N) - Who does them?" February 14, 1998 Practical Management of Orbital Disease in Your Practice, Wills Eye Hospital, Philadelphia, PA • "Orbital imaging CT or MRI?" Mercy Catholic Medical Center, Fitzgerald Division, Department of March 4, 1998 Radiology, Darby, PA • "Head and neck imaging" March 28, 1998 Association of University Radiologists, New Orleans, LA • "How to preserve quality of radiology residency programs in the future. Service vs. teaching: Importance of curriculum" April 1-5, 1998 32nd Annual Scientific Meeting and Postgraduate Course of the American Society of Head and Neck Radiology, Phoenix, AZ • "Evaluation of the patient with TMJ syndrome" May 28, 1998 Deborah Heart and Lung Center, Department of Pulmonary Medicine, Browns Mills, NJ • "Radiologic diagnosis of sinusitis and related diseases" ANA M. SALAZAR, M.D. March 28-29, 1998 5th Annual Cardiovascular Radiology Review Weekend, Philadelphia, PA

• Cardiac case review session

MARK E. SCHWEITZER, M.D.

August 13-18, 1997	Advances in Radiology Course, sponsored by Catholic University,
	Santiago, Chili

• "MRI of the wrist"

	 "MRI of marrow" "MRI of foot tendons" "MRI of osteomyelitis" "MRI of osseous disorders of the foot"
September 8-13, 1997	 24th Annual Refresher Course of the International Skeletal Society, Santa Fe, NM "MRI of musculoskeletal infection" "The knee" (moderator)
September 24, 1997	The University of Medicine and Dentistry of New Jersey, New Brunswick, NJ • "Direct and indirect MR arthrography"
November 5, 1997	Albert Einstein Medical Center, Department of Radiology, Philadelphia, PA • "MRI of the wrist"
November 13, 1997	Delaware Valley MRI Society, Philadelphia, PA • "Indirect & direct MR arthrography"
November 30 - December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Preoperative and postoperative evaluation of knee ligament injuries" (refresher course) "Vacuum disc: Frequency of high signal intensity on T2- weighted MR images" (poster)
January 7, 1998	Philadelphia Roentgen Ray Society, Philadelphia, PA"Peculiar meniscal tears"
January 9, 1998	Armed Forces Institute of Pathology, Washington, DC"MRI of the foot and ankle"
January 12, 1998	Allegheny University, Department of Orthopedic Surgery, Philadelphia, PA • "MRI of atypical meniscal tears"
January 26-27, 1998	 6th Annual Musculoskeletal MR Course, sponsored by University of California, San Diego, Palm Beach, FL "MRI of infection" "MRI of marrow" "Pulse sequence selection" "Contrast in skeletal MR"
March 19, 1998	Armed Forces Institute of Pathology, Washington, DC"MRI of the foot and ankle"
April 4-5, 1998	 Third Annual Jefferson Shoulder, Elbow & Wrist Imaging Symposium, Philadelphia, PA (Course Co-Director) "Direct/indirect MR arthrography shoulder and elbow" "MR of athletic shoulder injuries" "MR of shoulder AVN, infection and adhesive capsilitus"

• "MR of TFCC, SL, LT"

	 "MR arthrography of the wrist" "Wrist MR: Marrow" "Wrist MR: Carpal tunnel, flexot rand extensor tendons"
April 16-17, 1998	 Neurologic and Musculoskeletal MR Imaging: A Practical Approach 1998, sponsored by Boston University School of Medicine and Department of Radiology Boston Medical Center, Boston, MA "MR imaging of the wrist" "MR imaging of marrow in health and disease" "Is there a future for the low field extremity magnet?" (panel discussion)
April 27, 1998	98th Annual Scientific Meeting of the American Roentgen Ray Society, San Francisco, CA"MRI of the foot and ankle" (refresher course)
May 2-3, 1998	 Fourth Annual Jefferson Foot & Ankle Advanced Imaging Symposium, Philadelphia, PA (Course Co-Director) "MR of sports injuries" "Arthrography and MR arthrography of the ankle" "MR of arthritis and infection" "MR of sesamoid disorders"
May 8-10, 1998	 The 1998 Scientific Meeting of the Australian Musculoskeletal Imaging Group, Sydney, Australia "Labral tears" "MRI of rotator cuff" "Difficult meniscal diagnoses" "Ligaments of the knee and posterolateral capsular structures"
May 19-22, 1998	 The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ "Role of ultrasound in the musculoskeletal system" (panel discussion)
May 21, 1998	Armed Forces Institute of Pathology, Washington, DC • "MRI of the foot and ankle"
June 2, 1998	 Tel-Aviv University and Ichalov Hospital, Department of Radiology, Tel-Aviv, Israel "MRI of the knee" "Spinal trauma"
June 11, 1998	Hebrew University, International Center for ChildhoodRehabilitation, Jerusalem, Israel"Functional neuroimaging"

SHARON R. SEGAL, D.O.

May 19-22, 1998

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

• Stump the stars

WILLIAM T. SHI, PH.D.

August 10-13, 1997	Siemens Medical Systems, Inc., Ultrasound Group, Issaquah, WA • "Ultrasonic contrast agents and harmonic imaging"
October 6-8, 1997	 1997 International IEEE Ultrasonic Symposium, Toronto, Canada "Spectral broadening in conventional and harmonic Doppler measurements with gaseous contrast agents"
February 6-8, 1998	The 3rd Ultrasound Contrast Symposium, San Diego, CA • "Effects of bubble destruction on ultrasound imaging"
March 22-25, 1998	 42nd Annual Convention of the American Institute of Ultrasound in Medicine, Boston, MA "Effect of ambient pressure changes on subharmonic response of microbubbles"
June 22-23, 1998	Siemens Medical Systems, Inc., Ultrasound Group, Issaquah, WA • "Nonlinear ultrasound imaging"
June 24-26, 1998	 The 16th International Congress on Acoustics, Seattle, WA "Acoustic detection of microbubble destruction in gaseous contrast agents"

PAUL W. SPIRN, M.D.

March 28-29, 1998 5th Annual Cardiovascular Radiology Review Weekend, Philadelphia, PA

• "Critical care cardiac radiology"

ROBERT M. STEINER, M.D.

October 17, 1997	 Cornell University, New York Hospital Medical Center, New York, NY "The use of ultrasound in thoracic surgical interventional procedures"
October 29, 1997	 University of Szeged, Department of Radiology, Hungary Medical School, Szeged, Hungary "Recent multimodality advances in thoracic imaging and intervention"
November 30- December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "The American College of Radiology Chest Accreditation Project" (Focus session on ACR accreditation) "The pulmonary manifestations of collagen vascular disease separating the trees from the forest" (refresher course)
March 17, 1998	New York Hospital/Cornell University Medical Center, New York, NY

	• Resident board review
March 28-29, 1998	5th Annual Cardiovascular Radiology Review Weekend,Philadelphia, PA"Acquired heart disease in the adult"
April 23, 1998	The 13th European Congress of Cardiology, Athens, Greece • "Functional cardiovascular MRI in the adult"

KEVIN L. SULLIVAN, M.D.

October 6-7, 1997	 Fifth Annual Interventional Radiology and Vascular Imaging, University of Pennsylvania, Philadelphia, PA "Screening and percutaneous angioplasty of hemodialysis grafts" "Dialysis access" (workshop)
February 21, 1998	Third Annual Blood Access Intervention Therapy Symposium, Tokyo, Japan • "Dialysis access screening and intervention"

LISA M. TARTAGLINO, M.D.

November 30-
December 5, 199783rd Scientific Assembly and Annual Meeting of the Radiological
Society of North America, Chicago, IL• "CT angiography of carotid stenosis: Should the NASCET
criteria be different for men and women?"

• "Measuring carotid stenosis using CTA: Reliability and reproducibility"

MATHEW L. THAKUR, PH.D.

November 16-19, 1997	 29th Annual Meeting Society of Nuclear Medicine, Chandigarh, India "Developments of peptide radiopharmaceuticals" "Enhancing tumor target with monoclonal antibodies"
November 20, 1997	All India Institute of Nuclear Medicine, New Delhi, India • "Recent advances in radiopharmaceutical chemistry"
November 30- December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Imaging infection/inflammation with Tc-99m labeled anti- human PMN antibody LeuTech: Comparison with Tc-99m- HMPAO-WBC" "Tc-99m-TP 1201 for imaging thromboembolism"
February 2-5, 1998	International Atomic Energy Agency, Vienna, Switerland and Warsaw, Poland • "Tc-99m labeled peptides for imaging peripheral receptors"
March 11-15, 1998	 University of Nijmegen, The Netherlands "Tc-99m-LeuTech: Anti-CD-15 antibody for imaging infection: An update"
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March 29- April 6, 1998	 International Symposium on Recent Trends in Radiopharmaceutical Developments, International Atomic Energy Agency, Vienna, Switzerland, and Lisbon, Portugal "Tc-99m Vasoactive Intestinal Peptide (VIP): Structure activity relationship" "Radiolabeling of peptides and biomolecules"
June 5-11, 1998	 45th Annual Meeting of the Society of Nuclear Medicine, Toronto, Canada "Tc-99m labeled VIP receptor agonist: Functional and pharmacokinetic studies" "Dosimetry of anti-SSEA-1: A technetium-99m labeled IGm murine antibody to human granulocytes" "Transient changes in white blood cell (WBC) counts after administration of a technetium-99m labeled murine antibody (MAb) to human granulocytes" "Imaging vascular thrombosis with Tc-99m-TP-1300 peptide derived from active domain of thrombospondin (TSP)" "Tc-99m labeled VIP receptor agonist: Functional and pharmacokinetic studies"
<u>TERRI TUCKMAN, M.D.</u>	
May 19-22, 1998	The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJStump the stars: Difficult obstetrical cases
<u>SIMON VINITSKI, PH.D.</u>	
September 15-18, 1997	 Society of Image Analysis and Post Processing, Florence, Italy "Tissue segmentation based on a 4D feature map: Preliminary results"
October 12-15, 1997	 Society of Biological Medical Engineering, Chicago, IL "Tissue segmentation based on 3D and 4D feature maps: Comparison study"
November 30, 1997 December 5, 1997	83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chigago, IL"Distance-based subset alignment of MR images"

RICHARD J. WECHSLER, M.D.

September 24, 1997	Deborah Heart and Lung Center, Browns Mills, NJ
	 "Thoracic applications of spiral CT"

May 2-3, 1998

Fourth Annual Jefferson Foot & Ankle Advanced Imaging Symposium, Philadelphia, PA • "CT of hindfoot fractures"

ANNINA N. WILKES, M.D.

November 30- December 5, 1997	 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL "Intracystic papillary carcinoma" (mammography case of the day)
March 22-25, 1998	 42nd Annual Convention of the American Institute of Ultrasound in Medicine, Boston, MA "Results of short term interval follow-up of benign appearing masses seen only by ultrasound"
May 19-22, 1998	The Leading Edge in Diagnostic Ultrasound, sponsored by Thomas Jefferson University Hospital, Atlantic City, NJ."Breast ultrasound tutorial. Sonography-pathology correlation"

JAMES J. ZHANG, PH.D.

Novermber 30-December 5, 1997 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL

- "Dynamic brain SPECT with octreoscan in meningioma"
- "What is normal and abnormal pituitary gland uptake in In-111-DTPA-Octreotide brain SPECT"

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HONORS, EDITORIAL ACTIVITIES, SERVICE TO REGIONAL OR NATIONAL ORGANIZATIONS

JOSEPH BONN, M.D.

- Fellow, Council on Cardiovascular Radiology, American Heart Association
- Fellow, Society of Cardiovascular and Interventional Radiology
- Councilor for Internal Affairs, Society of Cardiovascular and Interventional Radiology
- Member-at-Large, Executive Committee, Council on Cardiovascular Radiology, American Heart Association
- Grant proposal reviewer, Cardiovascular and Interventional Radiology Research and Education Fund, Society of Cardiovascular and Interventional Radiology
- · Consultant to the Editor, Interventional-Cardiovascular section, Radiology
- Abstract Reviewer, 23rd Annual Meeting of the Society of Cardiovascular and Interventional Radiology
- Abstract Reviewer, Scientific Sessions, 71st Annual Meeting, American Heart Association
- Associate Editor, Journal of Vascular and Interventional Radiology
- Abstracts of Current Literature Editor, Journal of Vascular and Interventional Radiology

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
- Elected Fellow, Cardiovascular Radiology Council, American Heart Association
- Member, Executive Committee, Council on Cardiovascular Radiology, American Heart Association
- Member, Executive Committee Advisory Council, Society of Cardiovascular and Interventional Radiology
- Associate Editor, Journal of Vascular and Interventional Radiology
- Reviewer, Journal of Pharmacology and Experimental Therapeutics
- Gary J Becker Young Investigator Award, Society of Cardiovascular Interventional Radiology

DIANE M. DEELY, M.D.

• A. Edward O'Hara, M.D. Award for Excellence in Teaching, Department of Radiology, Thomas Jefferson University Hospital, 1998

W. SCOTT ENOCHS, M.D.

- Consultant, MR Contrast Agent Division, Berlex Laboratories
- Reviewer, Radiology

DAVID J. ESCHELMAN, M.D.

• Member, Relative Value Update Advisory Committee, Society of Cardiovascular and Interventional Radiology

- Reviewer, AJR
- 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 Distinction in Reviewing, Radiology

STEPHEN A. FEIG, M.D.

- Vice 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
- Chair, Ad-Hoc Committee Breast Imaging Training Advisory, Society of Breast Imaging
- Chair, General Membership Program Committee, Society of Breast Imaging
- Chair, Bylaws Committee, Society of Breast Imaging
- Chairman, Ad Hoc Committee for Whole Breast Digital Mammography Standard, American College of Radiology
- Co-Chairman, Committee on Correlation of Phantom and Clinical Image Quality, American College of Radiology
- Member, Committee on Stereotactic Breast Biopsy Accreditation, American College of Radiology
- Member, Breast Task Force, American College of Radiology
- Member, Clinical Image Reviewer Subcommittee, Mammography Accreditation Program, American College of Radiology
- Member, Clinical Image Reviewer Training Committee, Mammography Accreditation Program, American College of Radiology
- Member, Commission on Standards and Accreditation, American College of Radiology
- Member, Committee on Mammography Reporting and Data Base System, American College of Radiology
- Member, Executive Committee, Society of Breast Imaging
- Member, Mammography Physics Subcommittee, American College of Radiology
- Member, Mammography Quality Assurance Subcommittee, American College of Radiology
- Member, Scientific Committee 72: Radiation Protection in Mammography, National Council on Radiation Protection and Measurements
- Member, Written Examination Committee, American Board of Radiology
- Guest Examiner, American Board of Radiology
- · Editorial Board, Advance for Administrators in Radiology and Radiation Oncology
- Editorial Advisory Board, Breast Cancer Alert
- Editorial Advisory Board, Mammography Today
- · Editorial Advisory Board, Women's Imaging
- Editor, Seminars in Breast Disease (W.B. Saunders Co.)
- Editor, Breast Diseases, A Year Book Quarterly, Mosby Year Book Medical Publishers
- Editor, Society of Breast Imaging Newsletter
- Associate Editor, Radiology
- Reviewer, American Journal of Roentgenology
- Reviewer, Ca A Cancer Journal for Clinicians
- Reviewer, Cancer
- Reviewer, Journal of the American Medical Association
- Reviewer, Radiographics
- Recipient, Editor's Recognition Award for special Distinction in Reviewing, Radiology
- Radiology's Most Prolific Reviewers, Editor's Page, Radiology

RICK I. FELD, M.D.

- Senior Member, American Institute of Ultrasound in Medicine
- Member, Exam Development Task Force (Abdomen), American Registry of Diagnostic Medical Sonographers
- Abstract Reviewer, Abdomen-General, 42nd Annual Convention of the American Institute of Ultrasound in Medicine
- Reviewer, Clinical Imaging
- Reviewer, International Medical Image Registry
- Reviewer, Journal of Clinical Ultrasound
- Reviewer, Journal of Vascular and Interventional Radiology

ADAM E. FLANDERS, M.D.

- Consultant, Squibb Diagnostics, Contrast Division
- Consultant Neuroradiologist, Neotherapeutics
- Member, Squibb Diagnostics Contrast Speakers' Bureau
- Member, Task Force on Electronic Information, American Society of Neuroradiology
- Reviewer, American Journal of Neuroradiology
- Reviewer, Neuroradiology
- Reviewer, New England Journal of Medicine

FLEMMING FORSBERG, PH.D.

- Chairperson, Doppler Subcommittee, Technical Standards Committee, American Institute of Ultrasound in Medicine
- Member, Advisory Council, SDMS Educational Foundation
- Member, Technical Standards Committee, American Institute of Ultrasound in Medicine
- Reviewer, Ferroelectronics & Frequency Control, IEEE Transactions on Ultrasonics in Medicine
- Reviewer, Journal of Ultrasound in Medicine
- Reviewer, Radiology
- Reviewer, Ultrasonic Imaging
- Reviewer, Ultrasound in Medicine and Biology
- First Place for Scientific Presentations, "Non-vascular applications of an ultrasound contrast agent", 14th Annual Conference of the Society Diagnostic Medical Sonographers, Nashville, TN, September 1997
- Certificate of Merit, "Validation of three-dimensional endoluminal ultrasound in phantoms", 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL, November-December 1997
- First Prize for Scientific Exhibit, "Three-dimensional endoluminal ultrasound of the upper urinary tract", (exhibit). 42nd Annual Convention of the American Institute of Ultrasound in Medicine, Boston, MA, March 1998

DAVID P. FRIEDMAN, M.D.

- Member, 1998 Scientific Exhibits Committee, Radiological Society of North America
- Reviewer, American Journal of Roentgenology
- Reviewer, Neurology
- Certificate of Appreciation Citation, Preparation of 1997 Neuroradiology Case of the Day, Radiological Society of North America

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

- Fellow, Council on Cardiovascular Radiology, American Heart Association
 Board Examinar American Particle Particl
- Board Examiner, American Board of Radiology for Added Qualifications in Vascular and Interventional Radiology
- Editorial Board, Cardiovascular and Interventional Radiology
- Associate Editor, Journal of Vascular and Interventional Radiology
- Reviewer, Cardiovascular and Interventional Radiology
- Reviewer, Circulation
- Reviewer, Radiology

BARRY B. GOLDBERG, M.D.

- President, World Federation for Ultrasound in Medicine and Biology
- Chairman, Committee on Government Relations, American College of Radiology
 Commission on Ultrasound
- Chairman, Archives Committee, American Institute of Ultrasound in Medicine
 Chairman, Archives Committee, We hill F. Institute of Ultrasound in Medicine
- Chairman, Archives Committee, World Federation for Ultrasound in Medicine and Biology
 Medical Advisor in Ultrasound We block Hereit and Biology
- Medical Advisor in Ultrasound, World Health Organization
 Member Commercial Lision Organization
- Member, Commercial Liaison Committee, Society of Radiologists in Ultrasound
 Member, NICER Advisory Record
- Member, NICER Advisory Board
- Grant Reviewer, Binational Science Foundation
- International Advisory Board, Indian Journal of Medical Ultrasound
- Editorial Board, Journal d'Echographie et de Médecine par Ultrasons
- Editorial Board, Radiologia
- Editorial Board, Ultrasound International Journal
- Editorial Advisory Board, Clinics in Diagnostic Ultrasound
- · Editorial Advisory Board, Journal of Ultrasound in Medicine and Biology
- Reviewer, American Journal of Roentgenology
- Reviewer, Cancer
- Reviewer, Gastroenterology
- Reviewer, Gastrointestinal Endoscopy
- Reviewer, Radiology
- Honorary Fellowship for Life, Indian Federation of Ultrasound in Medicine and Biology, 1997
- Honorary Member of the French Ultrasound Society, 1998
- Certificate of Merit, "Validation of three-dimensional endoluminal ultrasound in phantoms" (exhibit). 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL, November-December 1997
- First Prize for Scientific Exhibit, "Three-dimensional endoluminal ultrasound of the upper urinary tract", (exhibit). 42nd Annual Convention of the American Institute of Ultrasound in Medicine, Boston, MA, March 1998

CARLOS F. GONZALEZ, M.D.

- Reviewer, IEEE Transaction of Biomedical Engineering
- Reviewer, Neuroradiology

ETHAN J. HALPERN, M.D.

• Grant Reviewer, Cardiovascular Interventional Radiology Research and Education Foundation

- Reviewer, Academic Radiology
- Reviewer, Annals of Internal Medicine
- Reviewer, Radiology

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
- Editorial Board, Journal of Nuclear Medicine
- Editorial Board, Radiology

PAMELA T. JOHNSON, M.D.

- Reviewer, Radiology
- · Editors Recognition Award for Special Distinction in Reviewing, Radiology

DAVID KARASICK, M.D.

- · Board Examiner, Musculoskeletal Radiology, American Board of Radiology
- Member, Liaison Committee, International Skeletal Society
- Editor-in-Chief, Seminars in Musculoskeletal Radiology (Thieme Medical Publishers)
- Manuscript Reviewer, American Journal of Roentgenology
- Manuscript Reviewer, Radiology
- Manuscript Reviewer, Skeletal Radiology

STEPHEN KARASICK, M.D.

- Written Examination Committee, GU Section, American Board of Radiology
- Reviewer, American Journal of Roentgenology

SUNG M. KIM, M.D.

- Secretary, The Korean-American Society of Nuclear Medicine
- Member, Committee on Brain Council, Society of Nuclear Medicine
- Member, Committee on 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

ALFRED B. KURTZ, M.D.

- Secretary, American Institute of Ultrasound in Medicine
- Board Examiner, Oral, American Board of Radiology
- Councilor, American College of Radiology, Society of Radiologists in Ultrasound
- Medical Advisor, Ultrasonic Procedures, Blue Shield of Pennsylvania
- Member, The Strategic Planning Conference on New Directions in Ovarian Cancer Research, The U.S. Public Health Service's Office on Women's Health, The Society of Gynecologic Oncologists, The National Cancer Institute, Washington, DC

- Member, Constitution Committee, American Institute of Ultrasound in Medicine
- Member, Editorial Board, Journal of Women's Imaging
- Member, Ultrasound Manuscript Reviewer, Radiology
- Reviewer, American Family Physician
- Reviewer, American Journal of Obstetrics and Gynecology
- Reviewer, American Journal of Roentgenology
- Reviewer, Cancer
- Reviewer, Journal of Ultrasound Medicine
- Reviewer, Obstetrics and Gynecology
- Reviewer, Radiographics
- Reviewer, Ultrasound Accreditation, American College of Radiology
- · Editor's Recognition Award for Special Distinction in Reviewing, Radiographics

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
- Fourth Annual Hyman Senturia Lecturer, Mallinckrodt Institute of Radiology of Washington University Medical Center, St. Louis, MO
- Member, Program Committee for the Annual Meeting, Pennsylvania Radiological Society
- Member, Publications Committee, Pennsylvania Radiological Society
- Member, Economics Committee, Philadelphia Roentgen Ray Society
- Member, Refresher Course Committee, Radiological Society of North America
- Member, Executive Committee, Society of Chairmen of Academic Radiology Departments
- Editorial Board, Academic Radiology
- Editorial Board, Current Diagnosis
- Reviewer, American Journal of Roentgenology
- Reviewer, New England Journal of Medicine
- Reviewer, Radiology

ANNA S. LEV-TOAFF, M.D.

- Elected Senior Member, American Institute of Ultrasound Medicine
- Vice President, Delaware Valley Ultrasound Society
- Member, Scientific Exhibits Committee, Pennsylvania Radiological Society
- Book Reviewer, Americal Journal of Roentgenology
- Reviewer, American Journal of Roentgenology

- Reviewer, Obstetrics and Gynecology
- Reviewer, Radiology
- Reviewer, Ultrasound in Obstetrics and Gynecology

<u>JI-BIN LIU, M.D.</u>

- Certificate of Merit, "Validation of three-dimensional endoluminal ultrasound in phantoms" (exhibit). 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, IL, November-December 1997
- First Prize, "Three-dimensional endoluminal ultrasound of the upper urinary tract" (exhibit). 42nd Annual Convention of the American Institute of Ultrasound in Medicine, Boston, MA, March 1998.

ANDREW D.A. MAIDMENT, PH.D.

- Phantom Reviewer, Stereotactic Breast Biopsy Accrediation Program, American College of Radiology
- Member, Committee on Correlation of Phantom and Clinical Image Quality, American College of Radiology
- Member, Committee of Chest Radiology Accreditation, American College of Radiology
- Member, DICOM Working Group 15: Digital Mammography, American College of Radiology and the National Electrical Manufacturers Association
- 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
- Member, Task Group 16: Noise Power Spectrum Analysis, American Association of Physicists in Medicine
- Grant Reviewer, study session SSS-7, NCI/NIH STTR/SBIR
- Grant Reviewer, study session RS-2, Breast Cancer Research Program, Department of Defense, United States of America
- Co-Chairman, 19th International Conference, IEEE/EMB Society
- Reviewer of proffered presentations, 40th Annual Meeting of the American Association of Medical Physicists
- Reviewer, American Journal of Roentgenology
- Reviewer, IEEE Transaction of Biomedical Engineering
- Reviewer, Journal of the Optical Society of America
- Reviewer, Medical Physics
- Reviewer, Physics of Medicine and Biology
- First Prize, Image Reconstruction and Microscopic Imaging Poster, World Congress on Medical Physics and Biomedical Engineering

DONALD G. MITCHELL, M.D.

- Member, Workshop Committee, International Society for Magnetic Resonance in Medicine
- Member, Program Committee, 83rd Scientific Assembly and Annual Meeting of the Radiological Society of North America
- Course Director, Body MR Educational Program, International Society for Magnetic Resonance in Medicine
- Member, Board of Trustees, International Society for Magnetic Resonance in Medicine
- Member, Finance Committee, International Society for Magnetic Resonance in Medicine

- Member, Meeting Coordination Committee, International Society for Magnetic Resonance in Medicine
- Member, Program Committee, International Society for Magnetic Resonance in Medicine
- Co-Editor, Clinical Desktop Section, MResource Guide
- Co-Editor, Topics in Magnetic Resonance Imaging
- Associate Editor, Journal of Magnetic Resonance Imaging
- Member, Editorial Board, Abdominal Imaging
- Member, Editorial Board, Journal of Computer Assisted Tomography
- Consultant to Editor, Radiology
- Reviewer, Academic Radiology
- Reviewer, American Journal of Roentgenology
- Reviewer, Radiographics

LEVON N. NAZARIAN, M.D.

- Editorial Board, Seminars in Musculoskeletal Radiology
- Reviewer, American Journal of Roentgenology
- Reviewer, Radiology

LAURENCE NEEDLEMAN, M.D.

- Fellow, American Institute of Ultrasound in Medicine
- Member, Task Force on Appropriateness Criteria Expert Panel on Cardiovascular Imaging, American College of Radiology
- Member, Committee on Economics of the Commission on Ultrasound, American College of Radiology
- Member, Committee on Ultrasonography, Pennsylvania Radiological Society
- Member, Professional Practice and Standards Committee, Society of Radiologists in Ultrasound
- Abstract Reviewer, Council on Cardiovascular Radiology, American Heart Association
- Abstract Reviewer, 42nd Annual Convention of the American Institute of Ultrasound in Medicine
- Distinguished Commission Service Award, American College of Radiology

HECTOR V. ORTEGA, M.D.

• Certificate of Excellence, "Computer simulation of complex flow in MRA of stenotic carotid arteries", Annual Meeting of the Symposium Neuroradiologicum XVI 1998, Philadelphia, PA, May 1998.

ERIC K. OUTWATER, M.D.

- American Roentgen Ray Society's Visiting Scientist at the Armed Forces Institute of Pathology, 1997
- Editorial Board, Radiology
- Reviewer, Critical Reviews in Diagnostic Radiology
- Reviewer, Journal of Computer Assisted Tomography
- Reviewer, Journal of Magnetic Resonance Imaging
- 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
- Guest Editor, Seminars in Breast Disease: Radiologic, Pathologic, and Surgical Considerations
- Guest Editor, Topics in Magnetic Resonance Imaging
- Clinical Reviewer, Mammography Accreditation Program, American College of Radiology
- Reviewer, American Journal of Roentgenology
- Reviewer, Journal of Ultrasound in Medicine

VIJAY M. RAO, M.D.

- Chairperson, Ad-Hoc Committee on Curriculum, Association of Program Directors in Radiology
- Consultant, National Institutes of Health
- Member, Executive Committee, American Society of Head and Neck Radiology
- Member, Executive Committee, Association of Program Directors in Radiology
- Member, Education Committee, American Society of Head and Neck Radiology
- Member, Rules 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
- Alternate Councilor, Pennsylvania Chapter, American College of Radiology
- Editorial Executive Committee, Academic Radiology
- Reviewer, American Journal of Neuroradiology
- Reviewer, Neuroradiology
- Reviewer, Radiographics
- Reviewer, Radiology

ANA M. SALAZAR, M.D.

• Reviewer, American Journal of Roentgenology

MARK E. SCHWEITZER, M.D.

- Member, Expert Panel, Orthopedic, Radiology, and Pathology Society
- Member, Appropriateness Panel, Musculoskeletal, American College of Radiology
- Associate Editor, Seminars in Musculoskeletal Imaging
- Exhibit Reviewer, Radiological Society of North America
- 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 Computer Assisted Tomography
- Reviewer, Journal of Magnetic Resonance Imaging

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

WILLIAM T. SHI, PH.D.

• Reviewer, Radiology

ROBERT M. STEINER, M.D.

- President, Society of Thoracic Radiology
- Program Chair, Annual Meeting, Society of Thoracic Radiology
- · Chairman, Chest Accreditation Committee, American College of Radiology
- Chairman, NASCI-STR Coordination Committee, North American Society for Cardiac Imaging
- Chairman, Radiology Technician Advisory Committee, Philadelphia Roentgen Ray Society
- Chairman Program Committee, Society of Thoracic Radiology
- Member, Executive Committee, Intersociety Commission, American College of Radiology
- Member, Subcommittee for the Chest and Bedside Chest Radiography Standards, American College of Radiology
- Member, Subcommittee for Adult and Pediatric Chest, American College of Radiology
- Member, Expert Chest Panel Continuing Professional Improvement (CPI) Program, American College of Radiology
- Member, Nominating Committee, Pennsylvania Radiological Society
- Member, Board of Censors, Philadelphia Roentgen Ray Society
- · Member, Training and Standards of Care Committee, Society of Thoracic Radiology
- Editor, Society of Thoracic Radiology Newsletter
- Editorial Board, American Journal of Cardiac Imaging
- Editorial Board, Heart and Vessels
- Editorial Board, RadioGraphics
- Reviewer, American Journal of Roentgenology
- Reviewer, Cancer
- Reviewer, Radiology
- Reviewer, Respiratory Medicine
- Editor's Recognition Award for Special Distinction in Reviewing, Radiographics

KEVIN L. SULLIVAN, M.D.

- Fellow, Society of Cardiovascular and Interventional Radiology
- Fellow, Cardiovascular Radiology Council, American Heart Association
- 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
- Editor's Recognition Award for Distinction in Reviewing, Radiology

LISA M. TARTAGLINO, M.D.

• Co-director, Philadelphia Neuroradiology Club

• 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
- Chair, Scientific Session, 46th Annual Meeting, Toronto, 1998.
- Subchairman, Scientific Program Committee, 45th Annual Meeting of the Society of Nuclear Medicine, Toronto, Canada, June 1998.
- Member, Scientific Program Committee, World Federation of Nuclear Medicine and Biology and European Association of Nuclear Medicine, Berlin, Germany 1998.
- 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, Journal of the Indian Association of Clinical Medicine
- Member Editorial Board, Nuclear Medicine Communications
- Member Advisory Committee, US Pharmacopea
- Member Advisory Committee, Kurwait Medical Research Council
- Member Advisory Committee, International Atomic Energy Agency, Vienna, Austria
- Grant Review Service, ad hoc member, National Institute of Health
- Grant Review Service, ad hoc member, American Cancer Society
- Grant Review Service, Canadian Medical Research Council
- Grant Review Service, Department of Energy
- Reviewer, Cancer Research
- Reviewer, Journal of Chromotography
- Reviewer, Journal of Labelled Compounds and Radiopharmaceuticals
- Reviewer, Journal of Nuclear Medicine
- Reviewer, Journal of Nuclear Medicine and Biology
- Reviewer, Nuclear Medicine Communications

TERRI TUCKMAN, M.D.

- Vice Speaker of the House of Delegates, Board of Directors, 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

SIMON VINITSKI, PH.D.

- Member, Scientific Program Committee, 38th Annual Meeting of the Society of Nuclear Medicine
- Reviewer, IEEE Trans Medical Imaging
- Reviewer, Journal of Investigative Radiology
- Reviewer, Journal of Magnetic Resonance Imaging
- Reviewer, Journal of Medical Physics
- Reviewer, Magnetic Resonance in Medicine
- Reviewer, Radiology

RICHARD J. WECHSLER, M.D.

- President-Elect, 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 the Commission on Standards and Accreditation, American College of Radiology
- Alternate Councilor, American College of Radiology
- Reviewer, Radiology
- 1997 Editor's Recognition Award for Special Distinction in Reviewing, Radiology

ANNINA N. WILKES, M.D.

- State Director, Pennsylvania, American Medical Women's Association
- Radiological Society of North America International Visiting Professor, Kenyatta Hospital, Nairobi, Kenya

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Active Grants 07/01/97 - 06/30/98 (Report reflects entire award period and first year of award) Revised 06/30/98

NIH/OTHER FEDERAL GRANTS

PRINCIPAL	TITLE OF PROJECT	FUNDING SOURCE	FIINDING DATES	DIRECT	INDIRFCT	TOTAL COSTS
INVESTIGATOR				COSTS	COCTS	ETINDED
MOTUNICIAN				61600	cient	FUNDED
Consigny, P.M.	Re-Endothelialization of	HIN	08/01/96-06/30/99	\$344,487	\$201,089	\$545,576
R36502	ATTATICS WICH ATTACK	02 year	07/01/97-06/30/98	\$123,120		\$196,277
				(current year)	(current year)	(current year)
Feig, S.	Clinical Evaluation of Digital	HIN	09/30/93 - 06/30/99	\$250,874	\$122,980	\$373,854
K11404	Mammography	5 KUI CA60192- 04 year	07/01/97 - 06/30/98	\$88,767	\$54,534	\$143,301
				(current year)	(current year)	(current year)
Feig, S. 080-05157	Stereotactic Breast Bionsy ys Onen Surgical	NIH 5 1101 CA62476	09/30/93 - 07/31/98	\$57,324	\$38,276	\$95,600
UNC (subcontract)	Biopsy	04 year	08/01/96 - 07/31/98			\$3,198
Z08504	(RDOG V)			(current year)	(current year)	(current year)
Feig, S.	Multi-center Clinical Evalu-	Department of Health	09/30/97 - 03/30/99	\$12,508	\$6,205	\$18,713
Subcontract		& runnan services Subcontract UNC	09/30/97 - 03/30/98	\$8,339		\$12,475
Z13801		No.5-35187		(-01 year)	(-01 year)	(-01 year)
Forsberg, F.	Contrast Enhanced 3D	U.S. Army Medical	09/15/97 - 09/14/00	\$130,544	\$80,936	\$211,480
X06101	Color Amplitude Imaging of Breasts	Research Acq.	09/15/97 - 00/14/08	C1 P73		
				(-01 year)	(-01 year)	(-01 year)
Goldberg, B.	Breast Cancer Detection	HIN	04/01/96 - 01/31/01	\$700.981	\$456.914	\$1 157 895
R38603	Using Ultrasound Contrast	1 RO1 CA60854				
		03 year	02/01/98 - 01/31/99	\$140,417	\$87,059	\$227,476
				(current year)	(current year)	(current year)

\$238,324 \$74,986 (current year)	\$117,742 \$20,000 (current year)	\$201,018 \$68,432 (current year)	\$298,330 \$115,215 (-01 year)	\$147,982 \$68,438 (-02 year)	\$21,293 \$21,293 (-01 year)	\$3,427,807 \$1,022,571 (current year)
\$95,614 (current year)	\$47,238 	\$13,668 \$13,668 \$4,832 (current year)	\$105,122 \$35,041 (-01 year)	\$48,820 \$26,192 (-02 year)	\$8,149 \$8,149 (-01 year)	\$1,225,011 \$358,588 (current year)
\$142,710 \$45,760 (current year)	\$70,504 \$12,346 (current year)	\$187,350 \$63,600 (current year)	\$193,208 (-01 year)	\$99,162 \$42,246 (-02 year)	\$13,144 \$13,144 (-01 year)	\$2,202,796 \$663,983 (current year)
09/30/91 - 09/29/98	09/01/94 - 08/31/98 09/01/97 - 08/31/98	09/30/95 - 09/29/98 09/30/97 - 09/29/98	08/15/97 - 08/14/00 08/15/97 - 08/14/98	08/15/96 - 08/14/99 08/15/97 - 08/14/98	09/30/97 - 08/31/98	TOTAL NIH/FEDERAL FUNDING CURRENT YEAR NIH/ FEDERAL FUNDING
NIH 2 PO1 CA52823 06 year	NIH 5 RO1 HL52901 04 year	NIH 1 KO8 CA63494 03 year	U.S. Army Medical Research Acq.	U.S. Army Medical Research Acq. DAMD17-96-1- 6280	Department of Health & Human Services (Sunnybrook Health Science Center)	
Developing of Tissue Characterization Methods	Development of a New Class of Ultrasound Contrast Agents	Tumor Evaluation by 2D and 3D Endoluminal Ultrasound	3-D Digital Imaging of Breast Calcifications: Improvements in Image Quality and Development	2-D and 3-D Digital Analysis of Breast Calcifications: A Technique to Improve Mammographic Specificity	Multicenter Clinical Evalua- tion of Digital Mammography	
Goldberg, B. 080-05263 Drexel (J. Reid) (subcontract) Z10802	Goldberg, B. 080-05710 Drexel(Wheatley) (subcontract) Z10503	Liu, Ji-Bin K02003	Maidment, A. X05901	Maidment, A. 080-05275 XO5501 (Conant)	Maidment, A. Z14001	

Active Grants 07/01/97 - 06/30/98 (Report reflects entire award period and first year of award)

FOUNDATION/NON-PROFIT ORGANIZATION GRANTS

PRINCIPAL	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT	INDIRECT	TOTAL COSTS
INVESTIGATOR				COSTS	COSTS	FUNDED
Feig, S. F40701	Clinical Evaluation of Digital Mammography	Breast Health Institute	07/01/97 - 06/30/98	\$25,000	\$0	\$25,000
	-			\$25,000	80	\$25,000
				(current year)	(current year)	(current year)
Gardiner, G. 081-08309	SCVIR Transluminal Angionlasty and	CIRREF (Cardiovascular/	01/01/92 - 12/31/98	\$828,420	\$77,225	\$905,645
F16701	Revascularization Registry	Interventional	01/01/98 - 12/31/98	20		
	(STAR)	Radiology Research & Education Foundation		(current year)	(current year)	(current year)
Goldberg, B.	Outstanding Scholars	Open Society	02/18/97 - 02/17/98	\$40,000	\$0	\$40,000
F38501	Program	Institute	02/18/97 - 02/17/98			
				(current year)	(current year)	(current year)
Goldberg, B.	Outstanding Scholars	Open Society	06/30/97 - 09/30/97	\$34,440	\$0	\$34,440
F39601	Program	Institute	06/30/97 - 09/30/97	\$34,440	0\$	\$34,440
				(current year)	(current year)	(current year)
Goldberg, B.	Training Activities Related to	Open Society	12/18/97 - 12/17/98	\$8,400	\$0	\$8,400
DUIQUI		ammsur	12/18/97 - 12/17/98	\$8,400		
				(current year)	(current year)	(current year)
Goldberg, B.	Core Curriculum Project	Open Society	01/14/98 - 01/13/99	\$250,000	\$0	\$250,000
INCOCY	Training Centers in Eastern		01/14/98 - 01/13/99	\$250,000		\$250,000
	Europe and the Soviet Union			(current year)	(current year)	(current year)

\$50,000	\$50,000	(current year)		\$20,000	\$50,000	(current year)		\$30,000		\$39,000	(current year)	\$82,577		110,200	(current year)	\$16 Q50	4107 G	\$16,950	(current year)	\$1,502,012		\$596,367	(current year)	
	\$0	(current year)	4 4	\$0		(current year)		80) }	80	(current year)	\$0		D¢.	(current year)	0\$	2	80	(current year)	\$77,225		\$0	(current year)	
\$50,000	\$50,000	(current year)	000 010	000,00¢	\$50,000	(current year)		\$39,000		\$39,000	(current year)	\$82,577		110,200	(current year)	\$16.950	÷	\$16,950	(current year)	\$1,424,787		\$596,367	(current year)	
01/14/98 - 01/13/99	01/14/98 - 01/13/99			66/01/10 - 06/41/10	01/14/98 - 01/13/99			11/20/97 - 11/19/98		11/20/97 - 11/19/98		06/30/98 - 09/30/98	80/02/00 - 80/02/90	OCINCIEN - OCINCIAN		03/01/97 - 02/28/99		03/01/97 - 02/28/99		TOTAL NON-PROFIT	LUNDING	CURRENT YEAR	NON-PROFIT FUNDING	
Open Society Institute				Open society Institute				Open Society	Institute			Open Society	Institute			Society of	Radiologists in	Ultrasound (SRU)						
Communication Coordination with the Ultrasound Affiliate	Training Center and the Mainte-	nance of TJU-JUREI's Web Site	Contraction for the second for the second	of Equipment Donations for the	Ultrasound Affiliate Training	Centers in Eastern Europe and	the Former Soviet Union	Affiliate US Training Sites	in Bulgaria, Estonia, George,	Slovakia and Slovenia		Training Program in Diagnostic	Ultrasound			Review of Volume Sono-	graphic Studies Across	Networks: A Feasibility	Study					
Goldberg, B. A30501			Caldbarr D	A30801				Goldberg, B.	A30701			Goldberg, B.	100709			Lev-Toaff. A.	G00301							

Active Grants 07/01/97 - 06/30/98 (Report reflects entire award period and first year of award)

INDUSTRIAL GRANTS

PRINCIPAL	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT	INDIRECT	TOTAL COSTS
INVESTIGATOR				COSTS	COSTS	FUNDED
Bonn, J.	A Randomized, Prospective,	Cordis Corporation	01/21/97 - 01/20/98	\$3,800	\$950	\$4,750
D74601	Controlled Study Evaluating					
	the Safety & Efficacy of the			\$3,800	\$950	\$4,750
	Cordis Peripheral Stent and			(current year)	(current year)	(current year)
	Delivery System Versus PTA					
	in the Treatment of Iliac					
	Artery Occlusive Disease					
Ronn I	A Drosnective Evaluation of	Meadov Medicale	00/10/80 - 20/00/80	110 CCC3	8CT 778	069 0203
D83701	the Meadox VANGUARD and	(Core Lab)		11/(7776	071,000	4410,077
	PASSAGER Endoprosthesis		08/22/97 - 08/21/98	\$39,217	\$9,804	\$49,021
	for Elective Treatment of			(current year)	(current year)	(current year)
	InfraRenal Abdominal Aortic					c Î
	Aneurysm and Aorto-Iliac					
	Aneurysms in Humans					
Bonn, J.	Symphony Nitinol Stent for	Boston Scientific	12/31/97 - 12/30/98	\$62,822	\$15,706	\$78,528
100060	I reatment of Illac Artery	Corporation				
	Stenoses			\$62,822	\$15,706	\$78,528
		Clinical Trial		(current year)	(current year)	(current year)
Consigny, P.M. A31401	Characterization of an Animal Model of Plaque Fractures	Rhone Poulenc Rorer	04/25/98 - 04/24/99	\$88,408	\$42,878	\$131,286
				\$88,408	\$42,878	\$131,286
				(current year)	(current year)	(current year)

\$69,600	\$48,160	(current year)						\$5,000		\$5,000	(current year)	\$85,134		\$85,134	(current year)	001 041	\$91,041 	\$91,041	(current year)	\$46,516	212 210	010,040	(current year)	\$25,620	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	(current vear)	(ma f manna)
\$13,920	\$9,632	(current year)						\$0			(current year)	\$27,805		\$27,805	(current year)	ACT 000	\$29,134	\$29,734	(current year)	\$12,288	000 010	\$14,200	(current year)	\$5,124	\$5 174	(current vear)	/ /
\$55,680	\$38,528	(current year)		-				\$5,000		\$5,000	(current year)	\$57,329		\$57,329	(current year)	CU2 130	\$01,507	\$61,307	(current year)	\$34,228	0CC // C3	(2000 + 1000)	(current year)	\$20,496	\$20.496	(current vear)	
03/01/95 - 02/28/99	03/01/97 - 02/28/98							12/15/97 - 06/15/98				08/01/97 - 07/31/98				05/01/07 04/20/00	86/05/40 - 16/10/c0			09/01/97 - 06/01/98				10/02/97 - 10/02/98			
Lovenox Spinal Cord Injury Study-611								UltraGuide, Ltd.				Nycomed, Inc.				Nivomed Inc	Nycomea, inc.			Alliance	Pharmaceutical	richmindin		Alliance	Cornoration		
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	Computerized Ultrasound-	Guidance System for Medical	Interventional Procedures		Diagnostic Accuracy of	Ultrasound Contrast Imaging	of Liver Lesions		Illtracound Contract Imaging	Oltrasound Contrast Imaging of Normal and Abnormal	Prostates		Hepatic Tumor Detection	with Imagent US			Core Lab Review of Tapes for			
Feld, R. 080-08684	D53901							Feld, R.	A29301			Forsberg, F.	A27301			Earchara E	rorsoerg, r. A24801			Forsberg, F.	A28201			Forsberg, F.	100071/		

5 \$36,285 5 \$36,285 1) (current year)	2 \$10,000 2 \$10,000 r) (current year)	7 \$40,000 7 \$40,000 r) \$40,000 r) (current year)	0 \$80,000 8 538,240 r) (current year)	\$ \$19,054 \$ \$19,054 \$ \$19,054 \$ \$19,054 \$ \$19,054 \$ \$19,054	5 \$430,000 5 \$30,000 r) (current year)
\$9,58 \$9,58' (current yea	\$2,642 \$2,647 (current year	\$10,567 \$10,567 (current year	\$16,000 \$7,648 (current year	\$2,485 \$2,485 (current year	\$86,000 \$6,000 (current year
\$26,700 \$26,700 (current year)	\$7,358 \$7,358 (current year)	\$29,433 \$29,433 (current year)	\$64,000 (current year) (current year)	\$16,569 \$16,569 (current year)	\$344,000 \$24,000 (current year)
05/15/97 - 05/14/98	04/06/98 - 04/05/99	10/01/97 - 09/30/98	04/06/95 - 03/31/99 04/01/97 - 03/31/98	02/05/98 - 02/04/99	07/01/96 - 06/30/98 07/01/97 - 06/30/98
General Electric Company	DuPont Merck Pharmaceutical Company	Toshiba America Medical Systems, Inc.	Rhone-Poulenc Rorer Enoxaparin 611	Boston Scientific Corporation	Berlex Laboratories NIH supplement #204-13 #204-14
Optimized Harmonic Imaging with Contrast (Loqiq 700)	Infusion Studies with MRX 115 in Woodchucks	Flow Estimation Using Flash Echo Imaging	RP:54563-611: The Pre- vention of Deep Vein Thrombo- sis in Acute Spinal Cord Injury by Comparing Enoxaparin ver- sus Low Dose Heparin Plus Ex- ternal Pneumatic Compression During the First Two Weeks Followed by Enoxaparin versus Low Dose Heparin for the Remaining Six Weeks	Safety & Efficacy of Symphony Nitinol Stent- Core Lab	Study of the Safety, Patient Acceptance & Efficacy of Levovist Injection in Female Patients Undergoing Doppler Sonography, Including Harmonic Imaging, for Eval- uation of Breast Mass or Abnormality
Forsberg, F. A25901	Forsberg, F. A31201	Forsberg, F. A31501	Gardiner, G. 080-01878 D54801	Gardiner, G. D89201	Goldberg, B. 080-08464 D69301

	Diagnostic Imaging Studies	Nycomed, Inc.	11/18/96 - 11/17/99	\$450,000	\$112,500	\$562,500
	carj		11/18/97 - 11/17/98	\$150,000 (current year)	\$37,500 (current year)	\$187,500 (current year
Hemorrhaging Detection	u	Nycomed, Inc.	08/01/97 - 07/31/98	\$15,706	\$5,639	\$21,345
WITH NC 100-100				\$15,706 (current year)	\$5,639 (current year)	\$21,345 (current year)
The Effects of Low Intensit Pulsed US on Bone Fractur Healing and Cartilage Heali	y, e ng	Exogen, Inc.	86/02/60 - 86/10/10	\$44,150 	\$15,850 \$15,850	\$60,000
In Kabbits				(current year)	(current year)	(current year)
A Clinical Comparison of the Safety and Efficacy of Multi- hance and Omniscan in MRI in Patients Highly Suspected of Having Lesions of the Central Nervous System		Bracco Diagnostics #43,779-9A	11/01/96 - 02/01/98	\$12,450 \$12,450 (current year)	\$3,112 \$3,112 (current year)	\$15,562 \$15,562 (current year)
A Safety, Dosing, and Efficacy Study of AF0150 for Con- trast-Ultrasound Assessment of Focal Lesions of the Liver or Kidney in Patients with CT-or MRI-Confirmed		Alliance Pharmaceutical Corporation	10/10/96 - 09/30/98	\$22,400 \$22,400 (current year)	\$5,600 \$5,600 (current year)	\$28,000 \$28,000 \$28,000 (current year)
Abnormalities						
A Phase III Multicenter Con- trolled Study of EchoGen as an Ultrasound Contrast Agen in Conjunction with Trans- rectal Ultrasonography of the Prostate	. +	Sonus Pharmaceuticals	08/01/97 - 05/31/98	\$37,410 \$37,410 (current year)	\$9,040 \$9,040 (current year)	\$46,450 \$46,450 (current year)

(current year)	(current year)	(current year)				
\$51,951	\$13,724	\$38,227				
\$51,951	\$13,724	\$38,227	86/15/10 - 16/10/20	Nycomea, Inc.	ity Evaluated with Contrast	A27201
					II T T T	1 1 D
(current year)	(current year)	(current year)				
\$2,000	\$0	\$2,000			×	
					Contrast Data Collection	A24901
\$2.000	\$0	\$2,000	06/01/97 - 12/31/97	MedSim Corporation	3-D Simulator Ultrasound	Liu, J.B.
(current year)	(current year)	(current year)				
\$140,000	\$28,000	\$112,000				
\$980,000	\$196,000	\$/84,000	06/0C/40 - 16/10/CO	NIO ING	ouppoint of minaging wayanti	081-30000-D29901
						-
					of the Extra-Cranial Carotid Arteries	
(current year)	(current year)	(current year)			mode and Doppler Examination	
\$35.437	\$6,887	\$28,550			bubbles for Injection) for B-	
\$55,437	D0,001	000,024	OCINCICA - OCITOICA	CONCOURSE CONTROL	(Sulfur Hexafluoride Micro-	D91101
	00 JO	022 OLD	05/01/08 00/10/20	Bracco Diagnostics	Safetv and Efficacy of Sonovite	Halnern, F.
021					for Transrectal Ultrasound	
11.5					Exam (DRE) Who are Scheduled	
					and/or Abnormal Digital Rectal	
					Prostate Specific Antigen (PSA)	
					Lesions in Males with Elevated	
(magnet)					the Visualization of Prostatic	
(current vear)	(current year)	(current year)			hanced Ultrasound to Aid in	
\$78 875	\$5.565	\$23.260			the Feasibility of AFO150-en-	
\$70,02J	,			Pharmaceutical Corp.	Randomized Study to Access	D90301
200 900	\$5 565	\$23.260	04/21/98 - 04/20/99	Alliance	A Single-Center, Open-Label,	Halpern, E.

\$25,756 \$25,756 (current year)	\$34,240 \$34,240 (current year)	\$68,637 \$68,637 (current year)	\$61,114 \$61,114 (current year)
\$5,151 	\$6,848 \$6,848 (current year)	\$13,727 - <u></u> \$13,727 (current year)	\$16,144
\$20,605 520,605 (current year)	\$27,392 \$27,392 (current year)	\$54,910 (current year)	\$44,970
10/01/96 - 09/30/97	11/07/96 - 11/06/98	12/05/96 - 12/04/97	06/03/96 - 12/30/98
DuPont Merck	Rhone-Poulenc Rorer	Nycomed, Inc.	Nycomed, Inc.
A Phase II Double-Blind Multicenter Trial to Evaluate the Safety and Determine the Optimal Image Enhancement Dose of MRX 115 for 2-D Gray Scale Imaging and Optimal Time Range for Color and Power Doppler Imaging in Patients with Liver and Kidney Abnor- malities Detectable by US	Randomized, Open Label Trial of Twice Daily Lovenox (Enoxaparin) Versus Low- Dose Heparin in the Preven- tion of Deep Vein Thrombosis in Medical Intensive Care Unit Patients	Contrast-Enhanced Ultra- sound Imaging of the Liver with Intravenous NC100100: A Phase II Multicenter, Randomized, Double-Blind, Placebo-Controlled, Dose- Finding Trial in Adult Patients with Know or Strongly Suspected Focal Solid Liver Lesions	Renal Transplant Model to Evaluate Efficacy of an Ultra- sound Contrast Agent
Needleman, L. D71701	Needleman, L. D72201	Needleman, L. D73901	Needleman, L. D67001

\$55,360 (current year)	\$5,000 \$5,000 (current year)	\$11,875 \$11,875 (-01 year)	\$91,840 \$91,840 (-01 year)	\$45,600 \$45,600 (-01 year)	\$57,000 \$57,000 (-01 year)
\$11,072 \$11,072 (current year)	\$0 \$0 (current year)	\$2,375 \$2,375 (-01 year)	\$18,168 \$18,168 (-01 year)	\$9,120 	\$11,200 \$11,200 (-01 year)
\$44,288 	\$5,000 \$5,000 (current year)	\$9,500 \$9,500 (-01 year) aasis	\$73,672 \$73,672 (-01 year)	\$36,480 \$36,480 (-01 year)	\$45,800 \$45,800 (-01 year)
11/19/97 - 11/18/98	10/01/97 - 09/30/98	02/01/98 - 01/31/99 \$11,875 = fixed fee balance to be paid on per read t	06/25/98 - 06/24/99	08/01/96 -09/30/98	05/01/98 - 08/31/98
DuPont Merck Pharmaceutical Company	Cooper Hospital	Coagulation Diagnostics, Inc.	Mallinckrodt Inc.	Advanced Magnetics	Advanced Magnetics, Inc.
A Phase III, Multicenter Cross- over Trial to Determine the Ability of DMP 115 Contrast- Enhanced Imaging to Provide Additional Diagnostic Informa- tion in Comparison to Un- enhanced US Imaging in Patients Referred for Diagnostic US of the Liver and Kidney	Early Non-Tidal vs. Tidal Ventilation if Premature Infants	A Multi-Center Clinical Study to Establish the Prognostic Value of the Tissue Factor Clotting Time Assay (TiFaCT) in Predicting Venous Thrombo- embolism (VTE) Following General Abdominal or Ortho- pedic Surgery	An Open-Label Phase 2 Study to Determine the Efficacy and Safety of OPTISON Injectable Suspension in Ultrasonography in Patients with Confirmed Renal Disease	A Phase III Safety & Efficacy Study of Combidex Code 7227 as a MRI Agent for the Evaluation of Lymph Node Disease (Abdomen/Lung)	A Clinical Study of Feridex I.V. (ferumoxides injectable solution) when Administered as a Direct Injection in Patients
Needleman, L. D84601	Needleman, L. D81601	Needleman, L. D89601	Needleman, L. D91901	Outwater, E. D69701	Outwater, E. D90401

\$40,000 (current year)	ourrent year)	(current year)	3		immunotherapy	
	111 74		07/01/97-07/31/98	Kesearcn Institute	scintigraphy and Radio-	
\$80,000	\$13,332	\$66,668	07/01/97-07/31/99	Schering Plough Research Institute	Interferon-Alpha-2b for Improving Radio-immuno-	A26401
						Thebue M
				i dest	Applications	
(current year)	(current year)	(current year)			to IMPKA ePTFE Vascular Graft in Hamodialveis	
\$13 371	\$1.744	\$11,627	10/01/97-10/30/98		Vascular Graft as Compared	
\$26,175	\$3,414	\$22,101	66100001-1010001		Evaluation of Venaflo ePTFE	A29001
		172 (03	10/01/97-10/30/99	IMPRA	Prospective Multicenter	Sullivan, K.
					Rheumatoid Arthritis	
					Patients with Early Active	
					Methotrexate in Treatment of	
(current year)	(current year)	(current year)			Receptor Fusion Protein to	
\$92,813	\$18,563	\$74,250			Comparing Recombinant Human Tumor Necrosis Factor	
\$92,813	\$18,563	\$/4,200		Corporation	Randomized, Phase III Study	D77101
			DAILEINT DEIDOIDO	Imminev	Multicenter, Double-Blind.	Schweitzer, M.
(current year)	(current year)	(current year)			Quantitative CT	
\$100,000	\$20,000	\$80,000		Inc. (INS)	Males and Females Using	
\$100,000	\$20,000	\$80,000	16/12/20	Network Systems,	Strength Properties of An-	D75601
					Connarison of Vortohal	Schweitzer M
(-01 year)	(-01 year)	(-01 year			Evaluation of Lymph Node Disease (Head/Neck)	
\$3 800	\$760	\$3,040			7227 as a MRI Agent for the	D69501
\$45,600	\$9,120	\$36,480	08/01/96 -09/30/98	Auvanced Magnetics	Study of Combidex Code	080-08470
					A Dhase III Safety & Efforce.	Ran V
(-01 year)) (-01 year)	(-01 year			Disease (Breast)	
\$45,600	\$9,120	\$36,480			Evaluation of Lymph Node	
					7227 as a MRI Agent for the	D69601
\$45.600	59,120	\$36,480	08/01/96 -09/30/98	Advanced Magnetics	A Phase III Safety & Efficacy	Piccoli, C.

\$30,000 \$30,000 \$30,000 (current vear)	\$210,000 \$210,000 (current vear)	\$4,350,133 \$2,347,711 (current year)	\$9,279,952 \$3,966,649 (current year)
\$6,000 \$6,000 (current year)	\$42,000 \$42,000 \$42,000 (current vear)	\$920,683 \$522,423 (current year)	\$2,222,919 \$881,011 (current year)
\$24,000 \$24,000 (current year)	\$168,000 \$168,000 \$168,000 (current year)	\$3,429,450 \$1,825,288 (current year)	\$7,057,033 53,085,638 (current year)
03/17/97 - 08/31/97	07/01/97 - 06/20/98	TOTAL INDUSTRIAL FUNDING CURRENT YEAR INDUSTRIAL FUNDING	TOTAL FUNDING TOTAL CURRENT YEAR FUNDING
Palatin Technologies, Inc.	Palatin Technologies, Inc.		
LeuTech Product Development (Protocol #03970)	Development of a Thrombis Imaging Agent		
Thakur, M. A26801	Thakur, M. A27001		

Pending Grants 07/01/97 - 06/30/98

Table 2

(Report reflects entire award period and first year of award) Revised 06/30/98 NIH/FEDERAL GRANTS

PRINCIPAL	TITLE OF PROJECT	FUNDING	FUNDING DATES	DIRECT	INDIRECT	TOTAL COSTS
INVESTIGATOR		SOURCE		COSTS	COSTS	FUNDED
Forsberg, F.	Doppler Ultrasound Spectral Estimation Using the Adaptive	NSF	01/01/99 - 12/31/01	\$232,817	\$141,557	\$374,374
	Constant-Q Distribution			\$74,987	\$44,942	\$119,929
	and Wavelet Transforms			(-01 year)	(-01 year)	(-01 year)
Forsberg, F.	Detection of Prostate Cancer	NIH 1 B21 CA81149 01	04/01/99 - 03/31/01	\$181,217	\$112,355	\$293,572
	FMBV	10-/1100/0 1701		\$92,873	\$57,581	\$150,454
				(-01 year)	(-01 year)	(-01 year)
Goldberg, B. Drexel (Reid)	Developing of Ultrasound Tissue Characterization	IOA	07/01/98 - 06/30/02	\$237,632	\$147,331	\$384,963
subcontract	Methods			\$52,953	\$32,831	\$85,784
FUNDED	(CORE A)			(-01 year)	(-01 year)	(-01 year)
Goldberg, B.	In Situ High Speed Scanning	NIH/SBIR	12/01/98 - 11/30/00	\$128,995	\$73,777	\$202,772
		(Cleare, IIIC.)		\$37,100	\$16,802	\$53,902
				(-01 year)	(-01 year)	(-01 year)
Goldberg, B. Gomella, L.	Image-Guided Diagnosis and Treatment of Prostate Cancer	DOD AdMeTech	07/01/98 - 06/30/99	\$25,000	\$0	\$25,000
				\$25,000		\$25,000
				(-01 year)	(-01 year)	(-01 year)
Liu, J.B.	3-D Endoluminal Ultrasound of Esophagcal Cancer	NIH R21	12/01/98 - 11/30/00	\$55,287	\$19,905	\$75,192
				\$36,838	\$10,680	\$47,518
				(-01 year)	(-01 year)	(-01 year)

Hepatic M Colorect	Aetastases from tal Carcinoma	NIH R21	12/01/98 - 11/30/00	\$192,935	\$118,069	\$311,004
	99 B)			\$94,625	\$57,117	\$151,742
				(-01 year)	(-01 year)	(-01 year)
High Fre	equency Two-	HIN	09/01/98 - 08/31/00	\$30,864	\$19,136	\$50,000
Dimensic	onal Ultrasonic	SBIR				
Tra	insducers	Creare, Inc.		\$123,457	\$76,543	\$200,000
				(-01 year)	(-01 year)	(-01 year)
Novel Tc-	99m-Tuftsin for	HIN	07/01/98-06/30/01	\$47,018	\$29,151	\$76,169
Imaging In	flammation Foci	SBIR (Phase II)				
		Palatin Technologies		\$47,018	\$29,151	\$76,169
				(-01 year)	(-01 year)	(-01 year)
umor Tissue	e Characterization-	HIN	12/01/98-11/30/00	\$197,974	\$122,744	\$320,718
Multispecti	ral Segmentation	R21				•
				\$98,467	\$61,049	\$159,516
				(-01 year)	(-01 year)	(-01 year)
Tissue Se	egmentation as	HIN	12/01/98-11/30/01	\$328,909	\$190,128	\$519,037
ndicator of	Disease Behavior	ROI				
	5			\$96,004	\$59,522	\$155,526
				(-01 year)	(-01 year)	(-01 year)
			TOTAL NIH GRANT	\$1,658,648	\$974,153	\$2,632,801
			FUNDING			.
			TOTAL FIRST YEAR	\$779,322	\$446,218	\$1,225,540
			NIH FUNDING	(-01 year)	(-01 year)	(-01 year

(Report reflects en	itire award period and first year (of award)				
FOUNDATION	N/NON-PROFIT ORGANIZ	CATION GRANTS				
PRINCIPAL	TITLE OF PROJECT	FUNDING	FUNDING DATES	DIRECT	INDIRECT	TOTAL COSTS
INVESTIGATOR		SOURCE		COSTS	COSTS	FUNDED
Goldberg, B.	Drexel-Jefferson Academic	The Whitaker				
Drexel-Jefferson	Alliance for Biomedical	Foundation				
(subcontract)	Engineering					water first first over over
FUNDED				(-01 year)	(-01 year)	(-01 year)
Shi, W.	Subharmonic Imaging and Sub-	The Whitaker	09/01/98 - 08/31/01	\$180,208	\$29,392	\$209,600
	harmonic-Aided Pressure Esti-	Foundation				
	mation with Microbubble-Based		09/01/98 - 08/31/99	\$79,136	\$9,698	\$88,834
FUNDED	Ultrasound Contrast Agents			(-01 year)	(-01 year)	(-01 year)
Vinitski, S.	Functional MRI of Respiratory-	Jefferson/Drexel		CLC 8\$	\$4 384	\$17 656
(Nissanov, J.)	Related Activity in Human	Foundation				
	Spinal Cord			\$8,272	\$4,384	\$12,656
FUNDED				(-01 year)	(-01 year)	(-01 year)
			TOTAL FOUNDATION/	\$188,480	\$33,776	\$222,256
			NON-PROFIT FUNDING			
			TOTAL FIRST YEAR	\$87,408	\$14,082	\$101,490
			FOUNDATION FUNDING	(-01 year)	(-01 year)	(-01 year)

Pending Grants 07/01/97 - 06/30/98

Pending Grants 07/01/97 - 06/30/98 (Report reflects en	s tire award period and first year	r of award)				
INDUSTRIAL	GRANTS					
PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	FUNDING DATES	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS FUNDED
Forsberg, F.	Testing and Evaluation of Prototype "Microsphere	POINT Biomedical Cornoration	06/01/98 - 05/31/99	\$6,500	\$0	\$6,500
FUNDED	Agents" in a Woodchuck			\$6,500 (-01 year)	\$0 (-01 year)	\$6,500 (-01 year)
Forsberg, F.	Evaluation of Bi-Spheres in Normal Rabbits	POINT Biomedical Cornoration	07/01/98 - 06/30/99	\$6,000	\$0	\$6,000
FUNDED		_		\$6,000 (-01 year)	\$0 (-01 year)	\$6,000 (-01 year)
Forsberg, F.	Evaluation of Experimental Ultrasound Contrast Agents	Rohm and Haas	07/01/98 - 10/01/98	\$5,100	\$0	\$5,100
FUNDED				\$5,100 (-01 year)	\$0 (-01 year)	\$5,100 (-01 year)
Goldberg, B. FUNDED	Short-Term Diagnostic Imaging Studies	Eagle Vision Pharmaceutical Corp.	07/07/98 - 07/06/99			
				(-01 year)	(-01 year)	(-01 year)
Nazarian, L.	Evaluation of a new soft tissue ultrasound scanner	Longport, Inc.	07/01/98 - 06/30/99	\$24,200	\$5,800	\$30,000
FUNDED				\$24,200 (-01 year)	\$5,800 (-01 year)	\$30,000 (-01 year)

\$126,000		\$126,000	(-01 year)		\$173,600		\$173,600	(-01 year)
\$26,000		\$26,000	(-01 year)		\$31,800		\$31,800	(-01 year)
\$100,000		\$100,000	(-01 year)		\$141,800		\$141,800	(-01 year)
07/01/98 - 06/30/99					TOTAL INDUSTRIAL	FUNDING	TOTAL FIRST YEAR	NIH FUNDING
Sonus	Pharmaceuticals							
A Phase III, Multcenter Study	of EchoGen as an Ultrasound	Contrast Agent for Doppier	Sonography of the Renal	Artery Stenosis				
Needleman, L.			FUNDED					

TOTAL FUNDING	\$1,988,928	\$1,039,729	\$3,028,657
PENDING			
TOTAL FUNDING	\$1,008,530	\$492,100	\$1,500,630
PENDING -First Year	(-01 year)	(-01 year)	(-01 year